



# A framework for participatory decision-making in the context of post-disaster housing reconstruction : case studies from three post-disaster reconstruction programs in the 2000s

Wael Naaseh

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Wael Naaseh. A framework for participatory decision-making in the context of post-disaster housing reconstruction : case studies from three post-disaster reconstruction programs in the 2000s. Art and art history. Université de Nanterre - Paris X, 2023. English. NNT : 2023PA100112 . tel-04500964

**HAL Id: tel-04500964**

**<https://theses.hal.science/tel-04500964>**

Submitted on 12 Mar 2024

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Membre de l'université Paris Lumières

## Wael Naaseh

# A Framework for participatory decision-making in the Context of post-disaster housing Reconstruction

*Case Studies from three Post-disaster Reconstruction Programs in the 2000s*

Thèse présentée et soutenue publiquement le 06/12/2023

en vue de l'obtention du doctorat de **Architecture et ville** de l'Université Paris Nanterre sous la direction de M. Yankel FIJALKOW (Université Paris Nanterre)

### Jury \* :

Thesis Director :	Mr Yankel Fijalkow	HDR Professor Sociologist and Urban Planner. Ecole Nationale Supérieure d'Architecture Paris Val de Seine.
Membre du jury , Rapporteur :	Mr Jean Pierre Levy	HDR Directeur de Recherche au CNRS,UMR LATTIS Ecole des Ponts ParisTech.
Membre du jury , Rapporteur :	Mr Yann Nussaume	HDR Professor of Architecture,Theory and practice of architectural design, Ecole Nationale Supérieure d'Architecture La Villette.
Membre du jury :	Ms Corinne Tiry Ono	Professor of Ville et territoires, Ecole Nationale Supérieure d'Architecture Paris Val de Seine.
President du jury :	Mr Marco Cremaschi	HDR Professor, Sciences Politiques.
Membre du jury :	Mr Cyrille Hanappe	Senior Lecturer in Architecture, Ecole Nationale Supérieure d'Architecture Paris Belleville.
Membre du jury , expert invité:	Mr Francesco Bogoni	Doctor in Architecture,Urbanism,Landscape and Heritage. ENSA Paris la Villette.

## Résumé

Cette thèse propose un cadre conceptuel qui vise à optimiser l'efficacité de la participation communautaire à la prise de décision liée à la reconstruction de logements après une catastrophe, en mettant en évidence les domaines les plus critiques de contribution communautaire aux décisions de reconstruction et en décrivant les facteurs qui affectent leur engagement.

La thèse analyse les facteurs qui ont affecté la reconstruction dans trois études de cas : l'ouragan Katrina de 2005 aux États-Unis d'Amérique, le tremblement de terre et le tsunami de 2004 dans l'océan Indien en Indonésie et le tremblement de terre du nord du Pakistan en 2005. L'étude empirique comprend l'analyse statistique de deux questionnaires pour étudier l'importance des facteurs identifiés. En outre, elle calcule les poids des facteurs à l'aide d'une méthode de processus de hiérarchie analytique (AHP) et réalise une analyse thématique qualitative des réponses aux questions ouvertes.

L'étude montre que la mise en relation de l'expertise avec le contexte local et la fourniture d'informations aux principaux décideurs sont les contributions les plus importantes de la participation communautaire. La participation communautaire joue également un rôle dans l'élaboration de stratégies visant à assurer l'équité, à répondre aux besoins et à tenir compte de l'identité architecturale. L'étude recommande d'utiliser davantage la prise de décision participative dans les activités liées à la coordination et à la planification, et moins dans les activités d'évaluation et de mise en œuvre. Elle souligne également l'importance d'une structure organisationnelle adéquate pour une participation communautaire efficace, en fournissant plusieurs mesures pour accroître l'efficacité de leur engagement.

Mots clés : identité architecturale ; Participation communautaire ; Prise de décision participative ; reconstruction post-catastrophe ; Reconstruction de logements ; Facteurs de reconstruction ; Facteurs de participation communautaire ; les défis de la participation communautaire ; Cadre de participation communautaire.

# Introduction

## I. Déclaration personnelle

Je suis Wael Naaseh, un architecte syrien qui vit à Paris. Depuis mon enfance, les bâtiments me fascinent, non seulement par leurs histoires, mais aussi par ce qu'ils renferment. J'ai choisi l'architecture comme ma discipline principale et l'ai étudiée en profondeur. Je me suis passionné pour le design, les méthodes de construction et les matériaux. J'étais fasciné par la façon dont les éléments structuraux étaient utilisés en architecture et comment les utiliser pour créer des bâtiments esthétiques et fonctionnels.

Je suis diplômé de l'Université de Damas avec un baccalauréat en architecture en 2013, avec un très bon classement. J'ai également reçu le diplôme le plus élevé pour mon projet de fin d'études à l'Université de Damas. Cette année restera à jamais gravée dans ma mémoire. Fin mars 2013, alors que nous faisions nos examens finaux, le bombardement a commencé à la faculté d'architecture. J'ai vécu les horreurs de la guerre, perdu des êtres chers et quitté ma patrie. Ce fut une journée terrifiante et triste, mais je suis reconnaissant d'être en vie. Ces expériences ont façonné mon engagement à utiliser mes compétences pour aider à reconstruire les communautés après les catastrophes. Je crois que l'architecture peut être un puissant outil de guérison et de résilience, et je suis déterminé à utiliser mes compétences pour aider à créer un avenir meilleur pour la Syrie et d'autres pays qui ont été touchés par des catastrophes.

Au cours de mon voyage d'étude, j'ai été étonné de voir comment les villes peuvent guérir après des catastrophes et des guerres. J'ai vu comment des villes et des pays détruits peuvent devenir plus beaux et plus forts, et j'ai été inspiré par la façon dont l'architecture peut être utilisée pour reconstruire des communautés après des catastrophes et des conflits. Peut-être que mon éducation à Damas, la plus ancienne capitale habitée du monde, m'a motivé à faire des recherches dans ce domaine. L'existence de la ville est devenue menacée après la guerre sanglante qui s'y est déroulée par les destructions causées par la guerre.

J'étais intéressé à étudier l'effet de la flexibilité sur le processus de conception et de construction de bâtiments résidentiels durables pour fournir des solutions de reconstruction et de réhabilitation en Syrie. J'ai mené une étude de cas de la reconstruction de la zone rurale de Damas, en mettant l'accent sur l'utilisation de matériaux disponibles localement tels que (bois, argile, pierre, roseaux, etc. / l'utilisation de pierres et de cages métalliques ensemble, en plus de



l'utilisation de déchets non biodégradables tels que des bouteilles en plastique usagées, des contenants ou des pneus de voiture, etc.). Mes conclusions suggèrent que la flexibilité est un facteur important dans la conception et la construction de bâtiments résidentiels durables, en particulier dans les situations post-catastrophe/conflit. J'ai obtenu un master avec un très bon classement dans ce domaine en 2018.

Pour n'importe quel lecteur, il peut sembler que j'ai terminé mes études et obtenu une maîtrise et c'est tout. Mais non, ça a été une année très difficile. Vous pouvez vous attendre à ce que la difficulté soit le manque de ressources ou leur absence, ou les pannes d'Internet et d'électricité, ou même l'inflation et les hausses de prix folles. Au contraire, mes défis et mes souffrances étaient plus grands que cela. Ma vie était toujours en jeu, et chaque jour je vivais en danger (Et malheureusement, je n'étais pas seul, mais la plupart des miens comme moi). J'ai vécu tout cela et je lutte toujours pour survivre. Mais je n'ai jamais abandonné. J'ai continué à apprendre et à travailler, à la poursuite de mes rêves.

J'ai aussi remarqué la mauvaise condition urbaine dont souffre mon pays. C'était le résultat de plusieurs mauvaises décisions prises par les décideurs en Syrie, qui ont provoqué une colère publique massive. Ces décisions n'étaient pas compatibles avec les désirs et les aspirations du peuple. La propagation de la corruption, la bureaucratie, l'absence de contrôle et le manque de participation communautaire dans tout processus de prise de décision et de mise en œuvre ont tous contribué à la mauvaise condition urbaine en Syrie. Cela a été largement observé dans les pays voisins et du monde entier, qui ont également subi des catastrophes et des guerres.

Le succès de tout processus de conception ou de mise en œuvre nécessite une bonne planification, une gestion compétente et des décisions décisives. Cependant, à mesure que je poursuivais mes recherches, je devenais de plus en plus convaincu que ces facteurs ne suffisaient pas. L'image sociétale, les méthodes de prise de décision et l'importance de la participation communautaire et de l'identité urbaine sont également essentielles au succès.

Après le récent tremblement de terre qui a frappé la Syrie et la Turquie en février 2023, ma confiance a été renforcée que cette recherche a une importance mondiale. Les catastrophes naturelles, malheureusement, sont dures et difficiles à prévoir. Par conséquent, je m'efforce dans cette recherche de développer un cadre de prise de décision participative dans le contexte de la reconstruction post-catastrophe pour aider les pays et les sociétés à se relever de la meilleure et la plus rapide des manières possibles.

## II. Arrière-plan

La participation communautaire à la reconstruction post-catastrophe a été de plus en plus soulignée pour faire face aux limites de la prise de décision descendante et pour accroître l'appropriation ; plusieurs efforts ont été déployés pour l'améliorer en formulant la base de leur engagement et en décrivant les approches de la participation communautaire à la reprise après sinistre. L'« approche guatémaltèque », établie en 1976, a été l'une des premières tentatives d'élaboration de la participation communautaire au relèvement après une catastrophe. Elle soulignait l'importance de l'engagement communautaire dans le processus de reconstruction. L'approche touchait à quatre principes clés, y compris l'engagement de la communauté pour identifier et mettre en œuvre leurs besoins. Elle a également mis l'accent sur la coordination avec toutes les parties prenantes et l'implication des personnes vulnérables (Gawronski et Olson, 2013).

Ce n'est que dans les années 1990 que la participation communautaire a acquis une reconnaissance internationale lorsque la participation communautaire a été soutenue par les Nations Unies pendant la Décennie internationale de la prévention des catastrophes naturelles (IDNDR). Elle a souligné l'importance de donner aux communautés les moyens de s'engager dans toutes les phases de la gestion des catastrophes (Goldammer, 1994).

Le dernier cadre internationalement reconnu pour la participation communautaire a été élaboré au début des années 2000 par le Programme des Nations Unies pour le développement (PNUD). Il s'est concentré sur l'autonomisation des communautés pour qu'elles jouent un rôle dans la réduction des vulnérabilités aux futures catastrophes. Le cadre de réduction des risques de catastrophe à base communautaire (CBDRR) comporte cinq étapes, notamment l'évaluation des risques, la planification par le biais d'un processus participatif, la mise en œuvre, le suivi et l'institutionnalisation (Jagirdhar et Sastry, ND).

Ces dernières années, l'importance de développer des cadres plus efficaces pour la participation communautaire a augmenté à la demande des organisations et des ONG travaillant dans le relèvement après une catastrophe et des gouvernements reconnaissant l'importance des approches communautaires dans un relèvement durable. Cependant, cette demande est due aux insuffisances du cadre précédent pour parvenir à une participation communautaire réussie malgré les efforts pour les impliquer dans le processus de reconstruction. Par exemple, impliquer les communautés à la suite du tremblement de terre en Haïti en 2010 a été un défi. Malgré les luttes, les décideurs n'ont pas réussi à instaurer la confiance et à établir des canaux

de communication efficaces ; la contribution de la communauté était également limitée (McCallin, et al., 2015).

Dans un autre exemple, après la catastrophe nucléaire de Fukushima en 2011, le gouvernement a élaboré une stratégie pour impliquer les communautés dans des projets de reconstruction. Cependant, il y a eu peu de mises en œuvre réelles de cette stratégie, en particulier dans les décisions de relocalisation qui, dans certains cas, ont conduit à des protestations contre les plans de reconstruction (Ribault, 2019).

Les expériences ratées de participation communautaire indiquent que les stratégies pour leur engagement sont encore peu claires ou difficiles à appliquer. Quelques indicateurs de l'échec de la participation communautaire comprennent le manque de confiance, l'engagement limité, le fait de favoriser les décisions qui profitent à des groupes d'individus influents et le manque de satisfaction des besoins à long terme de la communauté. L'une des raisons de l'échec des stratégies pour parvenir à une participation communautaire efficace est la limitation des cadres existants pour la participation communautaire dans les projets de reconstruction ; certaines des limitations des frameworks précédents incluent les éléments suivants :

Malgré la reconnaissance que l'implication de la communauté dans la reprise après sinistre est essentielle, l'absence d'un processus d'engagement communautaire clair a conduit à une mise en œuvre limitée des cadres de participation communautaire. Les aspects sociaux et culturels affectant l'engagement communautaire dans la reprise après sinistre n'étaient pas traités efficacement dans les cadres antérieurs, tels que les relations de pouvoir, les normes culturelles et les hiérarchies établies. Reconnaître et traiter ces facteurs est crucial pour s'assurer que la participation communautaire est significative et efficace. Parce que les problèmes sociaux n'étaient pas abordés, les efforts pour se remettre des catastrophes étaient parfois concentrés sur le court terme sans donner la priorité au développement durable et sans tenir compte de la façon dont les opérations de réhabilitation affecteraient la communauté à long terme.

De plus, les cadres antérieurs ne fournissaient pas toujours des informations précises sur la coordination de la participation communautaire pour la rendre pertinente et efficace. Enfin, les recommandations pour impliquer la communauté sont trop larges. Les cadres suggèrent d'impliquer la communauté dans toutes les phases du processus de reconstruction de manière égale, ce qui est trop étendu. Ne pas définir de stratégies pour savoir quand et comment utiliser la participation communautaire conduit souvent les décideurs à éviter la participation communautaire ou à la mettre en œuvre de manière superficielle ou désordonnée ; c'est parce

que la participation communautaire est lente et épuise les ressources à mettre en œuvre, et s'il n'y a pas de moyen optimisé de les engager, cela conduit souvent à l'échec de la participation communautaire.

Il est important que les cadres futurs abordent ces limites et développent des cadres basés sur les leçons tirées des études de cas et les commentaires des personnes ayant de l'expérience dans les projets de reprise après sinistre.

### III. Énoncé du problème

L'importance de la participation communautaire dans la prise de décision pour les projets de reconstruction de logements a été largement reconnue. La participation de la communauté peut créer un soutien pour les plans, augmenter la satisfaction, accroître la responsabilité de l'organisation, aider à identifier les besoins et fournir une connaissance du contexte local aux planificateurs. Les chercheurs soulignent souvent l'importance de la participation de la communauté dans la reconstruction des logements après une catastrophe (Davidson et al., 2007 ; Olshansky, 2006 ; Campanella, 2006 ; Ophiyaandri et al., 2016 ; Roosli et al., 2018). Bien qu'il existe de nombreuses études sur l'importance de la participation communautaire, la recherche sur les mesures pour une prise de décision participative efficace est limitée. Par exemple, Allen (2006a) a déclaré que les activités de reconstruction pourraient bénéficier davantage en impliquant les communautés affectées et les institutions locales dans le processus de reconstruction ; Raju (2013a) a noté qu'il est courant que les personnes affectées soient ignorées dans le processus de prise de décision. Davidson et al. (2007) ont déclaré que lorsque les bénéficiaires participent à une "conception appropriée des processus et de leur organisation, ils ont un impact important sur le projet avec des avantages à long terme pour eux et les autres parties prenantes". Selon les conclusions de Davidson et al. (2007), il existe peu de connaissances sur la manière dont la participation communautaire devrait être menée au niveau du projet. Sadiki a fait peu de contributions à la recherche ces dernières années qui se sont concentrées sur les défis de la participation communautaire ; il a déclaré que "les communautés touchées ont les connaissances essentielles pour concevoir des projets de reconstruction réussis" et que les communautés ont un rôle particulier à jouer à toutes les étapes de la reconstruction des logements après une catastrophe (Sadiki et al., 2011). "Une participation communautaire efficace est une clé majeure du succès dans la reconstruction post-catastrophe." En outre, "les

personnes concernées possèdent des projets de reconstruction de logements et doivent donc participer de manière adéquate à la prise de décision" (Sadiki et al., 2017).

Même si l'accent est mis sur l'importance de la participation communautaire dans la prise de décision, il y a encore peu de compréhension sur la façon d'engager la reconstruction dans un processus optimisé et ordonné. En d'autres termes, comment intégrer la participation communautaire dans le processus de reconstruction. Par exemple, il est crucial de comprendre le contexte social de la communauté et élaborer une stratégie d'engagement en conséquence. Les programmes de reconstruction plus récents ont pour politique d'engager la communauté dans la définition de ses besoins. Cependant, l'utilisation de l'approche de participation communautaire ne conduit pas nécessairement à atteindre des objectifs sociaux ; parfois, elle peut être inefficace. Pour donner plus de perspective à cet argument, Lizarralde et al. (2009) décrivent un cas dans le Gujarat, en Inde, où il y avait une utilisation de l'approche axée sur le propriétaire, qui est connue pour être une approche participative. Cependant, les politiques n'ont pas pris en compte les facteurs géographiques et socio-économiques locaux, ce qui a entraîné, selon Barenstien (2005), un "manque de caractère communautaire". Il est donc nécessaire d'examiner les défis qui peuvent entraver l'utilisation efficace de la participation communautaire. Même s'il y a une large reconnaissance dans la communauté de récupération après sinistre de l'importance de la participation communautaire dans ce domaine, les projets de reconstruction après une catastrophe échouent souvent à inclure une implication efficace. Il est souvent difficile d'interpréter le principe de la participation communautaire en actions sur le terrain.

La définition des besoins de la communauté n'est pas le seul domaine qui requiert la participation de la communauté. La reconstruction post-catastrophe nécessite de prendre des décisions qui ont un impact à long terme sur la communauté affectée ; par conséquent, il est avantageux d'inclure la communauté dans plus que la définition de ses besoins. D'un autre côté, l'expérience de la participation communautaire montre que le processus de participation communautaire nécessite des efforts, de la planification et du temps pour obtenir des résultats efficaces. Et ce n'est que lorsque les facteurs qui affectent la participation communautaire sont soigneusement étudiés que nous pouvons concevoir des cadres de participation communautaire qui fournissent une meilleure compréhension du processus de participation, pour aider les décideurs à développer un processus décisionnel participatif.

La littérature concernant le processus de reconstruction de logements met l'accent sur l'importance de la participation de la communauté dans le processus de reconstruction. Par

exemple, une étude de Sharma et al. (2018) a montré que les faibles niveaux de participation entraînent généralement la négligence des besoins des personnes affectées. Malgré la reconnaissance globale de cela dans la communauté humanitaire, le rôle de la participation communautaire dans les décisions de planification urbaine reste à découvrir. Les approches communautaires mettent l'accent sur les mêmes principes : l'autonomisation des pauvres et des autres groupes marginalisés, la réactivité à la demande des bénéficiaires, l'autonomie des institutions locales associée à une plus grande redevabilité vers le bas et le renforcement des capacités locales. Malgré ces principes partagés, l'intégration de ces approches au niveau local avec le système central de prise de décision a souvent été difficile.

Enfin, les dispositions institutionnelles ne soutiennent souvent pas la participation de la communauté affectée à la planification urbaine holistique. Même si les projets de reconstruction de logements sont des programmes de construction à grande échelle qui se déroulent sur une période relativement courte, ce qui peut avoir un effet significatif sur l'identité architecturale et le tissu urbain, qui à son tour affecte le socio-culturel et socio-économique des habitants, le rôle de la participation communautaire dans la formation de l'identité architecturale reste à découvrir.

#### **IV. Le but de la recherche**

Cette recherche vise à créer un cadre conceptuel pour les projets de reconstruction de l'environnement bâti post-catastrophe qui intègrent la participation communautaire dans la prise de décision et étudient le rôle de la participation communautaire dans les décisions de planification de l'environnement bâti. Le cadre proposé vise à accroître l'efficacité de la participation communautaire pour obtenir des résultats de reconstruction positifs ; cela peut conduire à des résultats plus durables qui tiennent compte des facteurs sociaux lors de la planification.

Identifier les stratégies optimales pour inclure les communautés dans diverses circonstances et comprendre comment quantifier l'influence de la participation communautaire sur le succès des projets de reconstruction post-catastrophe sont deux autres sujets qui peuvent nécessiter des recherches supplémentaires. Cette thèse contribue à identifier les apports communautaires qui permettent une participation optimale. Nous suggérons également des mesures correspondant à chaque défi de prise de décision participative pour faciliter l'intégration de la participation communautaire dans les projets de reconstruction. La thèse aborde également l'absence d'une

collection complète des différents facteurs et analyses qui affectent la participation communautaire dans les projets de reconstruction de logements post-catastrophe.

Cette thèse explore le rôle de la prise de décision participative dans différentes décisions critiques pour des résultats positifs de reconstruction. Elle examine comment concevoir un processus décisionnel participatif et quelles sont les caractéristiques de la structure organisationnelle qui soutiennent ce processus. La thèse ne fournit pas un modèle de décision unique pour la participation dans tout projet de reconstruction ; au lieu de cela, elle propose une approche par laquelle les décideurs peuvent analyser la structure institutionnelle et le processus de reconstruction pour soutenir une participation efficace dans chaque contexte local.

## V. Importance de l'étude

L'importance de cette thèse réside dans son application pratique pour faciliter la planification d'une participation communautaire efficace répondant aux aspects critiques nécessitant cette participation. L'accent mis sur la manière de mettre en œuvre le processus participatif est la clé du succès de l'engagement de la communauté affectée. En identifiant les éléments et les facteurs qui affectent la prise de décision participative et en soutenant les domaines de contribution les plus critiques pour la communauté dans les décisions de reconstruction, cette thèse décrit un cadre cohérent de participation communautaire en tant que contribution aux projets de reconstruction.

L'élaboration d'un cadre pour la participation communautaire aux projets de reconstruction accroît la prise en compte des facteurs sociaux lors de la planification, contribuant ainsi à un relèvement durable. Lorsque la communauté est consultée au cours de la phase de planification, les aspects sociaux importants pour la communauté sont identifiés et pris en compte, permettant d'obtenir des résultats équitables et culturellement sensibles, et renforçant la capacité de la communauté à jouer un rôle continu dans le développement à plus long terme. Le cadre proposé dans cette thèse vise à servir de référence aux décideurs dans le domaine des projets de reconstruction de l'environnement bâti après des catastrophes et contribue aux efforts en cours pour promouvoir l'approche participative dans les projets de reconstruction.

## VI. Délimitation de l'étude

Cette thèse se concentre sur les catastrophes naturelles. Les catastrophes causées par des conflits présentent plus de facteurs à prendre en considération, ce qui pourrait limiter l'applicabilité du cadre aux types de catastrophes conflictuelles. Cette recherche ne se focalise pas sur une région ou un pays spécifique touché par une catastrophe, ce qui limite la généralisation du cadre à d'autres contextes. Par conséquent, l'analyse des études de cas comprend l'exploration des facteurs généraux et de leurs résultats pour servir la portée de la recherche. Cette thèse se concentre sur la participation communautaire dans le court à moyen délai de rétablissement, en tenant compte des effets à long terme de leur engagement. La recherche n'étudie pas la participation de la communauté dans les phases de réponse ou d'atténuation. Cette thèse porte sur les rôles et les défis de la participation communautaire dans le processus décisionnel. Elle se concentre sur l'étude de la participation au processus de prise de décision, à l'exclusion du rôle de la communauté dans la mise en œuvre.

Enfin, l'étude empirique se concentre sur le point de vue des personnes ayant de l'expérience dans les projets de reconstruction post-catastrophe ou des personnes ayant une expertise universitaire à cet égard. La perspective de la communauté n'est pas incluse en raison de la nature généralisée de cette étude, qui vise à développer un cadre fonctionnant dans tous les contextes. Cependant, étant donné que les communautés peuvent différer dans leurs contributions en fonction de leur contexte, il est suggéré pour les études futures d'étudier la perspective communautaire et les apports de cette thèse dans différents contextes.

## VII. Méthodologie et structure de la recherche

Ce modèle sera développé en explorant le rôle de la participation communautaire dans les décisions critiques qui affectent les résultats de la reconstruction et en étudiant les facteurs qui influent sur le processus de prise de décision participative dans une méthode quantitative et qualitative.

Une revue de la littérature a été menée dans le premier chapitre, qui passe en revue les thèmes des catastrophes et de la gestion des catastrophes, ainsi que les détails du processus de reconstruction, y compris une comparaison de trois modèles pour le processus de reconstruction, en ajoutant les différentes activités compilées à partir de diverses publications. Le premier chapitre décrit les concepts de participation communautaire et les études



précédentes. Enfin, le premier chapitre passe systématiquement en revue des études de cas dans des projets de reconstruction pour identifier les thèmes des facteurs et leurs résultats. La revue de la littérature a compilé différentes sources, les a analysées et synthétisées pour former un construit. Un cadre théorique pour cette thèse a été développé sur la base de ces informations connexes.

Le premier chapitre a compilé différentes sources se concentrant sur les informations servant l'objectif de l'étude et les a synthétisées de manière à pouvoir les analyser au chapitre trois. Ce chapitre fournit des informations sur le contexte local de chaque cas et comment il a affecté le processus de reconstruction, ainsi que le rôle des parties prenantes et de la communauté dans la reconstruction. Il examine également plusieurs décisions ayant affecté la participation communautaire et les résultats de la reconstruction.

Le chapitre deux explore trois études de cas différentes :

- L'ouragan Katrina de 2005 à La Nouvelle-Orléans, États-Unis.
- Le tremblement de terre et le tsunami de 2004 dans l'océan Indien à Aceh, en Indonésie.
- Le tremblement de terre de 2005 au nord du Pakistan.

Le chapitre trois analyse les informations fournies dans les chapitres précédents pour identifier trois éléments principaux :

- Facteurs ayant affecté les résultats de la reconstruction dans les études de cas.
- Facteurs ayant influencé la prise de décision dans les études de cas.
- Facteurs ayant influencé la participation de la communauté aux études de cas.

Les variables définies ont été soumises à une méthode quantitative pour évaluer leur influence relative sur la reconstruction en utilisant ces trois méthodes :

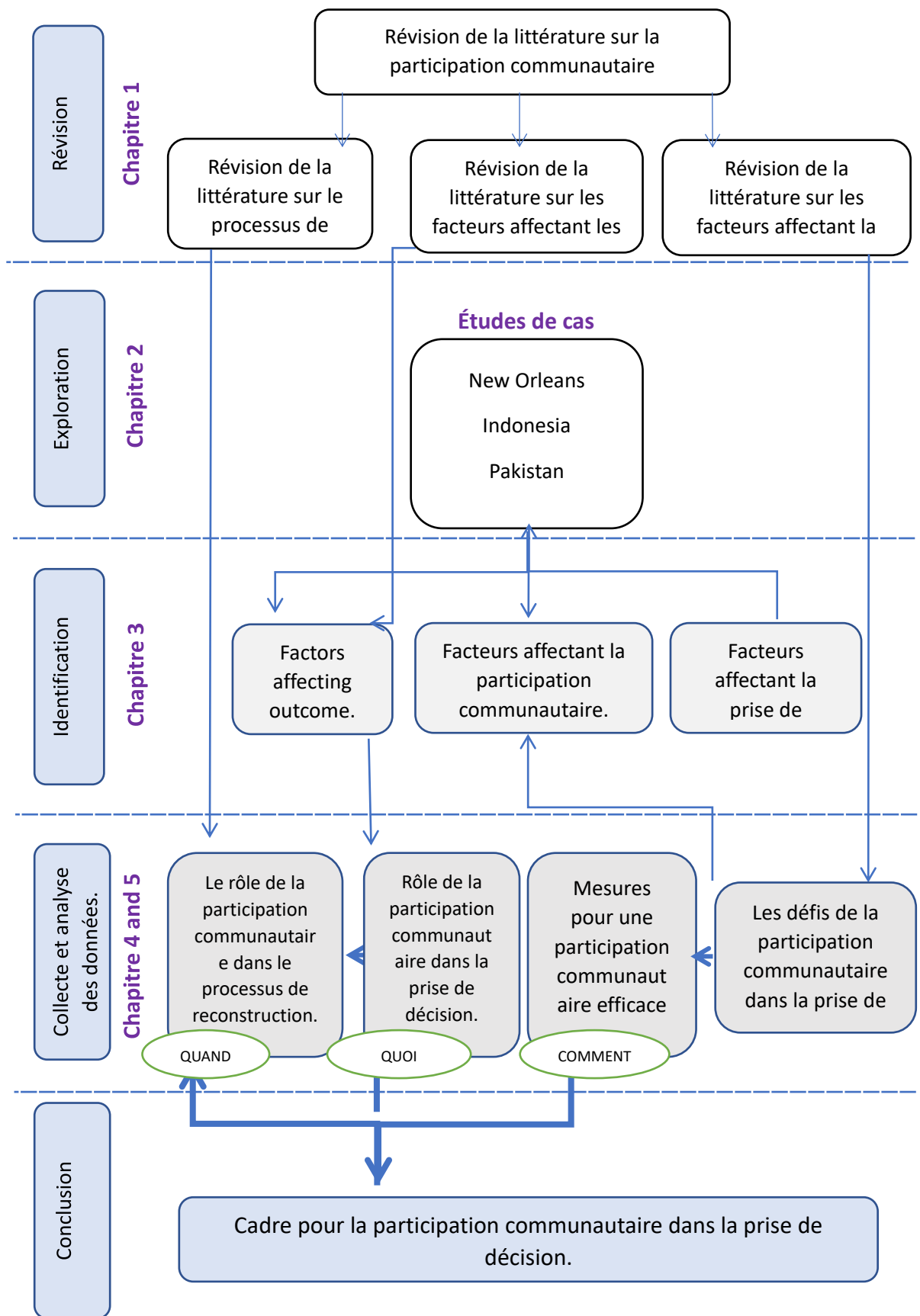
Le chapitre quatre détaille la collecte et l'analyse des données du premier questionnaire, qui cible la population universitaire en reprise après sinistre et le personnel travaillant dans des projets de reprise. Le but de ce questionnaire est d'évaluer l'importance de la participation de la communauté en tant qu'apport dans la prise de décision en matière de reconstruction de logements ; cela contribue finalement à identifier quand envisager d'utiliser un niveau de participation plus élevé en priorité. Il teste l'hypothèse selon laquelle la participation de la communauté est essentielle pour prendre des décisions d'identité architecturale. Ce questionnaire est exploratoire et comprend une liste complète des aspects possibles auxquels la communauté peut participer.

Le résultat de ce questionnaire donnera des indications pour affiner les points. Ensuite, un autre questionnaire quantifié est utilisé pour déterminer les poids des facteurs en utilisant la méthode AHP en comparaison de paires pour évaluer quand utiliser la participation communautaire dans le processus de reconstruction.

Le chapitre cinq rend compte de la collecte et de l'analyse des données du deuxième questionnaire, qui cible les personnes ayant de l'expérience dans les projets de reconstruction post-catastrophe et de la participation communautaire. Le but du questionnaire est d'évaluer l'influence de différents défis sur la participation de la communauté à la prise de décision. Cela permet d'identifier les mesures ou les facteurs qui contribuent à une participation plus efficace au processus de reconstruction. À la fin de ce chapitre, nous analysons les questions ouvertes dans les méthodes qualitatives pour affirmer et confirmer les résultats, ainsi que pour explorer des aspects supplémentaires.

Les méthodes statistiques utilisées dans les deux questionnaires comprennent l'analyse factorielle pour déterminer les thèmes et les tendances liés à la participation communautaire selon les points de vue de l'échantillon. D'autres méthodes statistiques comprennent la mesure de la validité et de la fiabilité de l'étude et la cohérence de ses facteurs, ainsi que les corrélations et l'indice de gravité.

Enfin, le chapitre six teste les modèles pour évaluer l'efficacité de l'utilisation de la participation communautaire et quand l'utiliser dans la prise de décision. Cela aide les décideurs à évaluer l'utilité de l'engagement communautaire dans tout projet de reconstruction. Les méthodes utilisées à cet effet incluent la Simple Multi-Attribut Rating Technique (SMART), qui est une méthode de prise de décision multicritères pour évaluer la meilleure alternative de projet sur la base d'une liste de critères pertinents, et une Sensibilité à la performance utilisant les résultats du questionnaire AHP.



## ملخص البحث

تقترح هذه الأطروحة إطاراً مفاهيمياً يعمل على تحسين فعالية مشاركة المجتمع في صنع القرار المتعلق بإعادة بناء المساكن بعد الكوارث من خلال دعم المجالات المساهمة الأكثر أهمية للمجتمع في قرارات إعادة الإعمار وتحديد العوامل التي تؤثر على مشاركتهم.

تحلل الأطروحة العوامل التي أثرت على إعادة الإعمار في ثلاث دراسات حالة: إعصار كاترينا 2005 في الولايات المتحدة الأمريكية، وزلزال المحيط الهندي عام 2004 وتسونامي في إندونيسيا، وزلزال شمال باكستان عام 2005. تضمنت الدراسة التجريبية تحليل استجابات عينة من الأفراد ذوي الخبرة في مشاريع التعافي من الكوارث، والتي تتكون من تحليل إحصائي لاستبيانين للتحقق من أهمية العوامل المستخرجة، بالإضافة إلى حساب أوزان العوامل باستخدام أسلوب عملية التسلسل الهرمي التحليلي (AHP) وتحليل موضوعي نوعي للردود على الأسئلة المفتوحة.

أظهرت الدراسة أن ربط الخبرة بالسياق المحلي وتوفير المعلومات لكبار صناع القرار من أهم مساهمات المشاركة المجتمعية. تلعب المشاركة المجتمعية أيضاً دوراً في تشكيل استراتيجيات لضمان العدالة وتلبية الاحتياجات والنظر في الهوية المعمارية. توصي الدراسة باستخدام صنع القرار التشاركي بشكل أكبر في التنسيق والأنشطة المتعلقة بالتخطيط وبدرجة أقل في أنشطة التقييم والتنفيذ. كما يؤكد على أهمية الهيكل التنظيمي المناسب للمشاركة المجتمعية الفعالة ويوفر العديد من التدابير لزيادة فعالية مشاركتهم.

**الكلمات الدالة:** الهوية المعمارية، المشاركة المجتمعية، صنع القرار التشاركي، إعادة الإعمار بعد الكوارث، إعادة بناء المساكن، عوامل إعادة البناء، عوامل المشاركة المجتمعية، تحديات المشاركة المجتمعية، إطار المشاركة المجتمعية.

## المقدمة والمنهجية المتبعة

### أولاً. بيان شخصي

أنا وائل ناعسه، مهندس معماري سوري يعيش في باريس. منذ الطفولة، أسرتني المباني بقصصها وخارج جدرانها. لطالما تساءلت كيف ولماذا وأين ومن بنى هذه المباني. اخترت الهندسة المعمارية لتخصصي ودرستها بعمق. أصبحت شغوفاً بالتصميم وطرق البناء والمواد. لقد أنبهرت بكيفية استخدام العناصر الهيكلية في الهندسة المعمارية وكيفية استخدام هذه العناصر لإنشاء مبانٍ جميلة ووظيفية.

تخرجت من جامعة دمشق بدرجة بكالوريوس هندسة معمارية عام 2013 بتقدير جيد جداً. حصلت على أعلى درجة في مشروع التخرج من جامعة دمشق. سيكون هذا العام محفوراً في ذاكرتي إلى الأبد. في نهاية مارس 2013، عندما كنا نجري امتحاناتنا النهائية، بدأ القصف في كلية الهندسة المعمارية. فقدت 15 صديقاً، ماتوا جميعاً في القصف. ذكرياتهم ستبقى خالدة في قلبي إلى الأبد. كان يوماً مرعباً وحزيناً، لكنني ممتن لكوني على قيد الحياة. شكلت هذه التجارب التزامي باستخدام مهاراتي للمساعدة في إعادة بناء المجتمعات بعد الكوارث.

أعتقد أن الهندسة المعمارية يمكن أن تكون أداة قوية للشفاء والصمود، وأنا مصمم على استخدام مهاراتي للمساعدة في خلق مستقبل أفضل لسوريا والبلدان الأخرى التي تضررت من الكوارث.

خلال رحلتي الدراسية، أدهشتني كيف يمكن للمدن أن تتعافى بعد الكوارث والحروب. رأيت كيف يمكن للمدن والبلدان المدمرة أن تصبح أكثر جمالاً وأقوى، وقد ألهمني كيف يمكن استخدام الهندسة المعمارية لإعادة بناء المجتمعات بعد الكوارث والنزاعات. ربما دفعني نشأتي في دمشق، أقدم عاصمة مأهولة في العالم، للبحث في هذا المجال. أصبح وجود المدينة مهدداً بعد الحرب الدامية التي حدثت هناك بسبب الدمار الذي سببته الحرب.

كنت مهتماً بدراسة تأثير المرونة على عملية تصميم وبناء المباني السكنية المستدامة لتقديم حلول لإعادة الإعمار والتأهيل في سوريا. أجريت دراسة حالة لإعادة إعمار ريف دمشق، مع التركيز على استخدام المواد المتوفرة محلياً مثل الخشب، الطين، الحجر، القصب، إلخ. / استخدام الأحجار والأقفاص المعدنية معاً، بالإضافة إلى استخدام نفايات غير قابلة للتحلل مثل الزجاجات البلاستيكية المستعملة، أو الحاويات، أو إطارات السيارات، إلخ. تشير النتائج التي توصلت إليها إلى أن المرونة عامل مهم في تصميم وبناء المباني السكنية المستدامة، لا سيما في ظروف ما بعد الكوارث / الصراع. حصلت على درجة الماجستير بتقدير جيد جداً في هذا المجال عام 2018.

قد يبدو لأي قارئ أنني أنهيت دراستي وحصلت على درجة الماجستير وهذا كل شيء. لكن، لا، كانت سنة صعبة للغاية. قد تتوقع أن الصعوبة تكمن في نقص الموارد أو غيابها، أو انقطاع الإنترنت والكهرباء، أو حتى التضخم وارتفاع الأسعار الجنوني. بل كانت تحدياتي ومعاناتي أعظم من ذلك. كانت حياتي دائماً على المحك، وكل يوم كنت أعيش في خطر (ولسوء الحظ، لم أكن وحدي، لكن معظم أفراد شعبي مثلي). فقد عانيت من الحرب وفقدت أحبائي وغادرت وطني. لقد عشت كل هذا، وما زلت أكافح من أجل البقاء. لكنني لم أستسلم أبداً واصلت التعلم والعمل، سعياً وراء أحلامي.

كما لاحظت الوضع الحضري السيئ الذي يعاني منه بلدي. كان ذلك نتيجة العديد من القرارات الخاطئة التي اتخذها صناع القرار في سوريا، والتي أثارت غضباً شعبياً عارماً. لم تكن هذه القرارات متوافقة مع رغبات وتطلعات الناس. ساهم انتشار الفساد والروتين وغياب الرقابة وعدم مشاركة المجتمع في أي عملية صنع قرار وتنفيذ في تدهور الوضع الحضري في سوريا. وتزامن ذلك إلى حد كبير مع جميع الدول المجاورة أو العالمية التي عانت من كوارث وحروب.

يتطلب نجاح أي تصميم أو عملية تنفيذ تخطيطاً جيداً وإدارة ماهرة وقرارات حاسمة. ومع ذلك، بينما واصلت البحث، أصبحت مقتنعة أكثر فأكثر بأن هذه العوامل ليست كافية. كما أن الصورة المجتمعية وأساليب صنع القرار وأهمية المشاركة المجتمعية والهوية الحضرية ضرورية للنجاح.

بعد الزلزال الأخير الذي ضرب سوريا وتركيا في فبراير 2023، تعززت ثقتي بأن هذا البحث له أهمية عالمية. الكوارث الطبيعية، للأسف، قاسية ويصعب التنبؤ بها. لذلك، أسعى في هذا البحث إلى تطوير إطار لصنع القرار التشاركي في سياق إعادة الإعمار بعد الكوارث لمساعدة البلدان والمجتمعات على النهوض مرة أخرى بأفضل وأسرع طريقة ممكنة.

## ثانياً. الدراسات السابقة:

تم التأكيد بشكل متزايد على مشاركة المجتمع في إعادة الإعمار بعد الكوارث لمواجهة قيود اتخاذ القرار من أعلى إلى أسفل ولزيادة الملكية؛ كانت هناك العديد من الجهود لتحسينها من خلال صياغة أساس المشاركة وتحديد النهج لمشاركة المجتمع في التعافي من الكوارث. واحدة من أولى الجهود لصياغة مشاركة المجتمع في التعافي من الكوارث كانت "نهج غواتيمالا"، الذي تأسس في عام 1976. وقد أكد على أهمية مشاركة المجتمع في عملية إعادة الإعمار. تطرق النهج إلى أربعة مبادئ رئيسية، بما في ذلك إشراك المجتمع لتحديد وتنفيذ احتياجاتهم. كما شددت على التنسيق مع جميع أصحاب المصلحة وإشراك الضعفاء. (Gawronski and Olson (2013)

اكتسبت مشاركة المجتمع اعترافاً دولياً حتى التسعينيات عندما دعمتها الأمم المتحدة خلال العقد الدولي للحد من الكوارث الطبيعية (IDNDR). أكدت أهمية تمكين المجتمعات للمشاركة في جميع مراحل إدارة الكوارث. (Goldammer (1994)

تم تطوير آخر إطار عمل معترف به دولياً لمشاركة المجتمع في أوائل العقد الأول من القرن الحادي والعشرين من قبل برنامج الأمم المتحدة الإنمائي. وركزت على تمكين المجتمعات لتكون لها دور في الحد من التعرض للكوارث في المستقبل. يتكون إطار الحد من مخاطر الكوارث المجتمعية من خمس مراحل، بما في ذلك تقييم المخاطر والتخطيط للحد من الكوارث واستجابة الطوارئ والتعافي وبناء المقاومة المجتمعية. (Jagirdhar and Sastry (N.D)

في السنوات الأخيرة، ازدادت أهمية تطوير أطر أكثر فعالية لمشاركة المجتمع بسبب الطلب من المنظمات والمنظمات غير الحكومية العاملة في التعافي من الكوارث وإدراك الحكومات لأهمية النهج المجتمعية في التعافي المستدام. ومع ذلك، فإن هذا الطلب يرجع إلى قصور الإطار السابق لتحقيق مشاركة مجتمعية ناجحة على الرغم من الجهود المبذولة لإشراكهم في عملية إعادة الإعمار. على سبيل المثال، كان إشراك المجتمعات في أعقاب زلزال هايتي في عام 2010 يمثل تحدياً. وعلى الرغم من الصعوبات، فشل صناع القرار في بناء الثقة وإقامة قنوات اتصال فعالة. كان هناك أيضاً مساهمة محدودة من المجتمع

.McCallin, et al.,2015

في مثال آخر، بعد كارثة فوكوشيما النووية في عام 2011، شكلت الحكومة استراتيجية لإشراك المجتمعات في مشاريع إعادة الإعمار. ومع ذلك، كان هناك عدد قليل من التطبيقات الفعلية لهذه الاستراتيجية، لا سيما في قرارات إعادة التوطين والتي أدت في بعض الحالات إلى احتجاجات على خطط إعادة الإعمار. (Ribault, 2019)

تشير التجارب الفاشلة في مشاركة المجتمع إلى أن استراتيجيات مشاركتهم لا تزال غير واضحة أو يتعذر الوصول إليها. بعض المؤشرات لفشل المشاركة المجتمعية تشمل عدم الثقة، والمشاركة المحدودة، وتفضيل القرارات التي تفيد مجموعات من الأفراد المؤثرين، وعدم تلبية احتياجات المجتمع على المدى الطويل. إن أحد أسباب فشل الاستراتيجيات في تحقيق المشاركة المجتمعية الفعالة هو محدودية الأطر القائمة للمشاركة المجتمعية في مشاريع إعادة الإعمار. تشمل بعض قيود الأطر السابقة ما يلي:

على الرغم من الاعتراف بأن مشاركة المجتمع في التعافي من الكوارث أمر ضروري، أدى عدم وجود عملية واضحة للمشاركة المجتمعية إلى التنفيذ المحدود لأطر مشاركة المجتمع. لم تتم معالجة الجوانب الاجتماعية والثقافية التي تؤثر على مشاركة المجتمع في التعافي من الكوارث بشكل فعال في الأطر السابقة، مثل علاقات القوة والمعايير الثقافية والتسلسل الهرمي الراسخ. الاعتراف بهذه العوامل ومعالجتها أمر بالغ الأهمية لضمان أن تكون مشاركة المجتمع ذات مغزى وفعالة.

نظراً لعدم معالجة القضايا الاجتماعية، تركزت جهود التعافي من الكوارث أحياناً على المدى القصير دون إعطاء الأولوية للتنمية المستدامة والنظر في كيفية تأثير عمليات إعادة التأهيل على المجتمع على المدى الطويل.

علاوة على ذلك، لم تقدم الأطر السابقة دائماً معلومات محددة حول تنسيق مشاركة المجتمع لجعلها ذات صلة وفعالة. أخيراً، التوصيات الخاصة بإشراك المجتمع واسعة جداً. تقترح الأطر إشراك المجتمع في جميع مراحل عملية إعادة الإعمار على قدم المساواة، وهو أمر مكثف للغاية. غالباً ما يؤدي عدم تحديد الاستراتيجيات الخاصة بوقت وكيفية استخدام مشاركة المجتمع إلى جعل صانعي القرار يتجنبون المشاركة المجتمعية أو تنفيذها بطريقة ضحلة أو غير منظمة. وذلك لأن المشاركة المجتمعية بطيئة وتستنفد الموارد اللازمة للتنفيذ، وإذا لم تكن هناك طريقة محسنة لإشراكهم، فغالباً ما يؤدي ذلك إلى فشل المشاركة المجتمعية.

من المهم لأطر العمل المستقبلية أن تعالج هذه القيود وأن تطور أطر عمل تستند إلى الدروس المستفادة من دراسات الحالة وردود الفعل من الأفراد ذوي الخبرة في مشاريع التعافي من الكوارث.

### ثالثاً. عرض المشكلة:

تم الاعتراف على نطاق واسع بأهمية مشاركة المجتمع في صنع القرار لمشاريع إعادة بناء المساكن. يمكن أن تخلق المشاركة المجتمعية دعماً للخطط، وتزيد من الرضا، وتزيد من مساءلة المنظمة، وتساعد في تحديد الاحتياجات، وتوفير المعرفة بالسياق المحلي للمخططين. غالباً ما يؤكد العلماء على أهمية مشاركة المجتمع في إعادة بناء المساكن بعد الكوارث (Davidson et al., 2007, Roosli, et. Al, 2018, Ophiyaandri et. Al, 2016, Campanella, 2006, Olshansky, 2006,al., 2007) على الرغم من وجود العديد من الدراسات حول أهمية مشاركة المجتمع، فإن البحث عن تدابير صنع القرار التشاركي الفعال محدود. على سبيل المثال، Allen, 2006 قال إن أنشطة إعادة الإعمار يمكن أن تستفيد أكثر من خلال إشراك المجتمعات

المحلية المتضررة والمؤسسات المحلية في عملية إعادة الإعمار؛ Raju, 2013 وأشار إلى أنه من الشائع أن يتم تجاهل الأشخاص المتضررين في عملية صنع القرار في البحث من قبل Davidson et. Al, 2007. قال الباحثون أنه عندما يشارك المستفيدون في "التصميم المناسب للعمليات ويكون لمنظمتهم تأثير مهم على المشروع مع مزايا طويلة الأجل لهم ولأصحاب المصلحة الآخرين" نتائج من المعرفة حول كيفية تنفيذ مشاركة المجتمع على مستوى المشروع. قدم صادقي مساهمات بحثية قليلة في السنوات الأخيرة ركزت على التحديات التي تواجه مشاركة المجتمع؛ وقال إن "المجتمعات المتضررة لديها المعرفة الحاسمة لتصميم مشاريع إعادة الإعمار الناجحة" وأن المجتمعات لها دور خاص تلعبه في جميع مراحل إعادة بناء المساكن بعد الكارثة (Sadiqi et al., 2011)، "المشاركة المجتمعية الفعالة هي مفتاح رئيسي للنجاح في إعادة الإعمار بعد الكوارث." علاوة على ذلك، "يمتلك الأشخاص المتضررون مشاريع إعادة إعمار المساكن، وبالتالي يحتاجون إلى المشاركة الكافية في صنع القرار" (Sadiqi et. Al, 2017).

. على الرغم من وجود تأكيد على أهمية مشاركة المجتمع في صنع القرار، لا يزال هناك القليل من الفهم لكيفية إشراك إعادة الإعمار في عملية محسنة ومنظمة. بمعنى آخر، كيفية دمج المشاركة المجتمعية في عملية إعادة الإعمار. على سبيل المثال، من الأهمية بمكان فهم السياق الاجتماعي للمجتمع ووضع استراتيجية لمشاركتهم وفقاً لذلك. برامج إعادة الإعمار الأحدث لديها سياسة إشراك المجتمع في تحديد احتياجاتهم، ومع ذلك، فإن استخدام نهج المشاركة المجتمعية لا يؤدي بالضرورة إلى الوصول إلى الأهداف الاجتماعية، وفي بعض الأحيان قد يكون غير فعال، لإعطاء المزيد من المنظور لهذه الحجة، (Lizarralde, et. al, 2009) وصفوا حالة في غوجارات، الهند، حيث كان هناك استخدام للنهج الذي يحركه المالك والذي يعرف بأنه نهج تشاركي، ومع ذلك، فقد افترقت السياسات إلى مراعاة العوامل الجغرافية والاجتماعية والاقتصادية المحلية التي نتجت وفقاً (Barenstien 2005) إلى "الافتقار إلى الطابع المجتمعي"، لذلك من الضروري النظر في التحديات التي قد تعيق استخدام المشاركة المجتمعية بشكل فعال. على الرغم من وجود اعتراف واسع في مجتمع التعافي من الكوارث بأهمية مشاركة المجتمع في هذا المجال، غالباً ما تفشل مشاريع إعادة الإعمار في حالات الكوارث في تضمين المشاركة الفعالة، وغالباً ما يكون من الصعب تفسير مبدأ المشاركة المجتمعية إلى أفعال على الأرض.

تحديد احتياجات المجتمع ليس المجال الوحيد الذي يتطلب مشاركة المجتمع. تتطلب إعادة الإعمار بعد الكوارث اتخاذ قرارات يكون لها تأثير طويل المدى على المجتمع المتضرر؛ لذلك، من المفيد إشراك المجتمع في أكثر من تحديد احتياجاتهم. من ناحية أخرى، تظهر تجربة المشاركة المجتمعية أن عملية المشاركة المجتمعية تتطلب جهداً وتخطيطاً ووقتاً لتحقيق نتائج فعالة، وليس حتى يتم دراسة العوامل التي تؤثر على المشاركة المجتمعية بشكل شامل، يمكننا تصميم أطر للمشاركة المجتمعية التي توفر فهماً أفضل لعملية المشاركة، لمساعدة صانعي القرار في تطوير عملية صنع القرار التشاركي.

تؤكد الأدبيات المتعلقة بعملية إعادة بناء المساكن على أهمية مشاركة المجتمع في عملية إعادة الإعمار. على سبيل المثال، دراسة بواسطة Sharma et. Al, 2018 أظهرت أن المستويات المنخفضة من المشاركة عادة ما تؤدي إلى إهمال احتياجات الأشخاص المتضررين، وعلى الرغم من الاعتراف الشامل بذلك في المجتمع الإنساني، إلا أن دور مشاركة المجتمع في قرارات التخطيط الحضري لا يزال قيد الاكتشاف؛ تؤكد المناهج المجتمعية على نفس المبادئ: تمكين الفقراء والفئات المهمشة الأخرى، والاستجابة لطلب المستفيدين، واستقلالية المؤسسات المحلية المرتبطة بمزيد من المساواة التنافسية، وتعزيز القدرات المحلية. على الرغم من هذه المشتركة في كثير من الأحيان، كان دمج هذه الأساليب على المستوى المحلي مع نظام صنع القرار المركزي يمثل تحدياً. أخيراً، لا تدعم الترتيبات المؤسسية غالباً مشاركة المجتمع المتأثر في التخطيط الحضري الشامل. على الرغم من أن مشاريع إعادة بناء المساكن هي برامج بناء واسعة النطاق تحدث في فترة قصيرة نسبياً، والتي قد يكون لها تأثير



كبير على الهوية المعمارية والنسيج العمراني، والتي بدورها تؤثر على الاجتماعية والثقافية والاجتماعية والاقتصادية للسكان، دور مشاركة المجتمع في تشكيل الهوية المعمارية لم يتم اكتشافه بعد.

#### رابعاً. هدف البحث

يهدف هذا البحث إلى إنشاء إطار مفاهيمي لمشاريع إعادة إعمار البيئة بعد الكوارث التي تدمج المشاركة المجتمعية في صنع القرار وتحقيق من دور مشاركة المجتمع في قرارات تخطيط البيئة المبنية. يهدف الإطار المقترح إلى زيادة فعالية المشاركة المجتمعية لتحقيق نتائج إيجابية لإعادة الإعمار. يمكن أن يؤدي هذا إلى نتائج أكثر استدامة تأخذ في الاعتبار العوامل الاجتماعية أثناء التخطيط.

تحديد الاستراتيجيات المثلى لإدراج المجتمعات في ظروف مختلفة وفهم كيفية تحديد تأثير مشاركة المجتمع على نجاح مشاريع إعادة الإعمار بعد الكوارث هما موضوعان آخران قد يتطلبان بحثاً إضافياً. تساهم هذه الأطروحة في تحديد مدخلات المجتمع التي تقدم المشاركة المثلى. كما نقترح تدابير تتوافق مع كل تحدٍ تشاركي في صنع القرار لتسهيل دمج مشاركة المجتمع في مشاريع إعادة الإعمار. تتناول الأطروحة أيضاً عدم وجود مجموعة شاملة من العوامل والتحليلات المختلفة التي تؤثر على مشاركة المجتمع في مشاريع إعادة بناء المساكن بعد الكوارث. لذلك، تستكشف هذه الأطروحة دور صنع القرار التشاركي في مختلف القرارات الحاسمة لنتائج إعادة الإعمار الإيجابية. يستكشف كيفية تصميم عملية صنع القرار التشاركية وما هي ميزات الهيكل التنظيمي التي تدعم هذه العملية. لا تقدم الأطروحة مخططاً محدداً للمشاركة في اتخاذ القرار في أي مشروع إعادة إعمار؛ بدلاً من ذلك، فهو يخدم فكرة يمكن من خلالها لصانعي القرار تحليل الهيكل المؤسسي وعملية إعادة الإعمار لدعم المشاركة الفعالة في كل سياق محلي.

#### خامساً أهمية الدراسة

تكمن أهمية هذه الرسالة في التطبيق العملي لاستنتاج هذا البحث، والذي يسهل التخطيط للمشاركة المجتمعية الفعالة التي تستجيب للجوانب الحاسمة التي تحتاج إلى هذه المشاركة؛ إن التركيز على كيفية تنفيذ العملية التشاركية هو المفتاح لنجاح إشراك المجتمع المتضرر، من خلال تحديد العناصر والعوامل التي تؤثر على صنع القرار التشاركي وتدعيم أهم مجالات مساهمة المجتمع في قرارات إعادة الإعمار وتحديد مخطط متماسك. إطار المشاركة المجتمعية كمدخل في مشاريع إعادة الإعمار.

تطوير إطار عمل للمشاركة المجتمعية في مشاريع إعادة الإعمار يزيد من مراعاة العوامل الاجتماعية أثناء التخطيط، والتي بدورها تساهم في التعافي المستدام لأنه عندما يتم استشارة المجتمع خلال مرحلة التخطيط، يتم تحديد الجوانب الاجتماعية المهمة للمجتمع والنظر فيها. مما يؤدي بدوره إلى تحقيق الإنصاف والنتائج الحساسة ثقافياً وبناء قدراتهم ليكون لهم دور مستمر في التنمية طويلة الأجل. سيتم اقتراح إطار العمل في هذه الأطروحة ليكون بمثابة أساس لصانعي القرار في مجال مشاريع إعادة بناء البيئة المبنية بعد الكوارث؛ تهدف إلى المساهمة في الجهود الجارية للنهج التشاركي في مشاريع إعادة الإعمار.

## سادساً. تحديد الدراسة

تركز هذه الأطروحة على الكوارث الطبيعية، والكوارث التي تسببها الصراعات لها المزيد من العوامل التي يجب أخذها في الاعتبار، والتي يمكن أن تحد من قابلية تطبيق الإطار على أنواع النزاعات من الكوارث. لا يتوافق هذا البحث مع التركيز على منطقة أو دولة معينة متأثرة بكارثة، مما يحد من تعميم إطار العمل على سياقات أخرى. لذلك، تضمن تحليل دراسات الحالة استكشاف العوامل العامة ونتائجها لخدمة نطاق البحث. تركز هذه الأطروحة على مشاركة المجتمع في الإطار الزمني القصير إلى المتوسط، وتتنظر في الآثار طويلة المدى لمشاركتهم. لا يدرس البحث مشاركة المجتمع في مراحل الاستجابة أو التخفيف. ستركز هذه الأطروحة على أدوار مشاركة المجتمع والتحديات في عملية صنع القرار. ستركز هذه الأطروحة على التحقيق في المشاركة في عملية صنع القرار، مع استبعاد دور المجتمع في التنفيذ.

أخيراً، تركز الدراسة التجريبية على منظور الأفراد ذوي الخبرة في العمل في مشاريع التعافي من الكوارث أو الأفراد ذوي الخبرة الأكاديمية في هذا الصدد؛ لم يتم تضمين منظور المجتمع بسبب الطبيعة المعممة لهذه الدراسة، والتي تعمل على تطوير إطار عمل يعمل في كل سياق، بينما قد تختلف المجتمعات في مساهماتها وفقاً لسياقها، فمن المقترح للدراسات المستقبلية التحقيق في منظور المجتمع ومساهمات هذه الأطروحة في سياقات مختلفة.

## سابعاً. منهجية البحث وهيكله.

سيتم تطوير هذا النموذج من خلال استكشاف دور مشاركة المجتمع في القرارات الحاسمة التي تؤثر على النتائج أو إعادة الإعمار ومن خلال التحقيق في العوامل التي تؤثر على عملية صنع القرار التشاركي بطريقة كمية ونوعية.

تم إجراء مراجعة الأدبيات في الفصل الأول، الذي يستعرض موضوعات إدارة الكوارث والكوارث ويراجع تفاصيل عملية إعادة الإعمار، بما في ذلك مقارنة بين ثلاثة نماذج لعملية إعادة الإعمار، إضافة إلى الأنشطة المختلفة التي تم جمعها من الأدبيات المختلفة. يستعرض الفصل الأول مفاهيم المشاركة المجتمعية والدراسات السابقة. أخيراً، يستعرض الفصل الأول بشكل منهجي دراسات الحالة في مشاريع إعادة الإعمار لتحديد مواضيع العوامل ونتائجها. قامت مراجعة الأدبيات بتجميع مصادر مختلفة وتحليلها وتولييفها لتشكيل بنية. تم تطوير الإطار النظري لهذه الأطروحة بناء على هذه المعلومات ذات الصلة.

قام الفصل الأول بتجميع مصادر مختلفة تركز على المعلومات التي تخدم هدف الدراسة وتولييفها في شكل يمكن تحليله في الفصل الثالث. يقدم هذا الفصل معلومات عن السياق المحلي لكل حالة وكيف أثرت على عملية إعادة الإعمار ودور أصحاب المصلحة والمجتمع في إعادة الإعمار. كما ينظر في العديد من القرارات التي أثرت على مشاركة المجتمع ونتائج إعادة الإعمار.

يستكشف الفصل الثاني ثلاث دراسات حالة مختلفة:

• إعصار كاترينا 2005، نيو أورلينز، الولايات المتحدة.

• زلزال المحيط الهندي وتسونامي 2004 في آتشيه بإندونيسيا.

• زلزال شمال باكستان 2005.

يحلل الفصل الثالث المعلومات الواردة في الفصول السابقة لتحديد ثلاثة عناصر رئيسية:

• العوامل التي أثرت على نتائج إعادة الإعمار في دراسات الحالة.

• العوامل التي أثرت على اتخاذ القرار في دراسات الحالة.

• العوامل التي أثرت على مشاركة المجتمع في دراسات الحالة.

تم إخضاع المتغيرات المحددة لطريقة كمية لتقييم التأثير النسبي على إعادة الإعمار باستخدام الطرق الثلاثة التالية:

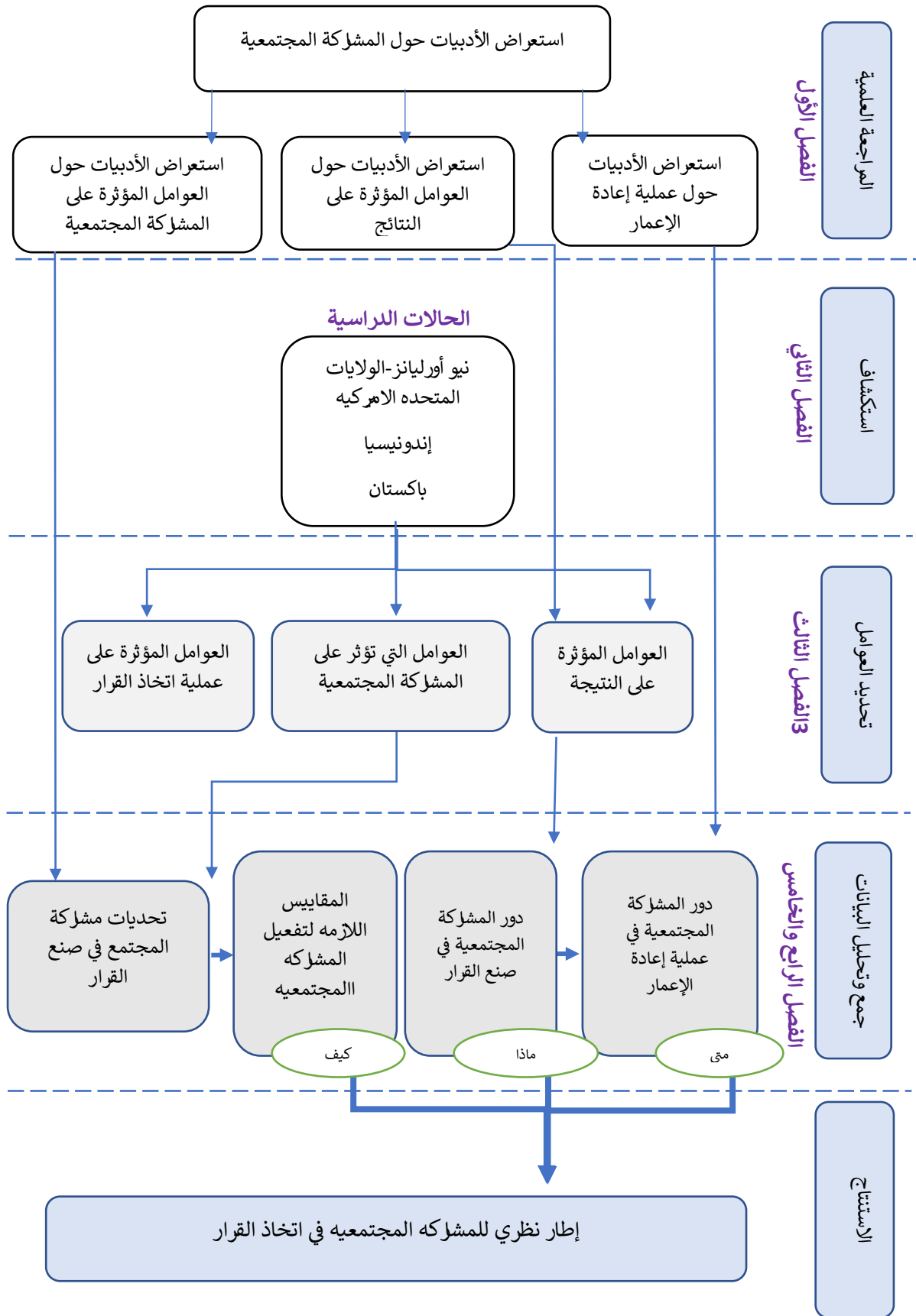
يفصل الفصل الرابع جمع البيانات وتحليلها في الاستبيان الأول، الذي يستهدف مجتمع العلماء في التعافي من الكوارث والموظفين العاملين في مشاريع التعافي. الغرض من هذا الاستبيان هو تقييم أهمية المشاركة المجتمعية كمدخلات في عملية صنع القرار بشأن إعادة بناء المساكن. هذا يساهم في النهاية في تحديد متى يجب التفكير في استخدام مستوى أعلى من المشاركة كأولوية. إنه يختبر الفرضية القائلة بأن مشاركة المجتمع أمر بالغ الأهمية لاتخاذ قرارات الهوية المعمارية. هذا الاستبيان استكشافي ويتضمن قائمة شاملة بالجوانب المحتملة للمجتمع للمشاركة فيها.

ستقدم نتيجة هذا الاستبيان إرشادات لتضييق نطاق النقاط. ثم يتم استخدام استبيان كمي آخر في المقارنة الزوجية لتقييم وقت استخدام مشاركة AHP لتحديد أوزان العوامل باستخدام طريقة المجتمع في عملية إعادة الإعمار.

يقدم الفصل الخامس معلومات عن جمع البيانات وتحليلها في الاستبيان الثاني، والذي يستهدف الأشخاص ذوي الخبرة في مشاريع إعادة الإعمار بعد الكوارث والمشاركة المجتمعية. الغرض من الاستبيان هو تقييم مدى تأثير التحديات المختلفة على مشاركة المجتمع في صنع القرار. هذا يساعد على تحديد التدابير أو المدخلات التي تساهم في مشاركة أكثر فعالية في عملية إعادة الإعمار. في نهاية هذا الفصل، نقوم بتحليل الأسئلة المفتوحة في الأساليب النوعية لتأكيد النتائج بشكل أكبر واستكشاف جوانب إضافية.

تشمل الأساليب الإحصائية المستخدمة في كلا الاستبيانين التحليل العملي لتحديد الموضوعات والاتجاهات المتعلقة بمشاركة المجتمع وفقاً لوجهات نظر العينة. تشمل الطرق الإحصائية الأخرى قياس صحة الدراسة وموثوقيتها واتساق عواملها وارتباطاتها ومؤشر الخطورة.

أخيراً، يختبر الفصل السادس نماذج تقييم فعالية استخدام المشاركة المجتمعية ومتى يتم استخدامها في صنع القرار. وهذا يساعد متخذي القرار في تقييم فائدة المشاركة المجتمعية في أي مشروع إعادة إعمار. تشمل الأساليب المستخدمة لهذا الهدف تقنية التصنيف البسيط وهي طريقة لإجراء عملية صنع القرار متعددة المعايير لتقييم أفضل، وتحديد المبادئ الذكية (SMART) للمشروع استناداً إلى قائمة المعايير ذات الصلة، وحساسية الأداء باستخدام نتائج AHP استبيان.



# Abstract

This thesis proposes a conceptual framework that optimizes the effectiveness of community participation in decision-making related to post-disaster housing reconstruction by underpinning the most critical fields of contribution to the community in reconstruction decisions and outlining the factors that affect their engagement.

The thesis analyses the factors that affected reconstruction in three case studies: The 2005 Hurricane Katrina in The United States of America. The 2004 Indian Ocean earthquake and tsunami in Indonesia. And The 2005 Northern Pakistan Earthquake. The empirical study includes analyzing the responses of a sample of individuals with experience in disaster recovery projects, which consists of a statistical analysis of two questionnaires to investigate the importance of the extracted factors, in addition to calculating factors weights using an analytical hierarchy process method (AHP) and a qualitative thematic analysis of the responses to open questions.

The study shows that linking expertise with the local context and providing information to top decision-makers are the most important contributions of community participation; community participation also has a role in forming strategies for ensuring equity, providing needs, and considering architectural identity. The study recommends using participatory decision-making more in coordination and planning-related activities and less in assessment and implementation activities; it also emphasizes the importance of adequate organizational structure for effective community participation, providing several measures to increase the effectiveness of their engagement. Overall, the thesis emphasizes that community participation has a role in the consideration of social factors while planning the recovery of the built environment after disasters and provide insight into how to achieve effective community participation in reconstruction projects of the built environment after disasters.

**Keywords:** architectural identity; Community participation; Participatory decision making; post-disaster reconstruction; Housing reconstruction; Reconstruction factors; Community participation factors; Community participation challenges; Community participation framework.

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# Introduction

## I. Personal Statement

I am Wael Naaseh, a Syrian architect who lives in Paris. Since childhood, buildings have captivated me with their stories and beyond their walls. I have always wondered how, why, where, and who built these buildings. I chose architecture as my major and studied it in depth. I became passionate about design, construction methods, and materials. I was fascinated by how structural elements were used in architecture. And how to use these elements to create aesthetic and functional buildings.

I graduated from Damascus University with a Bachelor of Architecture in 2013, with a very good ranking. I also received the highest degree for my graduation project at Damascus University. This year will be forever etched in my memory. At the end of March 2013 when we were doing our final exams, the shelling started at the Faculty of Architecture. I lost 15 friends, all of whom died in the bombardment. Their memories will remain immortal in my heart forever. It was a terrifying and sad day, but I am grateful to be alive. These experiences have shaped my commitment to using my skills to help rebuild communities after disasters. I believe that architecture can be a powerful tool for healing and resilience, and I am determined to use my skills to help create a better future for Syria and other countries that have been affected by disasters.

During my study trip, I was amazed by how cities can heal after disasters and wars. I saw how destroyed cities and countries can become more beautiful and stronger, and I was inspired by how architecture can be used to rebuild communities after disasters and conflict. Perhaps my upbringing in Damascus, the oldest inhabited capital in the world, motivated me to research this field. The city's existence has become threatened after the bloody war that took place there by the destruction caused by the war.

I was interested in studying the effect of flexibility on the process of designing and constructing sustainable residential buildings to provide solutions for reconstruction and rehabilitation in Syria. I conducted a case study of the reconstruction of the rural area of Damascus, focusing on the use of locally available materials such as (wood, clay, stone, reeds, etc. / the use of stones and metal cages together, in addition to the

use of non-biodegradable waste such as used plastic bottles, containers, or car tires, etc). My findings suggest that flexibility is an important factor in the design and construction of sustainable residential buildings, especially in post-disaster/conflict settings. I obtained a master's degree with a very good ranking in this field in 2018.

To any reader, it may seem that I have finished my studies and obtained a master's degree and that's it. But no, it has been a very difficult year. You may expect the difficulty it is the lack of resources or their absence, or the Internet and electricity outages, or even the Inflation and crazy price hikes. Rather, my challenges and sufferings were greater than that. My life was always at stake, and every day I was living in danger (And unfortunately, I wasn't alone, but most of my people such as me). I have suffered from war, lost loved ones, and left my homeland. I have lived through all of this, and I am still struggling to survive. But I never gave up. I continued to learn and work, in pursuit of my dreams.

I also noticed the poor urban condition that my country suffers from. That was a result of several wrong decisions taken by decision-makers in Syria, which resulted in massive public anger. These decisions were not compatible with the desires and aspirations of the people. The spread of corruption, red tape, the absence of oversight, and the lack of community participation in any decision-making and implementation process have all contributed to the poor urban condition in Syria. This coincided to a large extent with all the surrounding or global countries that suffered from disasters and wars.

The success of any design or implementation process requires good planning, skilled management, and decisive decisions. However, as I continued to research, I became more and more convinced that these factors are not enough. The societal picture, decision-making methods, and the importance of community participation and urban identity are also essential for success.

After the recent earthquake that struck Syria and Turkey in February 2023, my confidence has been strengthened that this research has global importance. Natural disasters, unfortunately, are harsh and difficult to predict. Therefore, I strive in this research to develop a framework for participatory decision-making in the context of post-disaster reconstruction to help countries and societies get up again in the best and fastest way possible.

## II. Background

Community participation in post-disaster reconstruction has been increasingly emphasized to encounter the limitations of top-down decision-making and to increase ownership; there were several efforts to improve it by formulating the basis of their engagement and outlining approaches to community participation in disaster recovery. One of the first efforts to draft community participation in disaster recovery was the "Guatemala Approach," established in 1976. It underlined the significance of community engagement in the reconstruction process. The approach touched upon four key principles, including engaging the community to identify and implement their needs. It also emphasized coordinating with all stakeholders and involving the vulnerable. [Gawronski and Olson \(2013\)](#).

It was not until the 1990s that community participation gained international acknowledgment when the United Nations-supported community participation during the International Decade for Natural Disaster Reduction (IDNDR). It underpinned the importance of empowering the communities to engage in all phases of disaster management [Goldammer \(1994\)](#).

The last internationally recognized framework for community participation was developed in the early 2000s by the United Nations Development Programme (UNDP). It focused on empowering the communities to have a role in reducing vulnerabilities to future disasters. The framework for community-based disaster risk reduction (CBDRR) has five stages, including Risk assessment, Planning through a participatory process, Implementation, Monitoring, and Institutionalization [Jagirdhar and Sastry \(N.D\)](#).

In recent years, the importance of developing more effective frameworks for community participation has increased by demand from organizations and NGOs working in disaster recovery and governments acknowledging the importance of community-based approaches in a sustainable recovery. However, this demand is due to the shortfalls of the previous framework to achieve successful community participation despite the efforts to engage them in the reconstruction process. For example, engaging the communities in the aftermath of the Haiti earthquake in 2010 was challenging. Despite the struggles, the decision-makers failed to build trust and establish effective communication channels; there was also limited community input. [McCallin, et al.,2015](#)

In another example, after the Fukushima nuclear disaster in 2011, the government formed a strategy to engage communities in reconstruction projects. However, there were few actual implementations of this strategy, especially in relocation decisions which in some cases led to protests against the reconstruction plans [Ribault \(2019\)](#).

The failed experiences in community participation indicate that the strategies for their engagement are still unclear or inaccessible. A few indicators for the failure of community participation include lack of trust, limited engagement, favoring decisions that benefit groups of influential individuals, and lack of meeting the community's long-term needs. One of the reasons for the failure of strategies to achieve effective community participation is the limitations of existing frameworks for community participation in reconstruction projects; some of the limitations of previous frameworks include the following:

Despite the recognition that community involvement in disaster recovery is essential. The lack of a clear community engagement process led to the limited implementation of community participation frameworks. The social and cultural aspects affecting community engagement in disaster recovery were not effectively addressed in earlier frameworks, such as power relationships, cultural norms, and established hierarchies. Acknowledging and addressing these factors is crucial to ensure that community participation is meaningful and effective. Because social issues were not addressed, efforts to recover from disasters were sometimes concentrated in the short term without prioritizing sustainable development and considering how rehabilitation operations would affect the community in the long run.

Furthermore, the earlier frameworks did not always provide specific information on coordinating community participation to make it relevant and efficient. Finally, the recommendations for involving the community are too broad. The frameworks suggest engaging the community in all phases of the reconstruction process equally, which is too extensive. Not defining strategies for when and how to use community participation often leads decision-makers to avoid community participation or implement it in a shallow or disorderly way; this is because community participation is slow and depletes resources to implement, and if there is no optimized way to engage them often lead to failure of community participation.

It is important for future frameworks to address these limitations and to develop frameworks based on lessons learned from case studies and feedback from individuals with experience in disaster recovery projects.

### III. Statement of the problem

The importance of community participation in the decision-making for housing reconstruction projects has been widely acknowledged. Community participation can create support for plans, increase satisfaction, increase organization accountability, help identify needs, and provide knowledge of local context to planners. Scholars often emphasize the importance of community participation in post-disaster housing reconstruction ([Davidson et al., 2007](#), [Olshansky, 2006](#), [Campanella, 2006](#), [Ophiyaandri et. Al, 2016](#), [Roosli, et. Al, 2018](#)). Although there are many studies on the importance of community participation, research on measures for effective participatory decision-making is limited. For example, [Allen, 2006](#) said that Reconstruction activities could benefit more by involving affected communities and local institutions in the reconstruction process; [Raju, 2013](#) noted that it is widespread that the affected people are ignored in the decision-making process in research by [Davidson et. Al, 2007](#) researchers said that when the beneficiaries participate in an "appropriate designing of the processes and their organization have an important impact on the project with long-term advantages to them and the other stakeholders "findings of Davidson et al. (2007) state that only a little knowledge exists on how community participation should be carried out at project level. Sadiki has made few research contributions in recent years that focused on the challenges for community participation ;he said that "Affected communities have the knowledge crucial for designing successful reconstruction projects" and that communities have a particular role to play in all stages of post-disaster housing reconstruction ([Sadiqi et al., 2011](#)), "effective community participation is a major key to success in post-disaster reconstruction." Furthermore, "The affected people own housing reconstruction projects, and thus they need to have adequate participation in decision-making"([Sadiqi et. Al, 2017.](#))

Even though there is an emphasis on the importance of community participation in decision-making, there is still little understanding of how to engage the reconstruction in an optimized and orderly process. In other words, how to integrate community participation in the reconstruction process. For instance, it is crucial to understand the

social context of the community and strategize their engagement accordingly. More recent reconstruction programs have the policy of engaging the community in defining their needs, however, using community participation approach does not necessarily lead to reaching social goals, sometimes it can be ineffective, to give more perspective into this argument, [Lizarralde, et.al, \(2009\)](#) described a case in Gujarat, India, where there was a use of owner-driven approach which is known to be participatory approach, however, the policies lacked the consideration of local geographic and socio-economic factors which resulted according to [Barenstien \(2005\)](#) to the "lack of community character", therefore it is necessary to look into the challenges that may hinder using community participation effectively. Even though there is a wide acknowledgment in the disaster recovery community for the importance of community participation in this field, post-disaster reconstruction projects often fail to include effective involvement, it is often a challenge to interpret the principle of community participation into actions in the ground.

Defining community needs is not the only area that requires community participation. Post-disaster reconstruction requires making decisions that have a long-term impact on the affected community; therefore, it is beneficial to include the community in more than defining their needs. On the other hand, the experience of community participation shows that the process of community participation requires effort, planning, and time to achieve efficient results, and not until the factors that affect community participation is thoroughly studied can we design frameworks for community participation that provide a better understanding of the participation process, to aid decision-makers in developing participatory decision-making process.

Literature concerning the housing reconstruction process emphasizes the importance of community participation in the reconstruction process; for example, a study by [Sharma et. Al, 2018](#) showed that low levels of participation usually cause neglecting the needs of the affected people. Despite the comprehensive acknowledgment of that in the humanitarian community, the role of community participation in urban planning decisions is still to be discovered; community-based approaches emphasize the same principles: empowerment of the poor and other marginalized groups, responsiveness to beneficiary demand, the autonomy of local institutions associated with greater downward accountability, and enhancement of local capacities. Despite these shared

principles, integrating these approaches at the local level with the central decision-making system has often been challenging.

Finally, institutional arrangements often do not support the participation of the affected community in holistic urban planning. Even though housing reconstruction projects are large-scale construction programs that occur in a relatively short period, which may have a significant effect on the architectural identity and urban fabric, which in turn affects the socio-cultural and socio-economic of the inhabitants, the role of community participation in shaping the architectural identity is yet to be discovered.

#### **IV. The research aim**

This research aims to create a conceptual framework for post-disaster-built environment reconstruction projects that integrate community participation into the decision-making and investigate the role of community participation in built environment planning decisions. The proposed framework aims to increase the effectiveness of community participation to achieve positive reconstruction outcomes; this can lead to more sustainable results that consider social factors during planning.

Identifying optimal strategies for including communities in various circumstances and comprehending how to quantify the influence of community participation on the success of post-disaster reconstruction projects are two more topics that may require additional research. This thesis contributes to identifying the community inputs that deliver optimum participation. We also suggest measures to correspond to each participatory decision-making challenge to facilitate the integration of community participation in reconstruction projects. The thesis also addresses the lack of a comprehensive collection of different factors and analyses that affect community participation in post-disaster housing reconstruction projects. Therefore, the research problem addressed in this thesis is when to use participatory decision-making and how to achieve effective community participation in post-disaster housing reconstruction projects.

This thesis explores the role of participatory decision-making in different critical decisions for positive reconstruction outcomes. It explores how to design a participatory decision-making process and what are the features of organizational structure that support this process. The thesis does not provide a determinant blueprint for participatory



decision-making in any reconstruction project; instead, it serves a notion through which decision-makers can analyze the institutional structure and reconstruction process to support effective participation under each local context,

## V. Significance of the study

The importance of this thesis is in the practical application of this research conclusion , which facilitates planning for effective community participation that responds to the critical aspects that need this participation; the emphasis on how to implement the participatory process is the key to the success of engaging the affected community, by identifying the elements and factors that affect participatory decision making and underpinning the most critical fields of contribution for the community in reconstruction decisions and outlining a coherent framework for community participation as an input in reconstruction projects.

Developing a framework for community participation in reconstruction projects increases consideration for social factors during planning, which in turn contributes to sustainable recovery because when the community is consulted during the planning stage, social aspects that are significant to the community are identified and considered. Which in turn achieve equity, culturally sensitive outcomes and build their capacity to have a continuous role in longer-term development. The framework will be proposed in this thesis is to serve as a baseline for decision-makers in the field of built environment reconstruction projects after disasters; it aims to contribute to ongoing efforts for the participatory approach in reconstruction projects, hoping to increase the effectiveness of community participation to achieve long term development and sustainability.

## VI. Delimitation of the study

This thesis focuses on natural disasters, disasters caused by conflicts have more factors to be taken into consideration, which could limit the applicability of the framework to conflict types of disasters. This research does not align with focusing on a specific region or country affected by a disaster, which limits the generalizability of the framework to other contexts. Therefore, the analysis of the case studies included exploring general factors and their outcomes to serve the scope of the research. This thesis focuses on community participation in the short to medium-recovery timeframe,

considering the long-term effects of their engagement. The research does not study community participation in the response or mitigation phases. This thesis will focus on community participation roles and challenges in the decision-making process. This thesis will focus on investigating participation in the decision-making process, excluding the role of the community in implementation.

Finally, the empirical study focuses on the perspective of individuals with experience in working on disaster recovery projects or individuals with academic expertise in this regard; the perspective of community is not included due to the generalized nature of this study, which serves to develop a framework that works in every context, while communities might differ in their contributions according to their context, it is suggested for future studies to investigate community perspective and the contributions of this thesis in different contexts.

## **VII. Research methodology and structure.**

This model will be developed by exploring the role of community participation in critical decisions that affect the outcomes or reconstruction and by investigating the factors that affect the participatory decision-making process in a quantitative and qualitative method.

Literature Review was conducted in the first chapter, which reviews themes of disaster and disaster management and reviews the details of the reconstruction process, including a comparison of three models for the reconstruction process, adding to the different activities compiled from various literature. Chapter One outlines the concepts of community participation and the previous studies. Finally, the first chapter systematically reviews case studies in reconstruction projects to identify the themes of factors and their outcomes. The literature review compiled different sources, analyzed, and synthesized them to form a construct. A theoretical framework for this thesis was developed based on this related information.

Chapter One compiled different sources that focus on information that serve the aim of the study and synthesized them in a form that can be analyzed in chapter three. This chapter provides information on the local context of each case and how it affected the reconstruction process and the role of stakeholders and community in the

reconstruction. It also looks into several decisions that affected community participation and reconstruction outcomes.

Chapter Two explores three different case studies,

- The 2005 Hurricane Katrina, New Orleans, United States.
- The 2004 Indian Ocean earthquake and tsunami in Aceh, Indonesia
- The 2005 Northern Pakistan earthquake.

Chapter three analyses the information provided in previous chapters to identify three main elements:

- Factors that affected reconstruction outcomes in the case studies.
- Factors that affected decision-making in the case studies
- Factors that affected community participation in the case studies.

The defined variables were subjected to a quantitative method to evaluate the relative influence on reconstruction using these three methods:

Chapter four details the data collection and analysis of the first questionnaire, which targets the population of scholars in disaster recovery and working staff in recovery projects. The purpose of this questionnaire is to assess the importance of community participation as input in housing reconstruction decision-making; this ultimately contributes to identifying when to consider using a higher level of participation as a priority. It tests the hypothesis that community participation is critical for making architectural identity decisions. This questionnaire is exploratory and includes a comprehensive list of possible aspects for the community to participate in.

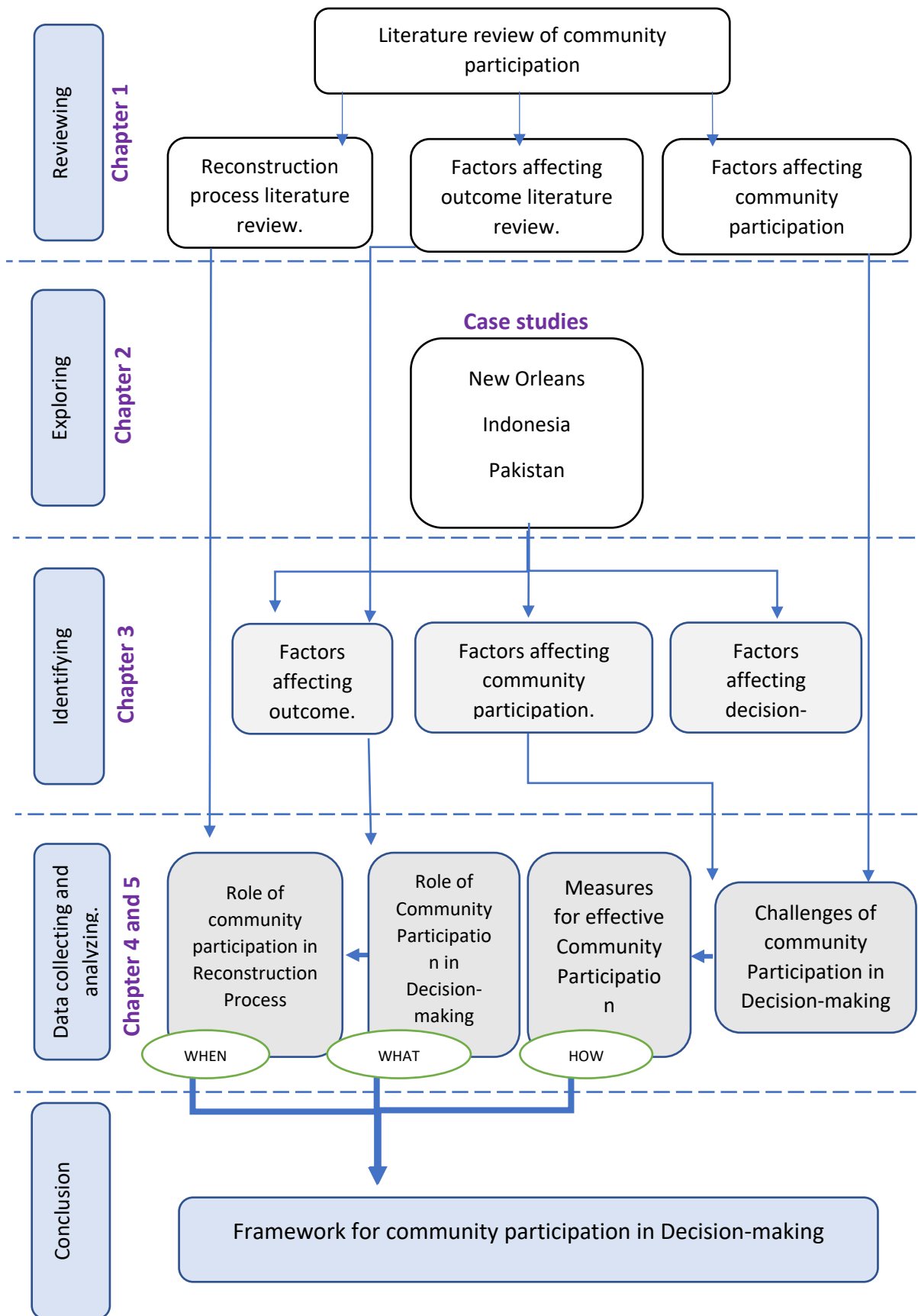
The result of this questionnaire will give guidance to narrow down the points. Then another quantitated questionnaire is used to determine the weights of factors using the AHP method in pair comparison for evaluating when to use community participation in the reconstruction process.

Chapter Five reports the data collection and analysis of the second questionnaire, which targets people with experience in post-disaster reconstruction projects and community participation. The purpose of the questionnaire is to evaluate how much influence different challenges have on community participation in decision-making. This helps to identify the measures or inputs that contribute to more effective participation in the

reconstruction process. At the end of this chapter, we analyze open questions in qualitative methods to assert further and confirm the findings and explore additional aspects.

The statistical methods used in both questionnaires include Factor analysis to determine the themes and trends related to community participation according to the sample views. Other statistical methods include Measuring the validity and reliability of the study and the consistency of its factors, correlations, and severity index.

Finally, chapter six tests the models for assessing the effectiveness of using community participation and when to use it in decision-making. This aids decision-makers in evaluating the usefulness of community engagement in any reconstruction project. The methods used for this aim include the Simple Multi-Attribute Rating Technique (SMART), which is a method for conducting multi-criteria decision-making to assess the best project alternative based on a list of relevant criteria. And a Performance sensitivity using the results of the AHP questionnaire



# Chapter 1

## The Literature Review

Disaster events cause losses and damage the living, buildings, and infrastructure. This damage triggers a series of dynamic and fluid circumstances and relationships between people, resources, and institutions to recover the livelihood of the affected communities, including rebuilding houses lost. Different approaches to housing reconstruction have emerged depending on the phase of the disaster life cycle, the level of urgency, the underpinning philosophy of funders and other decision-makers, the level of resources and expertise available, and the type of disaster ([Siriwardena and Haigh,2011](#)).

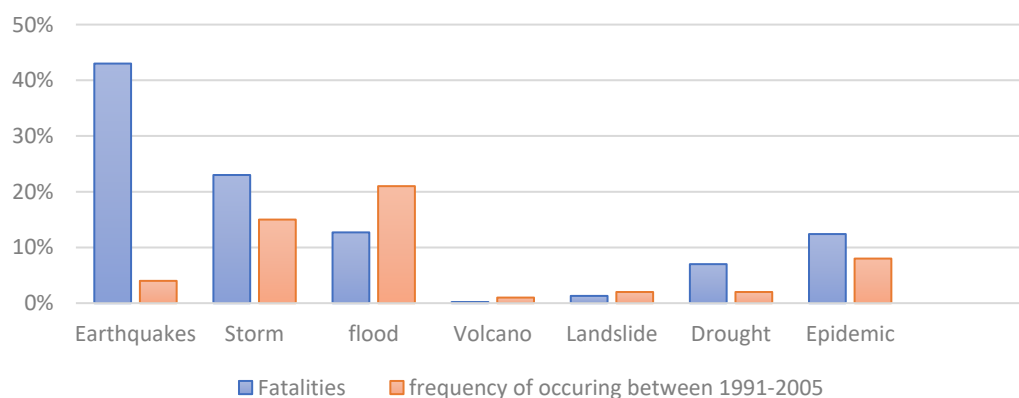
Chapter One aims to provide a theoretical context for understanding disasters and the different concepts related to disaster management and housing recovery process after disasters; it also gives a basis for understanding community participation in decision-making; previous studies have explored participatory decision-making in fields of social sciences for the aim of society empowerment, studies also investigated this issue in fields of project management and multi-sectorial development studies. The presented literature review focuses on participatory decision-making in the context of post-disaster housing reconstruction.

### 1.1. Understanding disaster

According to The Oxford Dictionary, disaster is Sudden or great misfortune, calamity, or significant failure. Disaster occurs when a hazard risk is realized due to inadequate prevention measures and overwhelms a community's response capability. ([Coppola,2006](#)), an international disaster, as defined by the U.N., is "a serious disruption of the functioning of society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using only its resources" ([U.N., 1992](#)).

Disaster losses include loss of lives, loss or damage to buildings and infrastructure, economic losses, cultural losses (historic or worship buildings), psychological losses, and social losses (disruption in the order of law, social services); this section will underline the types of disasters and their impact on the built environment.

Disasters occur for many different reasons. While some are results of natural phenomena, others are man-made, resulting from the neglect of preventive measures, unexpected errors, or intended actions. (Collaborative,2004), deaths caused by Building failure in earthquakes is about 90% more than deaths caused by building failure in other disaster types. (OCHA,2010), this fact shows earthquakes are destructive, mainly if the epicenter is highly populated. Earthquakes can directly affect buildings, such as making structures unstable, compromising the foundations and other structural elements, and causing dislocations, deflections, collapses, or leaning of the building. Earthquakes may cause ripple motions in water that trigger tsunamis; they can reach 30m in height as they progress, causing damage when they hit coastline settlements or may trigger landslides, floods, or fires. Scientists have conducted their efforts toward developing seismic design standards. General guidelines for seismic design include Strengthening support material and designing flexible enough buildings to absorb vibrations without deteriorating. (McDonals,2003).



*Figure 1-1 compares people killed and the frequency of natural disasters between 1991-2005, source: EM-DAT: The OFDA/CRED International Disaster Database, realized by the author.*

On the other hand, damage caused by flooding differs from minimal, such as water entering basements or severe damage to the structural elements when a large force of flowing water hits the buildings. Measures of prevention include dry and wet proofing. Still, it is better to address flooding by land-use planning; relocation of settlements is the first step of housing recovery when entire settlements need rebuilding. (UN-Habitat, AXA, 2019). Storms are another disaster type, the high wind caused by cyclones, tornados, and hurricanes can turn poorly secured objects into projectiles that can cause damage to structures. Proper orientation of

buildings can minimize exposure to wind and rain. Special care is needed with roof and cladding installments, overall building shape, roof shape, and lateral structural elements.

Storms, snowfall, earthquakes, or human interaction can cause a mass movement. The most common mass movements are landslides, rock falls, debris flow, and avalanches. (Coppola,2006) measures include reducing exposure by choosing the right building site, planting vegetation, and proper drainage systems. Lastly, volcanos. An estimated 800 million people live within 100 km of an active volcano in 86 countries worldwide. Dangers include lightweight roofs, which can collapse due to ash loads.

Conflicts are considered man-made disasters; in most cases, buildings and infrastructure are targets of destruction in conflicts, terrorism attacks, riots, and social unrest. Type of damage may include explosions, missile attacks, and fires; fire damages the building's contents and elements through flames and high temperatures, and movements cause structural elements failure. (McDonals,2003).

Trends show that the number of people affected by disasters is rising yearly due to the increase in urbanization and densely populated settlements. Most affected people are in developing countries with poor housing standards that fail to withstand such events (Coppola,2006). The impact of disasters is also related to their characteristics, meaning Intensity, Magnitude, Frequency, Duration, and Speed of Onset.

Reported disaster statistics indicate that disasters are occurring with greater intensity. In comparison, there is a decrease in fatality rates with organized and effective disaster management. Disasters are becoming costlier because of increased urbanization and dependency on technologies and infrastructure. (Coppola,2006).

The frequency of a natural hazard event is the number of times it occurs within a specified time interval. (Bobrovsky, 2013). Natural atmospheric hazards like floods, landslides, cyclones, and droughts have increased in frequency in the last decades; climate change is one of the contributors. Scientists found a correlation between environmental degradation and global temperature change with this increase. In contrast, geographical hazards like earthquakes and volcanoes have not changed their occurrence frequency.

Speed of Onset means the time elapsing between the start and the moment of peak (McDonals,2003). Scientists can predict slow, occurring events like floods. In contrast, fast-onset events like earthquakes occur unexpectedly or develop quickly. It is hard to take action



before the losses occur. Disaster's duration can vary from a few seconds, like earthquakes, days or more like floods, to years, such as conflicts, or even decades, like droughts. Still, the long duration is not necessarily a factor in how long it takes to recover. In most cases, people can start reconstruction not long before floods end, while earthquakes that end in seconds require a long-term stay in temporary shelters. (Menoni and Antonio,2013). The timing and duration of disasters can affect the pace of housing recovery. Building construction is affected by climate factors of low temperatures or dry seasons. (UN-Habitat, AXA, 2019), (Menoni and Antonio,2013).

The review above aimed to show how disasters have vast implications for urban fabrics, depending on their characteristics and type, which call for different strategies for reconstructing new houses after disasters, according to the type and characteristics of the event.

## 1.2. Disaster management trends

Throughout history, man faced risks and hazards like fire, disease, violence, floods, and more. However, our ancestors did not sit idly and become victims; they took measures to reduce risks. Figure (1-2) abstracts examples from the history of disaster management described by (Coppola,2006). Scholars have set different stages for managing disasters (Lettieri, et al. 2009) and differentiate between three stages of disaster management (pre-disaster, impact, and post-disaster). Still, most of the studies have similarities in categorizing the stages in the cycle of (Mitigation, Preparedness, Response, and Recovery). This model is widely used and known by disaster management scholars. Although the terminology used can vary for different countries, Chang (2012) reviewed the disaster management systems used in five countries and noticed that they seem to use similar concepts. However, one must consider the various political and cultural factors. Social distinctions that exist among all nations (UNISDR, 2005) ,the disaster management cycle is explained by Warfield (2008) as follows:

The mitigation phase includes activities that aim to eliminate or reduce the probability of disaster occurrence or the effects of unavoidable disasters, such as building codes, zoning, land use management, and safety codes. At the same time, preparedness sums up the activities that aim to achieve a satisfactory level of readiness to respond to any emergency through programs that strengthen the technical, logistical, and managerial capacity of governments, organizations, and communities. Response Activities aim to reduce the impact of disasters to reduce suffering and financial losses. Recovery is the short and long-term initiatives taken after the immediate response to achieve the rehabilitation of affected communities; recovery

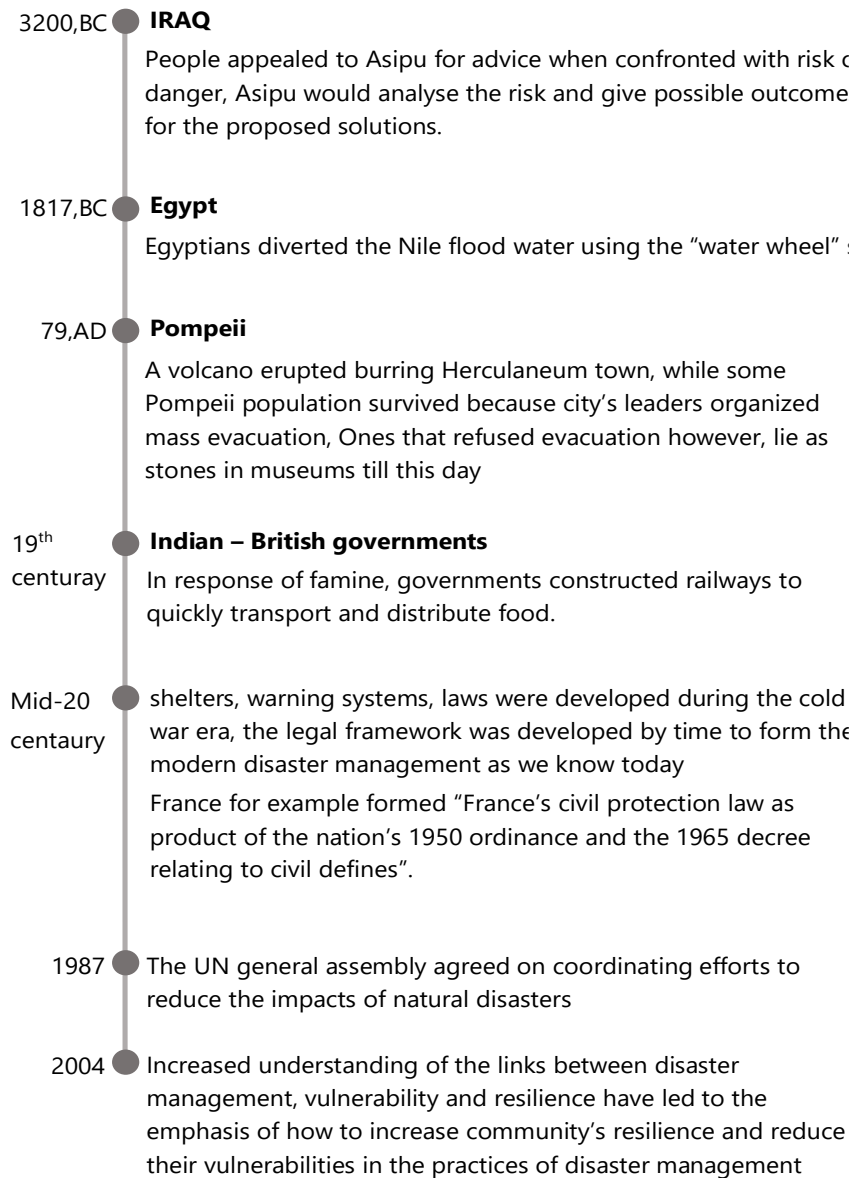
includes housing reconstruction; restoring health and education sectors; counseling programs; and economic impact studies.

Recent studies on disaster management emphasized concepts of vulnerability and resilience. Our understanding of these concepts is rapidly increasing, which is essential to develop and prioritizing disaster risk management strategies based on knowing who and what is most vulnerable. Recent disasters show that some regions in the world are at higher risk for losses of life and economy from disasters; this is linked to the fact that the region is in a high-risk zone (prone to higher hazard frequency and magnitude than other regions) like India is prone to floods for example, or the region is in seismic zones prone to earthquakes, this is called "exposure." ([Amaratunga and Haigh,2011](#)) Alternatively, the high risk is generated from inefficiencies of a manufactured system, which is especially relative in developing countries; there is another factor for disaster risk other than "frequency, magnitude, and exposure," which is capacity. Societies' ability to cope with a hazard is related to factors like the vulnerability of social and environmental systems, the efficiency and credibility of the information and decision-makers, and the availability and efficiency of technologies, resources, education, social networks, and insurance systems.

In short, the risk is "the likelihood of incurring harm from a hazard event." The interaction of physical systems creates the risk. In contrast, a human-made system produces vulnerability, "The characteristics and circumstances of a community, system, or asset that make it susceptible to the damaging effects of a hazard." ([UN/ISDR,2009](#)). Furthermore, it is determined by the different physical (infrastructure; densification; transport; public space), Spatial (land readjustment; urban extensions.), social, economic, Organizational (legal frameworks; strengthening stakeholder engagements), and environmental factors. ([UN-Habitat,2017](#)). The term "resilience" refers to "the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions" ([UN/ISDR,2009](#)).

More studies acknowledge the construction industry's critical role in improving communities' resilience. The significance comes from the vital role of the built environment in enabling society to function economically and socially. It provides protection and context for human activities, so how to apply resilience in the built environment? [Amaratunga and Haigh \(2011\)](#) Stated that designers and urban planners need to consider the various hazards and their effects

on buildings and their performance; facilities should be able to absorb, resist, or reduce the results of risks by enhancing materials, technologies, or the construction of protective infrastructure.



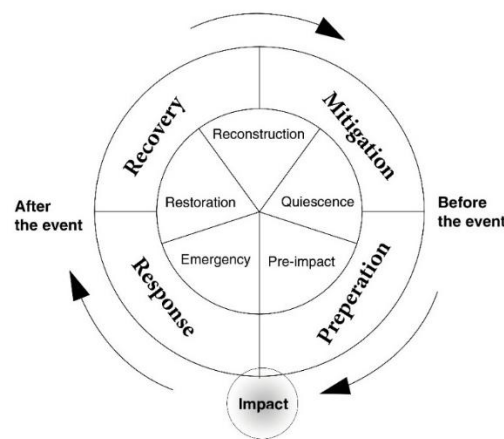
*Figure 1-2 Brief history of disaster management as described by (Coppola,2006), realized by the author.*

### 1.3. Phases of post-disaster housing reconstruction

The process of housing reconstruction is divided by Quarantelli (1995) into four periods: pre-disaster, immediate relief, rehabilitation, and reconstruction; he identified four corresponding types of housing for these periods: emergency sheltering, temporary sheltering, temporary housing, and permanent housing, however, temporary housing does not necessarily go through

these patterns of housing. Phases of Housing can vary in number, sequence of movements, and the duration of their stays in each type; this means there is no single pattern of progression through the different phases.

[Quarantelli \(1995\)](#) also differentiates between "shelter" and "housing," shelter is the residency place upon disaster where the lives and activities of the occupants are not fully back to normal, such as work, school, and shopping. Housing denotes the return to normal activities. Shelters built in the response phase are called emergency shelters, which relieve survivors from staying outdoors and being exposed to climate conditions. These shelters are usually spontaneous, influenced by the local conditions and the immediacy of the need, usually constructed from plastic sheeting, tents, or emergency centers set up in communal buildings or relief camps.



*Figure 1-3 Disaster management cycle, source: (Alexander,2002)*

Transitional housing is another type of temporary shelter; it is different from emergency shelters because it provides more privacy, safety, and a healthy living environment; most of the time, they consist of simple structures made from local materials. Transitional shelters have been developed significantly in the last two decades, with more emphasis on sustainable and flexible designs, by adopting one or more of these features: upgradable (improving the shelter to become permanent shelter), reusable partially or entirely, or recyclable. ([Collins et al.,2010](#))

Some scholars describe the advantages of investing resources into permanent housing rather than temporary measures. [Chang \(2012\)](#) defined permanent housing as the original homes that the disaster victims returned to after rebuilding or the new houses constructed for permanent residence; it is affected by the pre-disaster circumstances and the influence of local interest and power groups. According to [Baur \(2003\)](#), it is essential to prioritize permanent housing over transitional housing; spending funds on temporary shelters reduces the resources available for

more permanent solutions; because temporary shelters can be as expensive as permanent housing, especially since temporary shelter materials are almost always imported. (Barakat,2003) Barakat claims that transitional housing often turns into permanent, poor-quality settlements if decision-makers do not prioritize permanent housing projects. The scholar in post-disaster housing Ian Davis noted that temporary measures are not always needed before permanent housing. He found that the affected populations are quick to rebuild their houses. Even more, they can inhabit the "temporary shelters" for years and even generations, which counters the definition of "temporary" because decision-makers did not spend the resources to satisfy the long-term shelter needs of the affected population (Baur,2003). Therefore, families prefer living in permanent houses over temporary accommodations. Another issue is that sense of security declines in communities and neighborhoods with the presence of the occupants of temporary housing, especially when neighbors are afraid the "temporary housing will become permanent. Therefore, permanent housing should be prioritized (Bobrowsky,2013). Finally, Bilau, et al. (2018) Said that most of the time, there is a priority for permanent housing projects for their effects on social and economic recovery and the development of settlements' resilience.

Therefore, permanent housing positively affects disaster-affected communities; permanent housing projects can: Increase privacy, dignity, and security, reduce trauma after disasters, help communities restore livelihood, and enhance the livelihood conditions of communities (Bilau and Witt,2016). They add to the development of local capacities, empower communities towards resilient communities, and facilitate the recovery of the physical, economic, and social environment (Bilau et al.,2018).

However, in our rapidly urbanized world, more urban areas are becoming vulnerable to hazards; this means that more victims will likely be displaced when disasters occur, especially in developing regions where land is a scarce commodity. Many people live in informal tenure in buildings not inclined to safety codes. These displaced groups must be accommodated and prioritized in the emergency and response housing plans; transitional housing becomes essential.

To sum it up, first, it is better to prioritize transitional housing for the most in need, mostly the displaced that do not own land, and that is after conducting a rapid assessment. It is recommended to prioritize permanent housing.

## 1.4. Housing reconstruction definition

The terms "reconstruction" and "recovery" are used without much differentiation between the two terms. (Kondo and Karatani cited in Arefian,2018). "Housing recovery" refers to the "reconstruction, repair or upgrading of permanent, durable accommodation or dwellings affected by a disaster, as well as the restoring or improving the means of housing production, including regulatory systems, access to building materials, labor, and finance." (UN-Habitat, AXA, 2019). Housing reconstruction involves activities to support the repair, or new construction of full or partial homes damaged or destroyed by a disaster. Early literature discussed the difference between reconstruction and recovery; In 1989, Dynes and Quarantelli noted that reconstruction could only be understood in a more extensive recovery context. Reconstruction includes building confidence, self-esteem, self-dependency, mutual support, mutual trust, and the rebuilding of communities. (Delaney and Shrader, cited in Arefian,2018). reconstruction is also described as the 'rebuilding of entire communities, including livelihoods, such that they can support themselves and have reduced vulnerability to future natural hazards (OCHA,2010).

Lloyd-Jones et al. (2009) have argued that the reconstruction of houses is linked to other aspects of recovery, such as livelihood, institution, capacity building, and environmental sustainability, Therefore, reconstruction consists of rebuilding measures for physical structures and communities' livelihoods. Scholars expect it to reflect on sustainability principles, community participation, resilience, and mitigation for reduced vulnerability to future natural hazards.

## 1.5. Community in the Notion of Urban Development

### 1.5.1. Definition of participation in the notion of urban development.

Bender (1978) discussed that contemporary researchers, such as Brian J. L. Berry and S. N. Eisenstadt, have moved away from the belief that urbanization is a universal process with a fixed sequence of events and convergence of forms. They rejected the idea of societies converging or progressing towards a fixed plateau. In contrast, other critical factors, such as social networking, affect communities' sense of belonging and collective identities. Through social networking, Individuals can acquire a sense of belonging, trust, and mutual obligation, which are fundamental components of the community. Furthermore, social networks help to develop common understandings and collective identities within a group. They establish a

sense of shared purpose and common goals among community members by facilitating the transmission of cultural values, norms, and traditions.

Community participation plays an important role in achieving social change through collective action and social movements. These processes enable people to group and work toward a similar objective, resulting in local and national change. And Social science has contributed to exploring the role of community in promoting social change, highlighting the potential of collective action, social movements, and civic engagement to effect change at the local and national levels. (Bender,1978). Community-based participatory research, for example, is a collective inquiry strategy in which researchers and community stakeholders participate as equal partners in all stages of the research process to educate, improve practice, or bring about social change. (Tremblay et al., 2018)

Participation in urban planning is defined by (Calderon,2019) as decision-making processes that adhere to three main principles: inclusivity, power balance, and consensus decisions made via discourse and facilitation. According to Falanga (2020), participation is a method that involves citizens in decision-making and policy creation to improve the effectiveness of public services such as planning, health, education, and social services. Lach et al. (2022) describe Community wellbeing in the built environment development as a process of interactions between inhabitants that aim to set ground understandings of community inside the shared built environment spaces.

#### 1.5.2. The role of participation in Urban development.

Ataman and Tuncer (2022) systematically reviewed Participation tools for Urban Development. In total, they found five thematic areas in "urban intervention" The sub-categories include urbanism, community, sustainability, building kinds, and participation; this reflects the growing trend of researching the relationship between community participation and urban design.

The role of empowerment in urban policies in the United States, according to Bacque (2006), is to involve community associations, promote community participation in decision-making, and empower communities to have a say in the management and development of their neighborhoods. Dyer et al. (2017) suggest that participatory processes in the urban design process challenge the top-down decision-making process of centralized governments, which

can be seen as a positive action to growing democratic practices. According to Falanga (2020), participation can bring varied viewpoints and information to the table, resulting in better-informed and inclusive policy results. It can also assist in identifying and addressing the needs and goals of various groups, ensuring that policies are adapted to their circumstances.

[Ataman and Tuncer \(2022\)](#) emphasize that well-informed urban designs can be developed by integrating participation with urban design processes, ultimately producing responsive cities. Community participation in urban design processes can result in more inclusive designs that consider the community's needs. Therefore reflecting their values and priorities by incorporating the viewpoints and local knowledge.

### 1.5.3. Strategies for integrating participation in urban development

Several pieces of literature propose strategies for integrating participation in urban development. [Dyer et al. \(2017\)](#) suggest developing viable methods for scaling up public participation in the design and gathering substantial qualitative data without losing context. Along with identifying physical urban characteristics that affect people's lives, they also emphasize the importance of sharing the lessons learned from effective governing procedures.

[Ataman and Tuncer \(2022\)](#) suggest incorporating multi-layered and multi-directional representation techniques into digital tools to enhance how stakeholders utilize the data obtained. According to [Flint and Blyth's \(2021\)](#) proposal, specific design techniques can generate "people-centered" solutions. With these design techniques, established development hierarchies and narratives that emerged after the global financial crisis may be upended, and new forms of participatory engagement may be conceivable. However, the authors don't go into much detail about how design principles might be used.

While [Bacqué \(2006\)](#) mentions the factors that facilitate participation, such as community associations, power-sharing arrangements, legitimacy, and external funding sources, are all important elements that can contribute to empowerment in urban development.

According to Camilo Calderon, understanding the political aspect of public places is critical for advancing the participation concept in urban design. She argues that public spaces are shaped by power dynamics, conflicts, and disparities among different groups involved in the urban design process. ([Calderon,2019](#))



Even though the literature suggests different strategies for participation, there is still a gap between theory and practice regarding community participation in urban development. For example, the systematic review demonstrates a gap in understanding the function of participation tools in stakeholder engagements, indicating that more research is required for developing representational strategies in urban development projects. Moreover, [Flint & Blyth \(2021\)](#) discuss that developing "people-centered" design principles can help bridge the gap between rhetoric and reality in participatory urban design, which implies their acknowledgment of such a gap.

[Dyer et al. \(2017\)](#) also cast their doubt on the claim that communities are truly empowered through participatory processes in real-world settings. They claim that public participation in shaping city life's form and functioning is not yet fully explored in urban design practices.

In conclusion, the literature acknowledges the correlation between community participation and urban development. The literature provides strategies for integrating participation in urban design processes and policies, such as using digital tools, case studies, analyzing extensive data, and integrating specific arrangements for facilitating participation. However, the suggested strategies are yet discussed in a broader sense; there is still a need to bridge the gap between the theoretical concepts of community empowerment in urban development.

## 1.6. Community participation in the notion of recovery after disasters

The affected communities are those who were evacuated, displaced, relocated, or have suffered direct damage to their livelihoods by the effects of a disaster; examples of affected community stakeholders include representatives of local communities, ethnic minorities, construction professionals, and women's groups ([UN-Habitat- AXA, 2019](#)). A definition by [Sadiqi et. Al \(2011\)](#) for affected community participation in decision-making is "the introduction of an adequate knowledge input from them in the decisions, and in the project designs, that influence their future life."

Community in the context of disaster management was defined by [Abarquez and Murshed \(2004\)](#) as "a group that may share one or more things in common such as living in the same environment, similar disaster risk exposure, or having been affected by a disaster". This group shares common problems, concerns, and hopes regarding disaster recovery or risks. [Ophiyaandri \(2013\)](#) defines a community as a "group of beneficiaries of housing reconstruction whose

original houses have been affected by disaster," typically based in proximity to one geographical area.

Community participation was poorly defined in the 1980s when it first emerged. A model of community participation levels by [Davidson et al. \(2007\)](#) is usually referred to. He developed the model of [Choguill \(1996\)](#) into a ladder of participation that starts from the bottom with manipulation, informing, and consulting, while at the top of the ladder, there is collaboration and empowerment in the context of post-disaster reconstruction, community-driven approaches circle collaboration and empowering of beneficiaries to have a role in planning and implementation of reconstruction projects. "Community-based approach," according to the definition of Ophiyandri, is related to empowerment And consulting the community. It is different from the owner-driven approach. In the owner-driven approach, assistance is given to the community in implementation and monitoring, in addition to consulting the community on choosing housing designs , while community participation in decision-making is not only limited to the "community-based approach" in this thesis, community participation will be focusing around the same ladder of "consulting and empowerment."

### 1.7. Role of Community in the housing reconstruction

Literature emphasized the crucial role of the community in the construction program and the importance of engaging them in rebuilding their houses. Reconstruction approaches must be built upon people's local knowledge and cultural practices and apply tools that people can easily integrate into their lives ([UN/ISDR,2005](#)). Community participation is ensured by including their needs in policy-making and giving the community a leading role in the implementation process.

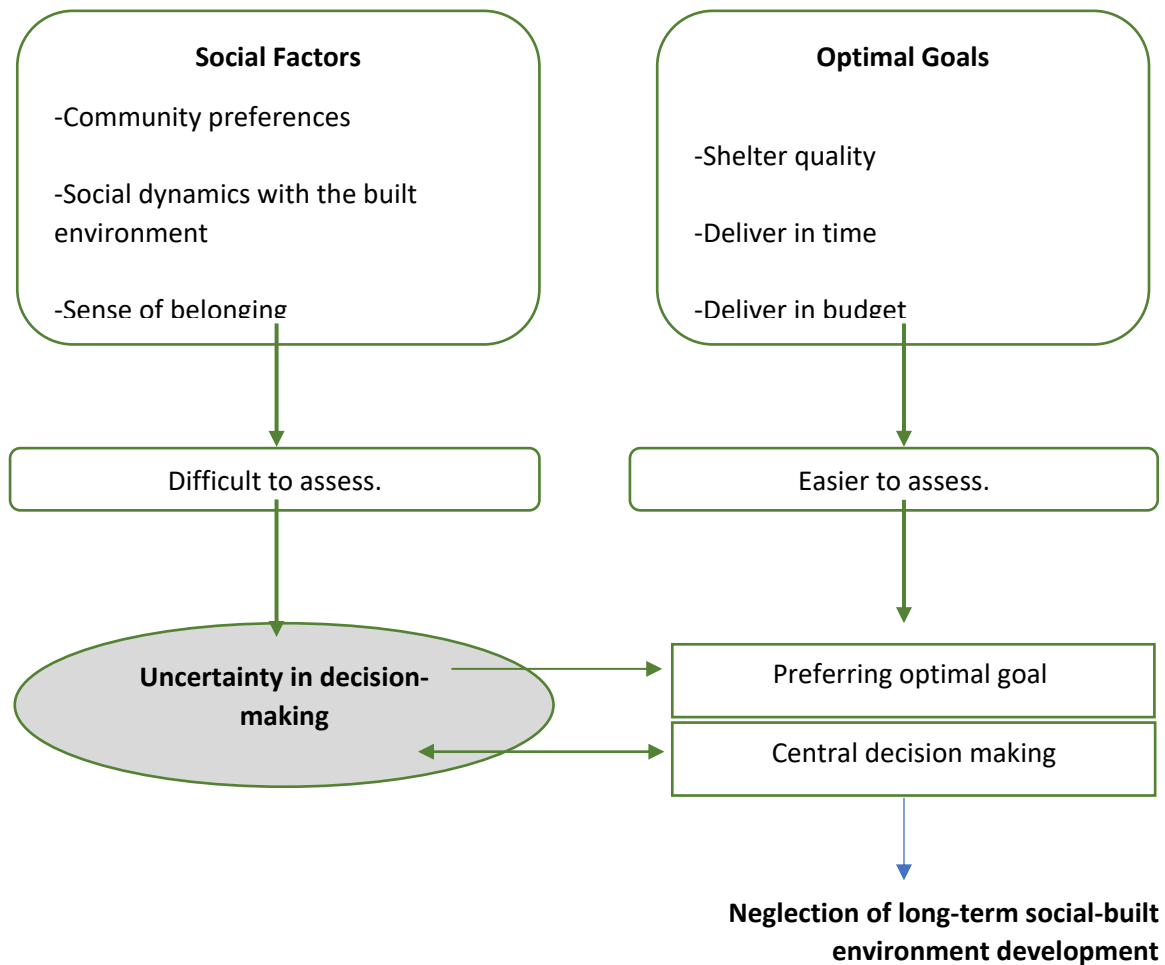
However, [Daly and Bassard \(2011\)](#) pointed out that there are significant gaps in the rhetoric of community participation outcome; social and physical decisions reciprocally affect the spatial usage of reconstructed houses; local culture, needs, and socio-demographic profile must be the basis of development plans ([Bouraoui and Lizarralde, 2013](#)). The failures in previous reconstruction programs usually get repeated because the "behavior of the victims rarely been understood" ([Dercon and Kusumawijaya 2007](#)). For this reason, the affected people have negative responses to the outcomes of the reconstruction programs." Decision-makers in disaster housing should consider all phases of the housing process not only from a physical point of view but also socially as well." ([Arslan and Unlu, 2006](#)). However, it seems that decision-makers often separate social and physical decisions; project actors tend to prefer

optimal solutions rather than satisfactory goals, considering the optimum use of resources and time; a case study in Turkey after the Marmara earthquake showed that the World Bank excluded local government and community-based organizations, even inputs from beneficiaries were neglected; the World Bank prioritized urgency of reconstruction and cost efficiency over considering cultural suitability of housing designs (Ganapati and Ganapati, 2008).

Preferring optimal solutions rather than satisfactory goals creates a discrepancy between decision makers and end-user in terms of the project priorities, criteria for choosing the project location, risks, the ability to implement agreed plans, and the relationship between tangible goals like buildings and houses and the intangible measures, (Bouraoui and Lizarralde, 2013), such as achieving satisfactory goals and long-term social development. Simon (1996) contributes this tendency of preferring optimal goals to high levels of uncertainty in construction projects (Simon, 1996 in Bouraoui and Lizarralde, 2013). This concept of uncertainty aligns with the argument by Frank Knight in 1921, where he said that the possible outcomes are hard to predict in the cases of novel situations. Uncertainty not only affects project outcomes but also characterizes the decision-making system. Ambiguity affects the level of centralization in decision-making (Lizarralde et al., 2009). On the same note, socio-cultural factors are challenging to assess, such as collective memory, community preferences, and "implied leadership." Therefore, this difficulty is exacerbated by an outsider to observe. (IRP guide, 2010)

Community participation increases the level of including social goals in reconstruction planning. The community-based approach can achieve the traditional objectives of any construction project, which is to meet the agreed costs, the desired quality, and the delivery time. Because they build their own houses, for example, the community participation in the Bam reconstruction is one of the factors of the relative success of the Bam reconstruction experience, which led to cutting down on the cost and time of the different activities. (Fallahi, 2007), community participation also leads to decisions that fit the culture and minimize corruption practices. Ophiyaandri et al. (2016) argue that the psychological advantages are more dominant than the physical advantages, which implies that the common construction objectives are not the primary purpose of implementing a community-based project; they added that psychological benefits could not be delivered by a method of housing procurement that did not involve active participation by beneficiaries. They studied the advantages of community participation in a quantitated method. According to them, the most ranked benefits were that

community participation creates a sense of ownership, fits local culture/customs/wisdom, builds beneficiaries' confidence, and minimizes corruption.



*Figure 1-4 The effect of social factors on decision-making in the context of post-disaster reconstruction*

There are many types of participation in post-disaster reconstruction projects; this confuses choosing the participation type that corresponds to the capacity available; for example, a community may have a role in implementation, such as an owner-driven approach, like in the case of Gujarat reconstruction, the beneficiaries used low-cost or recycled materials and building flexible designs, the participatory approach implemented in Gujarat and El Salvador called "progressive housing." In this approach, the NGOs construct the house's Main structure, and the beneficiaries complete building the house as they see fit (Houghton, 2005).

Response efforts depend on people and the community's capacities rather than machines and technologies. In Japan, communities provided the initial response when the emergency system failed due to cold weather and poor communication. (IFRC 1996 in Sanderson et al.,2012), the

affected community may have a role in decision-making or management ,and beneficiaries can, with proper, disinterested guidance, have a role in design decisions, materials selection and preparation, construction, management, and even financing ([Roesch da Silva, 1980](#); [Jorge Andrade, personal communication in Davidson et al., 2007](#)). In Gujarat, when designs were approved, the involved agencies presented models of the designs in village schools, which allowed the community to contribute to selecting the most appropriate designs. ([Barenstein,2005](#))

Community participation also plays a role in setting the political atmosphere .In Sri Lanka's reconstruction after the 2005 tsunami, the government established a buffer zone where no rebuilding was allowed in some coastal areas; this caused broad political opposition, eventually reducing the buffer zone policy ([Coffey and Trigunarsyah,2012](#)); this allowed for flexible resolution of grievances .According to [Barakat \(2003\)](#), community participation in Maharashtra ,India, allowed the government to address the grievances more efficiently because more communication channels were established, away from the bureaucratic processes that were stricter and disabling. ([Jigyasu, 2002](#)), there is also a paradigm shift in acknowledging the importance of community participation in macro-level decision-making, such as developing urban policies .[Ganapati and Ganapati \(2008\)](#)suggest expanding the participants' circle into more than the project beneficiaries by including the urban development process , local government, and community-based organizations; this can be achieved by making institutional changes ,such as creating binding contracts between the World Bank and other stakeholders through the government.

Other roles of community participation that were mentioned in the literature were that Community participation benefit in producing a sustainable environment, also expedite the reconstruction process; that claim was drawn after they noticed that even though the new settlement and old city center had not been finished yet, religious buildings were constructed rapidly by the community donation ([Arslan and Unlu, 2006](#)). Finally, [Roosli et al. \(2018\)](#) stated that communities can" identify the existing problems and prioritize them." they added that participatory activities displayed that communities have the necessary flexibility in using their skills to solve their problems ,in addition to participation promote equality, they emphasized on the importance of including the community as input in policy implementation" considering that the people affected will be the end users of the product of government services and the agencies involved."([Roosli, et al., 2018](#)).

Prior research suggests that Community participation can increase the consideration of local context; researchers argue that understanding local conditions has a degree of success, which can be achieved by "contextually appropriate community consultation and participation" (Chinyio and Olomolaiye, 2009). For example, the GDFRR, Japan report mentioned that recovery planning and policies must be based upon local conditions and culture to be most effective. As such, the highly participatory recovery-planning process followed in Tohoku has proven to be a solid model for disaster recovery. On the same note, according to Bouraoui and Lizarralde (2013), decentralized decisions link national policy and local experience; centralized decision-making has several drawbacks to pacifying objectives. Such as the reduced ability to identify "information and concerns from end-users." Centralized decisions also neglect setting objectives and risks among various stakeholders. (Bouraoui and Lizarralde, 2013) and Corsellis and Vitale (2008) mentioned the importance of proper assessment to identify the local context. In Aceh, these assessments "enabled agencies to identify low-cost technological and culturally appropriate means of improving outreach to affected people."

In summary, the vital role of community participation in the reconstruction process has been widely established in literature. A considerable body of studies on the benefits of community participation exists. It has a crucial role in realizing the social goals needed in addition to the physical needs that a traditional assessment of needs. It also sets the political atmosphere, contributes to sustainable recovery by empowering the community, and increases the local context's linkage to reconstruction planning. Conversely, some limitations were mainly agreed on, most notably that participation requires time and effort. The following section will review the literature on the constraints and challenges of community participation.

Despite being widely acknowledged and discussed in theory, community participation has no application in reconstruction practice; Davidson et al. said there is a gap between theory and practice. The authors outlined the importance of organizational design for effective community participation. Later, Sadiqi et al. (2011) said that "the knowledge to effectively apply the principles of community participation at the project level is very limited." However, there is little research that has been put into this issue. A recent study by Roosli et al. (2018) confirmed the importance of establishing practical procedures for ensuring community participation in designing reconstruction responses. Moreover, the factors that affect community participation have been researched, but there is still no comprehensive collection of the different factors and analyses. The following section reviews the factors influencing community participation, which is needed to answer "How to achieve effective community participation."

## 1.8. Factors affecting community participation literature review.

Engaging the affected community in the reconstruction process was found by (Pamidimukkala et al. 2020) is one of the most critical challenges to reconstruction, Davidson et al. (2007) describe the main difficulty of applying community participation as it has not been defined in housing reconstruction. Community participation has been widely expressed that it does not mean anything clear anymore". Moreover, the word "Community" has been used to refer to different groups of people without considering what those people have in common. Finally, the term "participation" is also widely used without defined attributes, all of which led to organizations not knowing how to achieve the purpose of participation.

Davidson et al. (2007) suggested that the solution to achieving community participation in housing reconstruction is to tackle the organizational design of the project as a whole (Davidson et al. 2007) related to organizational structure, Sadiqi et al. (2011) emphasized the importance of representation levels in participatory activities. Sponsors of reconstruction projects must "ensure that a Suitable mechanism is put in place to allow for all-inclusive and effective community participation before reconstruction can be instigated [...] having a wider representation of affected communities in the decision making and subsequent phases of post-disaster reconstruction projects appears to be crucial." (Sadiqi et al., 2011) touched upon the gender imbalance issues at representation levels, where there is more focus on recovering men's livelihood needs.

Government policies and capacity have roles in facilitating community participation .Davidson et al. (2007) said that Policies concerning community participation should be developed before disasters, especially in disaster-prone countries .Ganapati and Ganapati (2008) suggested that "allowing greater flexibility in implementation "government policies and practices were among the factors affecting community participation by Sadiqi et al. (2017). They also stated that financial policy could increase public participation, such as acknowledging the budget limits. (Omidvar ,et. Al, 2011). Even though the government's role is essential to participation, there is a limitation concerning the capacity of the implementer, especially concerning recruiting technical facilitators for community-based reconstruction (Ophiyaandri et al., 2016). Professional competence in NGOs was also mentioned as a factor by (Sadiqi et. Al, 2017)

The community's capacity can cause challenges for effective community participation. Community capacity also plays a crucial role in establishing community engagement in decision-making and reconstruction phases. (Sadiqi et. Al 2017), community capacity, such as



community knowledge about construction, is very limited, adding to that the difficulties in controlling the labor ([Ophiyaandri et al., 2016](#)) a qualitative study by [Roosli et al. \(2018\)](#) where they conducted meetings with beneficiaries, the scholars concluded that the beneficiaries did not feel that they have the required skills to participate in the reconstruction process, no training programs were offered to train them on how to participate in reconstruction planning, despite them believing that communities do not own enough knowledge about reconstruction process; "they have some input on what to expect from reconstruction programs to provide." And they think it is essential for them to participate in the reconstruction decision-making. "They felt that they should also be included in the process of decision-making." ([Roosli et al., 2018](#))

[Roosli et al. \(2018\)](#) also observed that the affected community had difficulties accessing the information on how the government plan for the reconstruction process would affect them. "The majority of actors interviewed agreed that victims have the right to know about any reconstruction program planned for them." ([Roosli et al., 2018](#)). The authors concluded that public awareness was the main reason for the low community participation in the reconstruction process. They recommended assessing community capacity and identifying training needs. They also suggested activities that increase awareness and facilitate access to existing information; this helps reach a common understanding of the reconstruction framework. Raising public awareness is discussed by [Omidvar et al. \(2011\)](#), who suggested developing information mechanisms and introducing the advantages of community participation, and promoting and encouraging participation. This factor was also mentioned by [Sadiqi et al. \(2011\)](#), who defined it as effective communication and cultural awareness, especially when international organizations are involved,

Affected community motives for participation are also a factor, such as the emotional resiliency of the survivors, the presence of hope, and motivation ([Omidvar et al. 2011](#)). According to the scholars, motivation for participation can decrease when temporary housing is provided because people have a level of comfort in their situation and less incentive to participate ;they concluded that participation rate increases "in activities in which they are more satisfied with" ([Omidvar ,et. Al, 2011](#)), similar study results were found by [Pamidimukkala et al. \(2020\)](#) .The results demonstrated that affected people who owned the destroyed houses were more inclined to participate in the reconstruction process ;this was also the tendency for rural communities, while urban communities were less willing to participate. The tendency of limited participation in urban communities shows that motivation for participation is related to understanding



motives. For example, in El Salvador, decision-makers did not understand why people wanted to participate. It was suggested by [Colin et al. \(2006\)](#) that they participated under the motives of owning a property and less about building the community, resulting in discrepancies between strategy and practice.

Decision maker's preferences have also been discussed among the factors in literature, "Community participation is usually driven by the inherent cultures of the sponsor organizations" ([Sadiqi et al., 2011](#)); they also mentioned that when governmental decision makers are in case of conflict, this makes participation a disposable strategy, [Omidvar et al. \(2011\)](#) also mentioned this factor. The performance of the reconstruction authorities, such as their behavior, accountability, and experience ,all have a role in effective participation. [Ganapati and Ganapati \(2008\)](#) said that in some cases, Participation had limited leverage because decision-makers engage in participation to avoid public criticism ,the authors suggest encouraging changing decision-makers" habits of the mind."

The underestimation of the local capacities of the beneficiaries has led to superficial participation, which is one of the reasons why Gujarat contractors have been involved. This limited the beneficiary's engagement in the reconstruction processes, such as limited monitoring and managing the budget expenditure. Reconstruction agencies perceived their efforts as participatory even though the results contradict this judgment, emphasizing that "beneficiary participation" varies significantly between different parties. ([Amaratunga and Haigh, 2011](#))

The pace of reconstruction is the last factor extracted from the literature review. [Omidvar et al. \(2011\)](#) mentioned it as the "pace of work cycles" and said speedy progress could achieve public trust. Political or social pressure for immediate reconstruction is one of the challenges to community participation ([Sadiqi et al., 2011](#)). [Ophiyandri et al. \(2016\)](#) said that community participation requires a long pre-construction process, the design process, for example, takes time because it involves consultation with the community several times to synchronize it with their needs and expectations, finally, [Ganapati and Ganapati \(2008\)](#) encouraged using participation on "timely basis" with discussing planning process scenarios and measures.

In summary, several studies brought some information about the background of the challenges of community participation; most recognized challenges were related to decision-maker preferences, government policies, and the pace of reconstruction. Other possible challenges identified by the literature review were the organizational structure, the community

representation levels, the capacity of the government to implement community participation, gender issues, the capacity of the community in decision-making, gender issues, and the presence of public awareness on the importance of community participation **Table (1-1)**. A closer look at the literature on challenges of community participation reveals many shortcomings; for instance, even though the organizational structure was identified as a factor, there is a limited description of how this challenge affects participation.

Factor	Reference
Organizational structure	(Davidson, et. Al, 2007)
Government policies .	(Davidson, et. Al, 2007) & (Ganapati and Ganapati, 2008) & (Omidvar, et. Al, 2011) & (Sadiqi, et. Al, 2017)
Decision makers preferences	(Ganapati and Ganapati,2008) & (Sadiqi, et.al, 2011) & (Omidvar, et. Al, 2011) &(Amaratunga and Haigh,2011).& (Sadiqi, et.al, 2011)
Pace of reconstruction	(Ganapati and Ganapati, 2008) & (Omidvar, et. Al, 2011) & (Sadiqi, et.al, 2011) & (Ophiyandri, et.al, 2016)
Representation levels	(Sadiqi, et.al, 2011)
Capacity of the government and facilitators	(Ophiyandri, et.al, 2016) & (Sadiqi, et. Al, 2017)
Gender issues	(Sadiqi, et.al, 2011)
participation	(Davidson, et. Al, 2007)
Affected community motives for participation	(Colin,et.al,2006) & (Omidvar, et. Al, 2011) & (Pamidimukkala, et. Al, 2020)
Capacity of the community	(Ophiyandri, et.al, 2016) & (Sadiqi, et. Al, 2017) & (Roosli, et.al, 2018)
Public awareness	(Omidvar, et. Al, 2011) & (Sadiqi, et.al, 2011) & (Roosli, et.al, 2018)

*Table 1-1 Literature review of the factors affecting community participation*

## 1.9. The post-disaster housing reconstruction process

Post-disaster housing reconstruction is a complex process that occurs on a large scale. It goes on for long periods with long-term impact despite the urgency of decision-making and responding action. Housing reconstruction was defined as a process after the publication of Cuny's (1978) Work during the 1970s (Baur,2003).

The phases of this process are not conducted consecutively but in parallel and with complicated links to each other .Researchers used different classifications for the process; each model featured activities or phases related to the process but missed some. They introduced them as a simplified representation of the reconstruction procedures or as an explanatory tool to link

the actions, tasks, or sub-projects included in the reconstruction. Therefore, a brief comparison of the different models of reconstruction is presented to distinguish the phases of reconstruction that outline the framework of the reconstruction process; this comparison will recognize the similarities that compose the proposed framework, then add to it by systematically reviewing the activities from literature, then the final reconstruction framework will be concluded, the reviewed reconstruction process will later serve as the basis of the framework of participation in the reconstruction process, that connect the elements of participation within it.

### 1.9.1. The model by Jha et al., 2010.

Jha et al. (2010) generalized the reconstruction process into a cycle of assessment, planning, project development, implementation, and monitoring. Actions in the coordination phase include establishing a coordination mechanism, conducting an initial assessment, calling appeals for funding, planning reconstruction, then implementing it. Specialized teams work on a detailed assessment before revising the strategies; after that, engaged agencies coordinate assistance to be delivered for implementation. Figure (1-5), the model specifies the order of the actions. Even though the actions presented were brief, they helped understand the outline of the process.

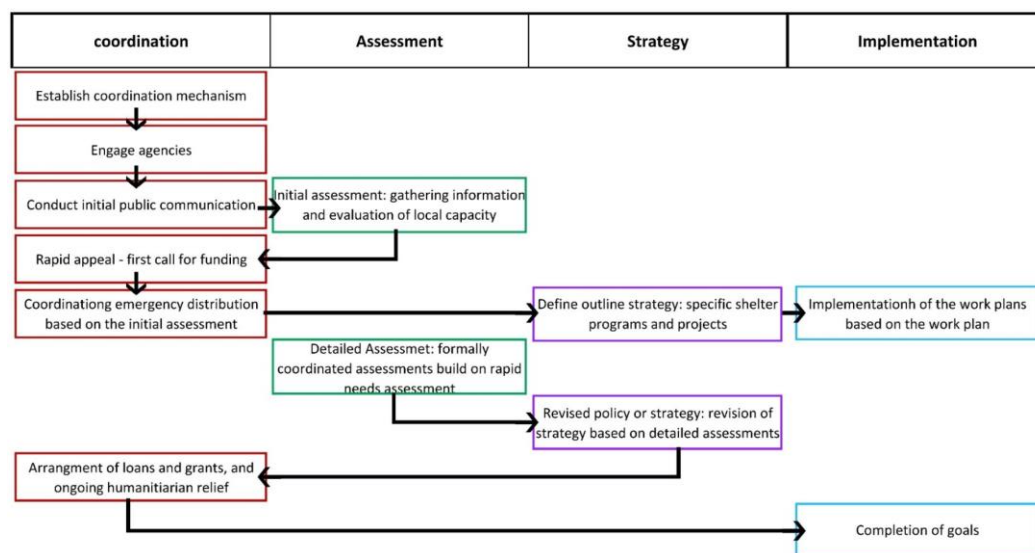
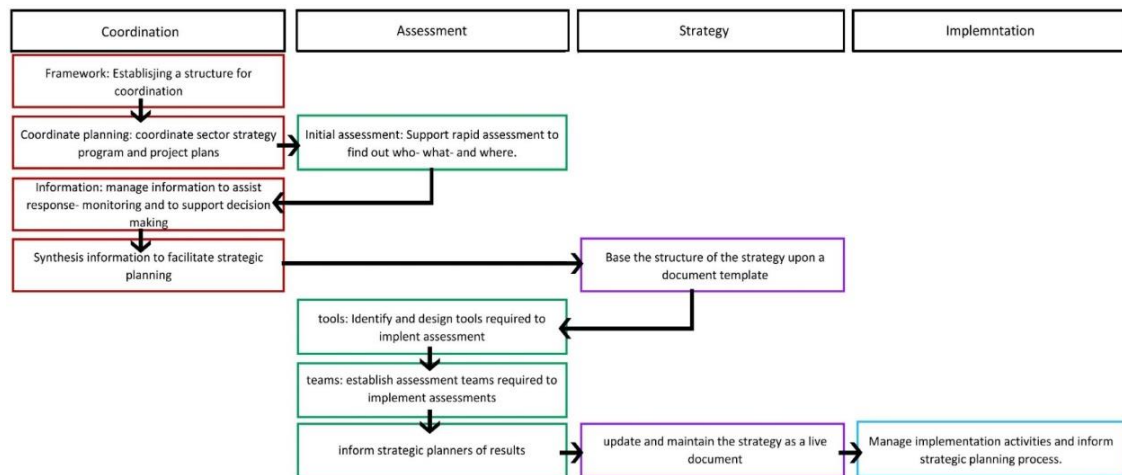


Figure 1-5 Reconstruction process as re-edited by the author from Jha et al., 2010

### 1.9.2. The model by OCHA,2010

In the book "Shelter after a Disaster, strategies for transitional settlements and Reconstruction," the authors divided the book into four chapters named "Coordination, strategy, assessment, and Implementation." Each chapter lists the set of actions included under its title, the model as

follows: Starting with setting a framework for coordination, establishing a structure for coordination, coordinating project plans, conducting a rapid assessment to "find out who, what, and where" after that, the phase of planning initiates where a group of actions manage information to for strategies, then document the strategy in a ready to update format, after that, then teams conduct detailed assessment phase, after reporting the information to the decision-makers, decision-makers revise the strategy before initiating the implementation activities according to the plans **Figure (1-6)**.



*Figure 1-6 Reconstruction process as re-edited by the author from OCHA,2010*

### 1.9.3. The model by Bilau et al. 2017

While the previous models were presented in the publications as a tool to better understand reconstruction, this model was proposed by [Bilau et al. \(2015\)](#) as an objective by itself. In their paper "A framework for managing post-disaster housing reconstruction," the authors focused on "developing a general framework for the effective organization and management of post-disaster housing reconstruction. " After analyzing three different reconstruction programs: the 2011 Tohoku earthquake in Japan, the 2004 Indian Ocean tsunami in Indonesia and Sri Lanka, and 2003 earthquake in Bam, they suggested that the "housing reconstruction process may be considered to compromise three general phases:" the enabling phase, where the institutional, budgetary, and legislation framework is established, phase two named reconstruction planning, where detailed plans, policies, and decisions are developed (like implementation approaches, relocation decisions, design standards, land use zoning, etc..), and finally, phase 3 is reconstruction implementation, which includes management issues like :monitoring and quality control, health and safety, coordination, resourcing, human resources, and financial management issues, no order could be observed in the model, naming some of the activities in

coordination phase: Institutional arrangements, recruiting management personal, establishing financial mechanism, and beneficiary participation, in assessment, some of the activities were: skills assessment, categorizing stakeholders, vulnerability assessment, and needs assessments, some the activities in planning include: the establishment of standards, establishment of codes, regulations, and guidelines, finally issues of implementation: procurement arrangement and establishing operational measures like supervision, monitoring, insurance coverage for workers. **Figure (1-7)**

	coordination	Assessment	Strategy	Implementation
Human resources	* Institutional organisational arrangements  * Recruit and deploy managemet personnel  * Capacity development  * Beneficiary community participation	Skills identification and assessment workers recruitment	Establishment of standards	
Logistics		Assessment	Planning	Procurement arrangements (approach options)
Monitoring				Operational implementation measures
management of coordination		Identify, analyse and categorize stakeholders	Identify coordination and communication systems and strategy	Establish operational measures
safety		*Vulnerability and hazard assessment    *salvage material assessment	*Establish and enforcement of codes * landuse, development, building codes and hazardous regulations,	*supervision, inspection, monitoring and enforcment *provide insurance coverage for workers
financing	Establish management agencies trust funds , provide budgets and monitoring evaluation	needs assessment		operational measures *Establish accerdation system for financial accounting and reporting

*Figure 1-7 Reconstruction process as re-edited by the author from Bilau et al.,2017*

#### 1.9.4. The comparison between models of the reconstruction process

The first phase in this model is related to enabling and coordination. This phase includes similarities with the previous models in establishing a coordination structure; the need for rapid assessment, defining the overall strategy; a detailed assessment, then revising the final plan. However, model 1 did not consider that the strategy should be changed regularly, even in the implementation phase, while Model 2 had this considered.

Model 3 had more differences than the other two; first, there was no specific Phase for assessment. Instead, there were three phases, enabling, planning, and implementation management. This simple representation did not consider that activities do not progress linearly but more going back and forth between the phases; for example, enacting necessary legislation was put in the first phase, even though updated legislation is also important in the planning phase after revisions of plans, it is also required for the implementation phase to facilitate and manage the implementation.

A good aspect of Model 3 was distinguishing management issues, such as logistics, financing, and monitoring. Etc. Such classification facilitates the management of each topic by appointing each one to dedicated parties. Moreover, having a specified strategy for each management issue increase accountability and facilitate coordination; however, in this model, the issues were only in the implementation phase, with less focus on coordination, assessment, and planning activities.

The author of the thesis re-edited each one of the activities in previous models to fit into four identified themes, some modifications in the presentation of the framework were made to have an easier comparison between the models, and the changes aimed to have the models closer in the display to each other without affecting the integrity of the source vision, the re-edited models are in [Figure \(1-5\)](#) ,[Figure \(1-6\)](#), and [Figure \(1-7\)](#).

By comparing the three models, there are similarities in three of them, regarding those activities of the process can be identified into four themes: coordination-related activities, assessment, planning, and implementation. Each one of the models presented a set of activities and the relation between them, but none offered a comprehensive review of possible activities; for example, model 3 does not consider that phases are not linear. On the other hand, it thought of the first phase as enabling phase that has all actions that enable initiating the reconstruction, which was a missing aspect in the other two models. Models 1 and 2 did not elaborate on the implementation phase, even though it needs the most mobilization and monitoring and takes a long time.

To contribute to a more comprehensive representation of the reconstruction process, the author attempted a systematic review of the reconstruction process in 19 different resources [Table \(1-2\)](#). And [Annex 1](#)). The most notable covering most categories were:

Da Silva: in the executive summary of Da Silva's book (Lessons from Aceh, key considerations in post-Disaster Reconstruction), the categorization for the reconstruction process was planning, design, and construction. Da Silva deconstructed each one into different issues (assessment, governance, funding, context)

Bilau et al., 2017: the paper focused on management issues, including monitoring, managing human resources, logistics, financing, and coordination, although not elaborated in the assessment or strategic planning process.



\_Corsellis and Vitale, 2008: the book offered guidelines for constructing transitional housing; the process has practical aspects in permanent housing reconstruction, especially in strategic planning and assessment.

	coordination	strategy	assessment	implement ation	regulation	logistics	human resoure	financing	monitoring
Ali,2016	*		*			*		*	
aramatunga and high, 2011								*	
Arshad and Athar,2005	*					*	*	*	
Asian Development Bank,2005	*								*
Azmeri, et.al, 2017.	*					*			
Banba and Shaw,2017	*				*				
BAPPENAS,2005	*				*	*			*
barenstien and leeman,2012			*						
Barron,2013,	*			*					
Bilau,2017	*	*	*	*	*	*	*	*	*
CHAP,2010	*						*		*
Choularton,2007		*							
Clark, et.al, 2005.						*			
Corsellis and Vitale,2008	*	*	*	*	*	*	*	*	*
Da Silva,2010	*	*	*	*	*	*	*		*
De ville de goyet,2006						*			
Fitzpatrick, 2010	*						*		
Gfdrr, 2016					*				
PNDA, VoIA,2013			*						

*Table 1-2 Studies reviewed for the reconstruction process.*

Upon reviewing the three examples of reconstruction process, and the systematic review of activities related to reconstruction projects, it is noticed that activities can be identified in four themes: coordination, assessment, strategy, and implementation, the four themes are present throughout the reconstruction process, however, there is no apparent moving from one theme to the other, it is a process of moving back and forth between groups, another thing can be noticed that there are four phases of the reconstruction process, and each one of the phases has four themes of (coordination, assessment, strategy, and implementation), the first phase has a cluster of activities related to initiating the reconstruction, this phase can be named "*initiating and enabling*", the second phase has mainly assessment activities, We designated it as "*information gathering and analysis*", the third phase concerns outlining the strategies, we named it "*planning and design*", the fourth and final phase recommended by the author to be called "*construction and delivery*" **Figure (1-8)**. A set of enabling procedures are needed for the implementation of each phase. They are defined into five groups (regulation, logistics, human resources, financing, and monitoring procedures). Those enabling procedures are, in nature, management issues; we recommend separating the enabling strategies from the activities to facilitate delegation to specialist management Figures .

Framework for Reconstruction Proces	Phase One: Initiating and Enabling	Framework	Coordination Strategy Assessment Implementation
		Enabling Procedures	Regulations Logistics Human resource Financing. Monitoring.
	Phase Two: Information Gathering and Analysis	Framework	Coordination Strategy Assessment Implementation
		Enabling Procedures	Regulations Logistics Human resource Financing. Monitoring.
	Phase Three: Planning and Design	Framework	Coordination Strategy Assessment Implementation
		Enabling Procedures	Regulations Logistics Human resource Financing. Monitoring.
	Phase Four: Construction and Delivery	Framework	Coordination Strategy Assessment Implementation
		Enabling Procedures	Regulations Logistics Human resource Financing. Monitoring.

Figure 1-8 The Reconstruction Process framework, as suggested by the author

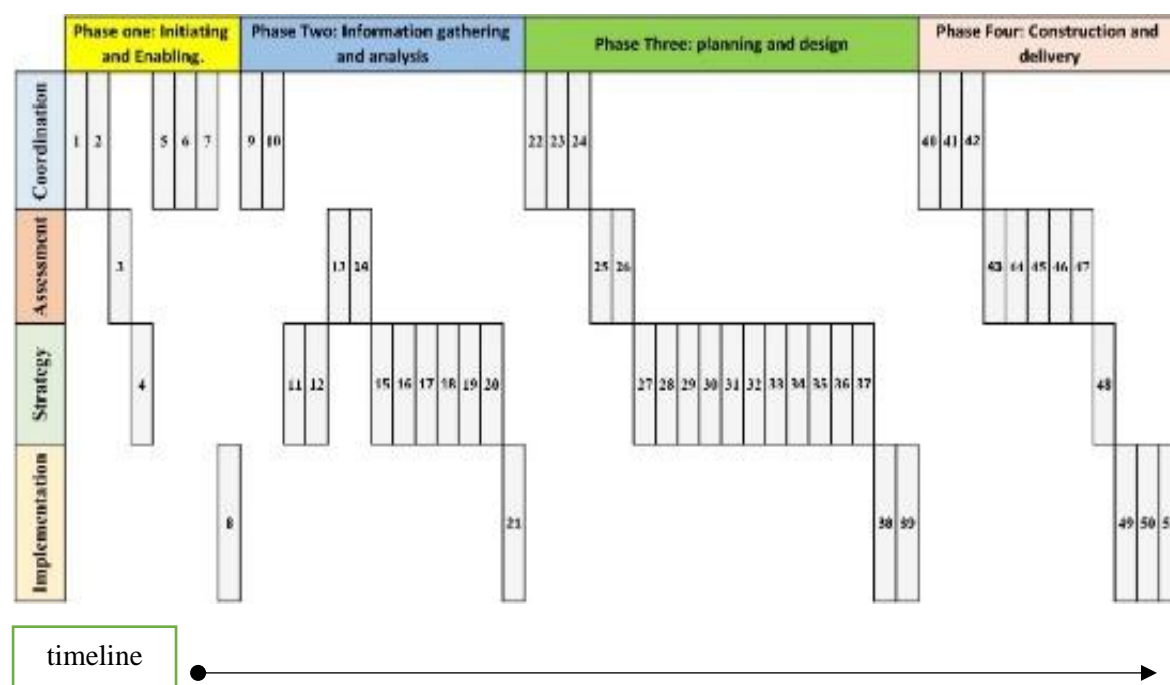


Figure 1-9 Activities are divided between the themes and arranged in the timeline. Numbers refer to the detailed activities in annex (1)



#### 1.9.5. Initiating and Enabling Phase

After a disaster occurs, emergency response care for the primary needs of the affected community, like providing temporary shelters, food, aid, etc. After a while, the government decides to initiate a reconstruction program to address the reconstruction of permanent houses. In the developed reconstruction process, the first phase is named "initiating and Enabling" This phase includes activities that include engaging stakeholders to participate in the program and coordinate their participation in institutional and coordination management arrangements. Coordination is needed in all reconstruction phases, but it is more prominent in the first phase, as "coordination must be a consensus process, continually revised, entailing regular consultation and adjustment to circumstances" (Corsellis and Vitale, 2008). The main aim of this phase is to enable the program by establishing the necessary managing and institutional structures and setting efficient communication channels and coordination mechanisms; this is because housing reconstruction programs usually require collaborating with a large number of organizations and partners, all with different background, and interconnected tasks, this makes coordinating efforts important to prevent "duplicated efforts or missed beneficiaries requirements, wasting valuable resources, and reducing conflict of authority" (CHAP, 2010). Having a coordination structure allows the participants to manage resources, efficient information, and knowledge sharing (CHAP, 2010), the identification of emerging problems (BAPPENAS, 2005), and "avoid socio-economic distortions and inequalities" (Arshad and Anthar, 2005).

Reconstruction following a disaster requires a continuous effort that extends for years after the initial response; it also calls for coordination between the affected population, governments, international organizations, NGOs, humanitarian agencies, and more. In addition to coordination and institutional managing, other actions included in this phase are conducting the initial assessment necessary for making decisions about the estimated funds needed, deciding on the primary objectives, and defining responsibilities. A set of enabling actions can be conducted to enable coordination and increase coordination capacity; the act of increasing coordination capacity is important (BAPPENAS,2005) because of the "increased complexity of all aspects of disaster management, with the many technical abilities required and governmental functions involved."

#### 1.9.6. Information Gathering and Analysis Phase

Activities in this phase are primarily for conducting detailed assessments and analyzing the data; for this aim, teams perform enabling activities and planning under the themes of (enabling procedures, coordination, and strategy). Those enabling procedures range from the institutional arrangement to providing funding and resources needed for assessment work. After the assessment, the teams analyze and cross-check the data to form the required information in the planning phase, such as (capacities available, priorities, beneficiary's identification, and local context).

#### 1.9.7. Planning and Design Phase

In this phase, the objective is to plan housing that meets the goals, standards, codes, and designs using data from the detailed assessment. In other words, it "Provides the basis for a recovery framework that will lead to the detailed implementation plan including specific objectives" ([European Commission, GFDRR, 2013](#)). Another issue in this phase is to resolve land issues, such as land identification and land disputes. This phase also has activities that facilitate the planning, such as coordination, "Coordination in the strategy phase is important to ensure consistent design standards, full spatial coverage." ([Arshad and Athar, 2005](#)). There are also other necessary project implementation elements, like providing resources, financing, and monitoring plans.

#### 1.9.8. Construction and Delivery Phase

The most noTable theme in this phase is implementation, which consists of a cluster of activities concerning managing the construction, monitoring, and executing handlers. Similar to the previous phases, this phase also consists of four themes. There are activities related to coordination; according to [OCHA \(2010\)](#), coordinating implementation is "necessary to ensure the ongoing participation of all stakeholders efficiency of the program and project management." Some activities include conducting assessments necessary in the implementation phase, such as local capacity, market changes, assessing resources, and completing objectives. There are activities related to Strategy: This phase aims to form the strategic framework of all cluster activities in the implementation phase, plan delivery (or handover) plans, manage occurring issues, and set systems for managing resources and monitoring. Enabling procedures include: increasing building capacities, providing necessary implementation resources, and monitoring and developing regulations.

		Enabling procedure				
		Logistics	Human resource	Financing	Regulations	Monitoring
Phase1	Initiating and Enabling.	Provide facilities, transportation, information tools, and accommodation to facilitate coordination and planning,	training programs on coordination to the management staff	<ul style="list-style-type: none"> <li>Estimate initial funding</li> <li>Concede coordination budget</li> <li>Delegate an independent entity to manage financing</li> </ul>	<ul style="list-style-type: none"> <li>preparing a memoranda of understanding</li> <li>Regulate the coordination mechanism</li> </ul>	Establish a coordination monitoring mechanism and system
Phase2	Information gathering	Provide accommodation, transportation to assessment teams	Conduct training on effective assessment.	<ul style="list-style-type: none"> <li>listing funding requirements,</li> <li>Assess potential donors and appeal to them</li> </ul>	Assess the pre-disaster system for land ownership certification,	
Phase3	planning and design	<ul style="list-style-type: none"> <li>Assessing limitations in supplying resources</li> <li>Identify alternative sources to overcome the large demand</li> </ul>	Engage local and international expertise in planning	develop long term plans for financial resource planning,	<ul style="list-style-type: none"> <li>Developing regulatory systems to resolving land issues</li> <li>Set structure and procedures for complaints</li> </ul>	Develop and establish monitoring and evaluation systems
Phase4	Construction of houses	<ul style="list-style-type: none"> <li>Provide coordination and management center in site,</li> <li>Adhere to resourcing plans,</li> </ul>	<ul style="list-style-type: none"> <li>Build capacity</li> <li>Recruit staff and labor</li> <li>Provide adequate supervision</li> <li>Provide recruitment needs</li> </ul>		<ul style="list-style-type: none"> <li>regulate quality of construction,</li> <li>update building codes,</li> <li>ensure compliance to contracts.</li> </ul>	<ul style="list-style-type: none"> <li>Provide monitoring, to ensure adherence to standards, schedules, and safety measures,</li> <li>Test building materials to ensure adequate specifications,</li> <li>evaluate quality at key stages</li> <li>conduct audits on constructed building</li> <li>share monitoring review with related stakeholders to provide feedback and update strategies.</li> </ul>

*Table 1-3 Enabling procedures for the reconstruction process in every phase.*

In summary, the reconstruction process is initiated by inputs such as assessment that provide the information necessary for decision makings, such as information on the capacity and needs; this information is then used with chosen principles and objectives, and with consideration of local context, to form the overall strategy, then with management arrangements, standards, codes, and implementation arrangements are produced to carry out implementation work, and with proper monitoring, objectives of reconstruction can be met, **Figure (1-10)** demonstrates the framework based on inputs, tools, decision-making, and outputs.

The reconstruction process presented earlier, and the four themes for reconstruction activities (coordination, assessment, strategy, and implementation) will be used to develop a community participation framework in reconstruction projects to answer the research question of "When to use community participation in the reconstruction process"?

Another aim of this research is to answer the question of "What are the outputs for community participation in the reconstruction process?" To address this question, there is a need to

understand the factors affecting the outcomes of housing reconstruction; the next section will review the literature concerning the factors affecting reconstruction.

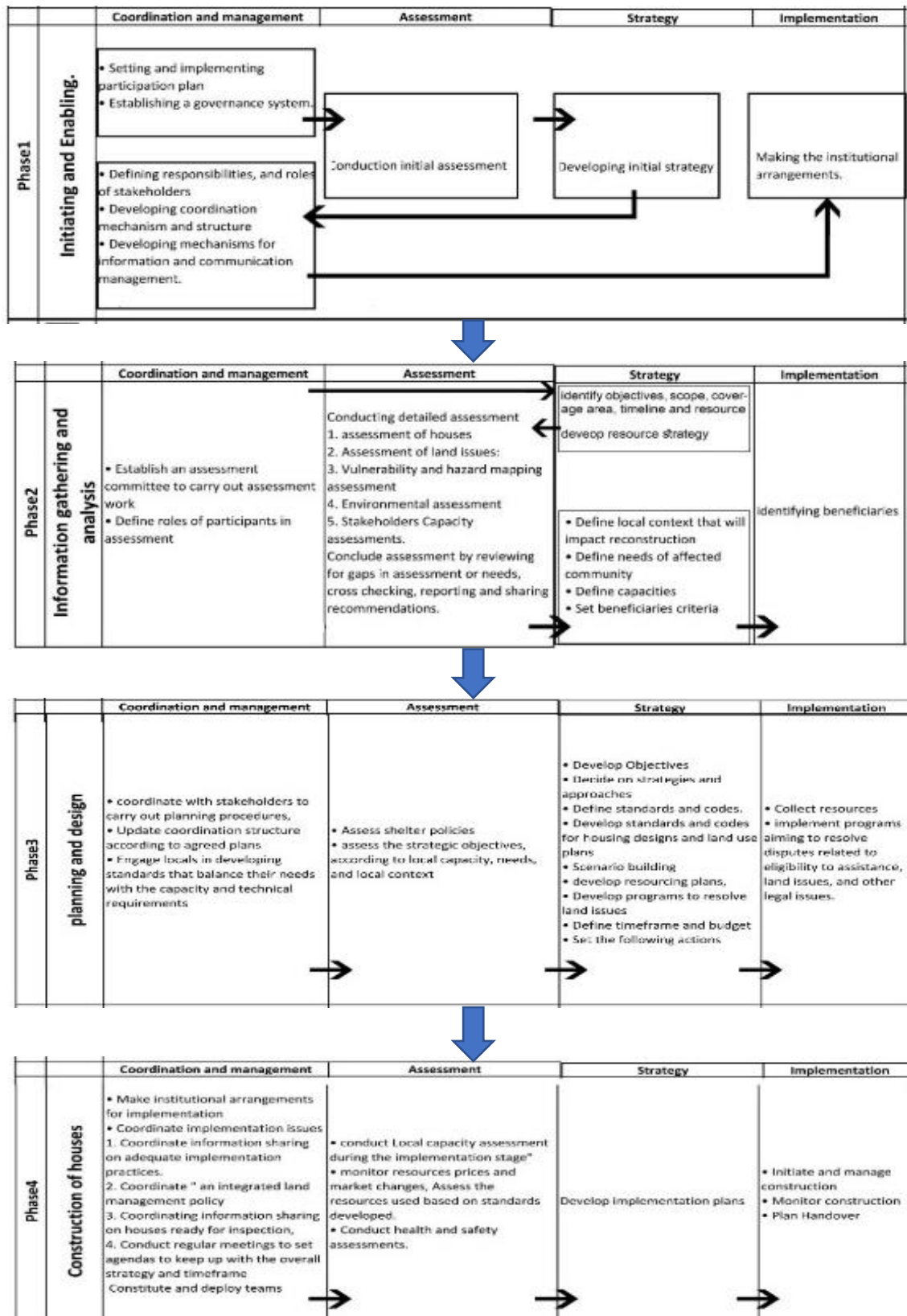


Figure 1-10 Framework of reconstruction by phases and activities.

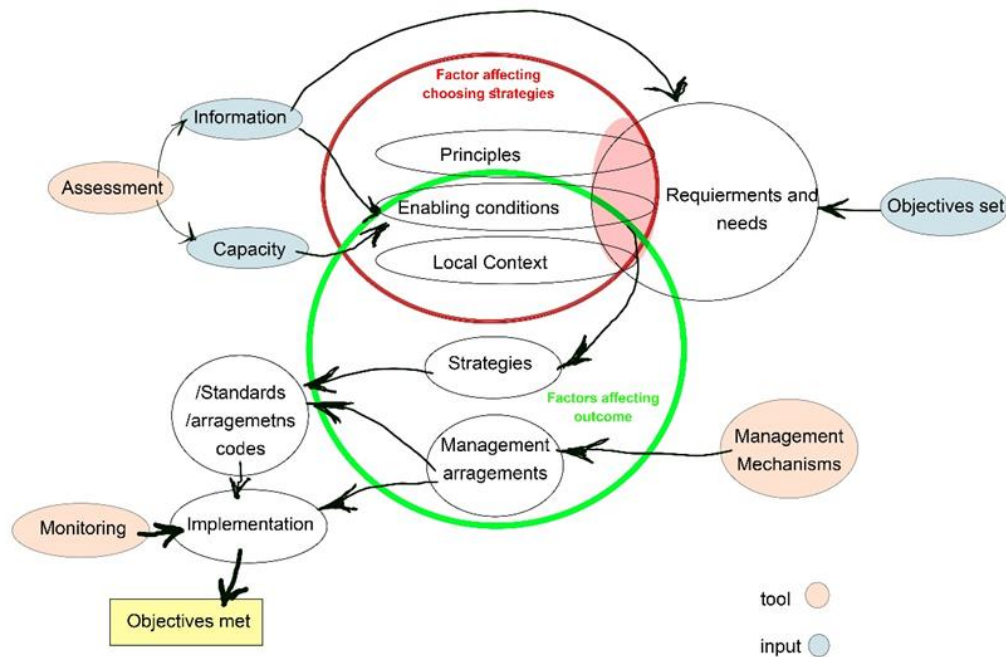


Figure 1-11 Reconstruction process as inputs, tools, and decision-making process.

### 1.10. Factors affecting outcomes of housing reconstruction – A literature review.

Permanent housing is usually a long-term project; it cannot be planned and implemented in the emergency phase. For example, there is a need to organize transportation for imported materials. They are also lengthy processes for solving the legal issues of land (Barakat,2003). Housing projects are also usually rather complex, many factors are involved in the outcome of housing reconstruction, and numerous studies have investigated the lessons learned from reconstruction projects. However, many factors contribute to the success of post-disaster reconstruction programs, such as the scale of schedule, budget, political goodwill, and cooperation of communities; this makes it difficult to identify factors that affect reconstruction. Moreover, the criteria for assessing success can be variable because this field has no globally accepted standard or guidelines. (Chinyio and Olomolaiye, 2009).

Some of the factors discussed by Ahmed ( 2011) include inadequacy of housing in size or design of spaces, choice of building materials and infrastructural services, or designing resettlements in regimental barrack-type layout; other factors involve: lack of institutional coordination, lack of planning and transparent policy, construction delays and financial mismanagement, building material procurement, human resources problems, corruption and

nepotism, [Shaw, et al.,\(2003\)](#) listed the factors that affected the Kobe reconstruction program as climatic conditions, cost-effectiveness, and cultural adaptability.

The factors, according to [Lizarradde et al. \(2009\)](#), were: the capacity of local communities to articulate their needs, the relationship between government, international agencies, and national civil society organizations, previous disaster experiences, the balance between public and private sectors, and finally, the amount and source of funding for reconstruction ,

[Da Silva \(2010\)](#) identified factors such as the flow of funds, existing social conflicts on social networks and institutional capacity, risks of natural disasters, and the effect of economic activities on the availability of skills and materials. [Lizarrade et al. \(2009\)](#) defined the indicators of assessing the success of reconstruction: the critical indicator of citizen's satisfaction, reconstructed built environment resilience, and the social and environmental impact. [Barenstien and Leeman,2012](#) defined the criteria for choosing housing designs as the local housing culture and the local building practices in a survey conducted in 2006 to evaluate the reconstruction of 800 houses in Banda-Aceh; the indicators of the survey were: construction quality, beneficiaries' satisfaction, and accountability. [IRP \(2010\)](#) addressed the indicators of successful reconstruction as: "Access to livelihood, cost-effectiveness, community satisfaction, permanent, progressive (long-term development is maintained) and resilience. [Christoplos \(2006\)](#) claimed that the indicators of failure of reconstruction are the abandonment of reconstructed houses and unsustainable livelihood.

According to [Amaratunga and Haigh \(2011\)](#), the factors that affect housing reconstruction are the phase of a disaster life cycle, level of urgency, underpinning philosophy of funders and decision-makers, level of resources and expertise available, and type of disaster. [Bouraoui and Lizarralde \(2013\)](#) focused on the organizational structure factors that affect the satisfaction of end-users ,the level of decision-making centralization within a context of limited access to information, and the capacity of the organizational structure to involve the active participation of users in project planning, management, and design.

[Sapat and Esnard \(2016\)](#) set the factors that affect satisfaction as "physical and technical, socio-economic, and infrastructure and services" They also described the recipients' requirements as "socio-cultural concerns, expansion plans, and livelihood patterns" [Sadiqi et al. \(2017\)](#) focused on the aspects of community participation that positively affect outcomes of post-disaster housing reconstruction projects: community participation and community empowerment,



effective communication among the stakeholders, community cultures and beliefs, and support from the local government.

A recent study by [Pamidimukkala et al. \(2020\)](#) classified challenges into (general, economic, physical, and social difficulties). They ranked challenges by counting the frequency of mentioning in different references; the highest rankings were planning and management, land issues, occupancy, interaction, population, and occupation. Income level was found to be a major economic challenge. Managing funds and local economic levels were also significant economic factors. Finally, they categorized quality, construction team, design, transportation, safety, and nature of the land as physical challenges.

In addition to the factors mentioned above, the issue of lack of consideration of local context during planning was acknowledged by some research, especially the issue of linking the local context to planning by international agencies and NGOs; these parties usually have lower awareness of the local culture, and they typically lack producing original synthesis for housing reconstruction projects according to the local context ([Arslan and Unlu 2006](#)). In Haiti, the assistance provided by the international agencies was delivered according to their priorities and agenda rather than accommodating the local context ([GFDRR, 2014](#)). [Ali \(2016\)](#) wrote that in Haiti, a "limited understanding of the local context and situation analysis" was one factor that caused recovery challenges. In another case in Gujarat, India, while the local planners adopted the owner-driven approach learning from the previous experiences of the adverse effects of the contractor-driven approach in India, the international NGOs went for a contractor-driven approach resulting in the negative consequences associated with this approach ([Sapat and Esnard, 2016](#)).

Researchers bring some information about the background of the problem. According to [Davidson et al. \(2007\)](#), the socio-economic and political context affect the reconstruction; there cannot be a single universal approach to reconstruction " since every country has its own geographic, socio-economic, and budgetary characteristics, and also faces hazards of different dimensions, practical approaches will differ from country to country."

The impact of local context on the outcome of reconstruction shows a big gap between practice and theory because most reconstruction principles are not based on specific context but on more general guides ([Ranghieri et al., 2014](#)). this generalization creates a level of uncertainty that lead to different interpretations of the guidelines that do not necessarily relate to the needs, resources, and local context of the targeted program ;the context-specific characteristics of

housing, community, and governance arrangements have significant amplification on the success or failure of a strategy, for even if one approach had positive results in one case, it could not be implemented in other cases without considering the local indicators if they suit this approach or the other. For example, [Tibaijuka and Mangkusubroto \(2009\)](#), when discussing the drawbacks of the owner-driven approach in Pakistan after the 2005 earthquake, mentioned that most of them were not inherent problems of the approach and "could have been addressed if the knowledge transfer had provided a more comprehensive picture of the of the on the ground realities of the adoption and implementation of this approach." [Lizarralde et al. \(2009\)](#) similarly discussed that reconstruction outcomes are affected by local context rather than the effects of choosing one approach. They noted the importance of discussing the role of the local context as a factor of failure of reconstruction and less on the debate of contractor-driven approach that prevails more in the literature. They also mentioned that "policy-making processes, practices, and outcomes depend on several contextual factors;" they pointed out that "At the same time, these reconstruction approaches and outcomes are, in many respects, remarkably different, which shows that the specific conditions, interests, and priorities prevalent in a given context are not homogeneous and may strongly influence reconstruction outcomes." For example, in Tamil Nadu, after the tsunami of 2005, the lack of knowledge of local housing culture was one of the reasons there was a setback in reconstruction planning; in this case, built houses were inappropriate for the inhabitants. In another case, the deficit to achieve the targeted number of households to be constructed in both Bam and Bhuj was attributed by [Tafti and Tomlinson \(2015\)](#) to the discordancy between reconstruction principles, the needs of the affected communities, and to the capacity "of different households to comply with the inflexible assistance disbursement mechanism."



Timeline	
phase of disaster life cycle	Amaratunga and Haigh (2011)
reconstruction timescale,	Day Silva (2010) & Amaratunga and Haigh (2011)
Decision makers preferences	
underpinning philosophy of funders and decision makers	Amaratunga and Haigh (2011)
previous disaster experiences,	Lizarradle, et.al, (2009)
Enabling conditions	
level of resources and expertise available	Amaratunga and Haigh (2011) & Pamidimukkala, et. Al, 2020 & Da Silva (2010)
the funding available,	Da Silva (2010) & Lizarradle, et.al, (2009)
logistics,	Da Silva (2010) & Pamidimukkala, et. Al, 2020
infrastructure and services	Sapat and Esnard,2016
land issues	Pamidimukkala, et. Al, 2020
local economical levels	Pamidimukkala, et. Al, 2020 & Da Silva (2010)
access to information	Bouraoui and Lizarralde, 2013
Land nature	
the local geography,	Da Silva (2010) & Pamidimukkala, et. Al, 2020
type of disaster.	Amaratunga and Haigh (2011)
risks of natural disaster,	Da Silva (2010)
climatic conditions	Shaw,et.al,2003 & Da Silva (2010)
Planning	
Cost effectiveness	Shaw,et.al,2003
plans for expansion,	Sapat and Esnard,2016
design,	Pamidimukkala, et. Al, 2020 & Bouraoui and Lizarralde, 2013
community participation	Sadiqi, et. Al, 2017
communication among stakeholders	Sadiqi, et. Al, 2017 & Lizarradle, et.al, (2009)
Institutional arrangements	
the relation between government,	Lizarradle, et.al, (2009) & Da Silva (2010)
international agencies,	Lizarradle, et.al, (2009)
construction team,	Pamidimukkala, et. Al, 2020
national civil-society organizations,	Lizarradle, et.al, (2009)
balance between public and private sectors	Lizarradle, et.al, (2009)
Clear definition of responsibilities	Da Silva (2010)
level of decision-making centralization	Bouraoui and Lizarralde, 2013
Management	
managing funds	Pamidimukkala, et. Al, 2020
Managing quality,	Pamidimukkala, et. Al, 2020
Managing safety,	Pamidimukkala, et. Al, 2020
Social factors	
livelihood patterns	Sapat and Esnard,2016
community cultures and beliefs	Sadiqi, et. Al, 2017 & Sapat and Esnard,2016 & Shaw,et.al,2003

Table 1-4 Literature review of factors affecting the outcome of housing reconstruction

In general, previous studies have emphasized the role of institutional arrangements and enabling conditions in the reconstruction outcome. Institutional arrangements include The relation between the government and international and national organizations, the clear definition of responsibilities, and the level of decision-making centralization. A considerable body of literature exists on the effects of capacity on reconstruction outcomes, such as the level of resources and expertise available, the land issues, the effects of infrastructure and services, funding, and easy access to information. Additionally, the issue of considering the local context in the decision-making process was acknowledged in the literature; the previous studies suggest a link between community participation in decision-making and increased consideration of the local context. Other contributing factors acknowledged in the literature were planning issues, social factors, management factors, land nature factors, time factors, and decision-makers preferences. The literature review of factors affecting the outcome is shown in **Table (1-5)**.

Although there are several studies on factors affecting reconstruction, the research in identifying urban development-related factors remains limited, as most mentioned factors concern management, capacity, or social factors. Also, the link between community participation and increased consideration of the local context in decision-making has been previously assessed only to a minimal extent. Moreover, the literature on the factors is less consistent and remains briefly addressed in the literature or without clear distinction or identification; this limited their ability to contribute to the development of measures that enhance the probability of more successful reconstruction outcomes. Finally, although research has illuminated the vital role of local context in decision-making, the extent of local context is rarely analyzed in the case studies of post-disaster reconstruction. Considering all these limitations in the literature review, a more holistic approach is conducted in reviewing factors that affect the outcomes by reviewing case studies.

#### **1.11. A review of case studies for the outcomes of reconstruction**

The pressure for planning and implementing a significant number of buildings in a relatively short period led to hasty decisions with less consideration of complex factors that caused adverse outcomes; this often led to negative outcomes in previous reconstruction projects. This section aims to systematically review previous case studies to comprehend the wide range of factors that affect outcomes. **The numbers in section (1.10.1) refer to where more details and references on the case study are located in annex (2).**

#### 1.11.1. Reconstruction project management

Many studies explored management issues for reconstruction in recent literature ([Brassard et al., 2016](#)), ([Bilau et al., 2015](#)), ([Bilau and Witt, 2016](#)), ([Bilau et al., 2018](#)), ([Seneviratne et al., 2017](#)), ([Fayazi et al., 2017](#)). They touched upon the lack of clear roles of stakeholders, poor coordination, diverse interests of decision-makers, and mismanagement of funds. Inadequate implementation monitoring is among the most common management issues in developing countries such as Sri Lanka, India, Haiti, and Iran. Some countries are also in seismic high-risk regions, exacerbating their vulnerability. For example, reconstruction projects require the mobilization of resources, which requires enabling conditions that facilitate the reconstruction process. Weaknesses in enabling conditions are observed in several reviewed cases, such as a lack of accompaniment infrastructure reconstruction in newly constructed settlements. Providing infrastructure is usually the role of the government with national private contractors, while NGOs may have their timeline reconstructing houses with limited coordination for aligning infrastructure projects timeline with housing reconstruction; this creates issues of poor living conditions, public health problems, and unoccupied dwellings. Enabling conditions are usually interrelated; for example, the lack of an accompaniment infrastructure is related to the lack of skilled labor; this can cause the avoidance of important housing choices; this was present in India, planners opted to exclude eligibility of middle-income people because they feared the "risk" of building two-story houses ([32](#)). In another case, a lack of staff in reconstruction management and inspection in Sri Lanka and Turkey caused structurally compromised houses, leading to expensive repairs for none compliance. Therefore, houses became vulnerable to future risks, and lack of compliance is more prominent in contractor-driven and owner-driven approaches.

Political and public opposition to plans leads to changes in critical decisions, which in turn cause delays to projects; public support is interrelated with the political atmosphere, and a lack of public transparency in decision-making may result in accusations of corruption. There were cases of changes of relocation plans in India and Sri Lanka in the 2005 tsunami reconstruction after allegations of corruption to the local politicians; political rivalry also caused hindrance of planning and implementation, such as the case in Iran, when a newly elected cabinet administered restrictions on some of the international agencies. ([23](#))

### 1.11.2. Reconstruction Objectives: Providing community needs and Equity

There is still no clear definition of equity in reconstruction after a disaster; the term "social equity" in post-disaster reconstruction is referred to the unequal distribution of forms of aid among victims; equity could also refer to interventions that have the potential to worsen the vulnerability of marginalized victims or decisions that lead to increased disparities among societal layers (12). For example, there was a weak governmental role in post-civil war reconstruction in Lebanon; decision-makers of the private sector prioritized profit by building luxury complexes, which led to exclusive spaces not being accessible to different groups living in the city (5), lacking centralized planning cause organizations to implement varied standards, which result in various quality and attributes of houses.

The most common cause of inequity in distributing houses is the issue of eligibility, such as the decision to distribute aid based on housing owners or households, or it might occur because of technological shortages like in the cases of Sri Lanka and Indonesia, people received aid more than one because of an absence of a uniform database, eligibility issues such as neglecting squatters as beneficiaries lead to exacerbating patterns of gentrification (19). Another form of inequity is the lack of a supportive strategy to protect the vulnerable when relocation cannot be avoided; this occurred in the cases of Tamil Nadu and Aceh (2005 great tsunami); relocation plans in coastal areas had impeded livelihood opportunities for the fishery communities (29). Higher levels of public transparency in decision-making can increase equity for all societal layers and decrease the authority of influential people in decision-making.

Reconstruction goals mostly derive from the requirements of implementing or funding parties. Therefore, the social and economic community needs, or other non-basic needs often become neglected. One of the most common issues of ignoring community needs is neglecting family structure and lifestyle in housing design, such as layouts, area size, and accommodations, which often lead to dissatisfaction, unoccupied houses, or costly modifications. Another issue is the lack of livelihood recovery within reconstructed dwellings. Here are some instances related to these two issues:

\_ India (Orissa Cyclone, 1999): the grants were insufficient for families to build the same house size they used to have, which led to dissatisfaction (8).

\_ India (Gujarat earthquake, 2001): enforcing the housing designs on beneficiaries rather than consolidating with the local practices led the community to reject the government grants and seek the help of the more open NGOs to build houses (35).

\_ Honduras and Nicaragua (Hurricane Mitch, 1998): the housing designs did not accommodate more than six people (parents and children only), even though it was a custom to have multiple generations living in the same household, so some members of the extended family were separated and stayed in the high-risk areas despite being members of the close family culturally.

(11)

\_ Turkey (Marmara earthquake, 1999): house design was inappropriate to villagers' lifestyle; they were not used to living in small apartments. (20).

\_ Sri Lanka (2005 Tsunami): despite the substantial participation of the beneficiaries in consulting them for the feasibility of building two-story houses, the occupants complained about the housing layouts, such as lack of outdoor spaces, the kitchen did not operate in biofuel, which was the primary cooking mean, the designs also used attached toilets instead of the more preferred detached ones. (46). Another example of the neglect of livelihood recovery is when a new settlement had a relatively long distance from the markets, which increased transportation costs. Furthermore, households suffered a decrease in essential assets to their livelihood, like a significantly decreased number of animals and access to free fish and vegetables. Their options were to immigrate, or families had to obtain money through high-interest lending sources or consume their savings. (47).

The issue of neglecting the creation of spaces and facilities for social interactions has little acknowledgment in post-disaster literature, perhaps because it is only recently that research acknowledged the importance of considering social factors for reconstruction. The post-civil war reconstruction in Lebanon showcased the impact of building exclusive complexes that disconnected a vital node in the city that used to connect people from different socio-economic backgrounds (5).

\_ (Latur earthquake, 1993), a settlement in India did not accommodate the social dynamics of the inhabitants; the new settlement had wide streets with a grid pattern; this layout was more spread out than the old village. Moreover, the new layout did not provide the public and private open spaces that were once present in the old town; the open spaces were necessary for the livelihood of the inhabitants, especially for artisans. It was not until several years later that people could modify the houses and settlements to accommodate their lifestyle needs; they also modified the land use to adjust their lifestyle and needs. (14). Later (the Gujarat earthquake, 2001), in one of the reconstructed relocated settlements, the urban pattern was distributed according to socio-economic categories instead of considering the local's social

distribution pattern that was more caste-based. As a result, families were isolated from their communities and relatives, and people resulted in selling their new houses. (39)

Conflicting reconstruction goals between top decision-makers and affected communities, as presented in relocation plans in Tamil Nadu, might lead to weakening political stability. For example, the Indian local government did not strictly prohibit urban self-settlements after the Gujarat earthquake in 2001, proving land ownership was not strictly required; this contributed to concerns over potential political consequences if people were not given shelter support. Moreover, the issues of neglecting community needs may result from decision-makers prioritizing their perceived requirements, such as the urgency of reconstruction, costs, and sometimes seeking an opportunity to advance development projects with little consideration of their effect on the community. For example, prioritizing profit in Lebanon by attracting foreign investments in luxury offices and high-rise residential complexes, with all the negative social impacts discussed earlier. Or in the case of post-2005 tsunami reconstruction in Indonesia, Tamil Nadu, and Sri Lanka, the coastal area in Tamil Nadu that was considered lucrative for tourism businesses, the policymakers viewed the occurrence of the tsunami as an opportunity to seize the land for economic development projects. Another reason for the relocation plan is the government perceived the vernacular housing type as a "downgrade" and the perceived views of what is considered resistant housing; all of these reasons led to demolishing thousands of undamaged houses which were appropriate culturally, even though some communities preferred to be located in more "modern" houses, other communities preferred staying on-site close to their livelihood means; lots of people rejected the relocation plans that would interrupt their livelihood opportunities. In Sri Lanka, decision-makers had prejudices against the traditional houses built in the coastal areas which they thought it was more appropriate to have tourist resorts than "poor settlements in such high investment land." (53)

### 1.11.3. Spatial Planning: architectural identity, continuity, and land use

Decision makers commonly neglect spatial planning aspects in favor of a quicker, cost-efficient, or more significant number of constructed units; one of the aspects that might get overlooked is how land nature affects the built environment. The local climate is one determinant of housing layout and building materials; neglecting this aspect produces poor living conditions in houses. In Haiti (2010), the designs of houses were not appropriate for the hot tropical climate; they had low ceilings, which trapped heat in summer (16).



Master spatial planning is fundamental in balancing living conditions throughout a large habitat area; when many stakeholders are involved in reconstruction, it is crucial to combine efforts into one unified spatial master plan that adheres to established standards. Fragmentary recovery often results from reconstruction projects (Haiti, New Orleans, India, Sri Lanka). In India (Gujarat earthquake, 2001), fragmentary planning made the different private agencies and NGOs implement their approaches to the point that there was Dispersion between urban and rural development; international NGOs were mainly involved in rural reconstruction, while urban reconstruction was avoided, which exacerbated the issues of informal urban settlements.

Another spatial planning aspect is the linkage of the reconstructed settlement with the surrounding environment, more explicitly, linking settlement Characteristics (size, location, density- compact or dispersed- and pattern) with (needed services, type of livelihood, surrounding natural environment, and characteristics of neighboring settlements), in an earlier example for a newly reconstructed settlement in India (Latur earthquake, 1993), where the settlement lacked spaces and facilities for social interactions, it also shorthanded linking the pattern with surrounding settlement patterns, the new modern settlements occupied ten times more land than original villages, another negative aspect of this settlement regarding spatial planning is neglecting previous mixed-use in the new master plan, open spaces necessary for the livelihood of the inhabitants were not provided.

Japan gives another example of linking reconstructed settlement with its surrounding environment. While the destruction scale was more prominent in the rural areas, the demand of housing was more in the city than in the suburbs; this demand detected the existence of a socio-economic polarization towards urban areas caused by the dependency of reconstructed settlements on neighboring settlements in services, traffic, or livelihood. (13)

In a case of a disaster causing partial destruction, reconstructing the area should be done carefully not to disrupt the dynamic interconnections of different parts of the settlements. The exclusive spaces constructed in Beirut Central District after the civil war caused the detachment of the area from the rest of the city, which left failing businesses and empty apartments. Moreover, the typology of large blocks designed for high-rises stood in stark contrast to the low-rise, dense fabric that characterized the pre-war architecture of the city center (W.B, ND). (4,5).

A strong sense of belonging in the affected community can be a factor for opposing or approving reconstruction plans; this connection between space and society varies among

settlements. Urban societies have less sense of belonging than rural settlements. The presence of areas for social interaction and identity of place can also contribute to the sense of belonging, especially the opposition to relocation plans; this was the case in Sri Lanka and Tamil Nadu. (48), (53), (29).

There is an interrelation between the sense of place and architectural identity; architectural identity is produced by the common sense of place of the community to form meanings and ways of life that distinguish the local architectural identity from other settlements (Vale, 1992). It is accumulated over time and through layer-by-layer small interventions in a settlement. We can describe reconstruction after a disaster as a hardcore intervention in a built environment since it occurs on a large scale and a short time; then it can be said that reconstruction projects can affect the accumulated architectural identity rather significantly; therefore, special consideration is needed for restoring the architectural identity of the built environment. For example, in India (Tamil Nadu, 2005 Tsunami), a plan was set to demolish thousands of vernacular houses because they thought they were a downgrade and unsafe, even though they were undamaged, culturally and climate-appropriate, and withstood the earthquake, such intervention for changing traditional pattern of settlement into a more "modern" standards was changed later due to protests from the locals to oppose this plan, the houses built eventually with local timber (26). In another example, the city of Bam (Bam earthquake, 2003 in Iran) had significant changes in its characteristic where it lost the architectural fabric identity of the old city; that was due to the use of prefabricated steel structural elements, decision-makers opted for fast reconstruction, they considered steel to be faster to construct with than the traditional techniques of building with mud and brick.

Architectural identity is one of the physical representations of the local culture; in this sense, the diverse cultural identity of a built environment can be considered as one dimension of architectural identity, a possible shortfall for the reconstruction master plan is neglecting integration traditional or culturally motivated building attributes, to provide an example from India, a country known for being a nation with culturally deep-rooted amongst the people, and building with local skills and materials using traditional technologies have their roots in principles of Gandhi, this culturally motivated building movement had its effects on the reconstruction policies in Gujarat, even though there were instances of NGOs using imported technologies and materials, this led to yet another example of disparity from the local architectural identity, (34), another example from 2005 tsunami reconstruction in India, where the new housing designs lacked the locally preferable design elements (27)



Finally, reconstruction projects often generate environmental concerns; waste generated after disasters and the high demand for resources has a high impact on the environment, whether depleting natural land resources like water or mining resources, converting land use to agriculture or vice versa, affecting biodiversity, or increasing environmental pollution. The construction of new houses significantly impacts the environment; inadequate location or spatial planning may cause agricultural land loss and soil erosion.; inappropriate sites may also cause sanitation system malfunction, thus contaminating the soil. There is also the issue of constructing many houses requiring large surface areas; therefore, house location should be considered carefully. Global warming, sand, and gravel extraction cause topographical changes, and wood logging threatens biodiversity and may directly affect people's lives. Housing reconstruction uses a significant amount of construction materials, instigating concerns about the environmental impacts; fuel used to burn clay may contribute to air pollution. To provide an instance on this matter, in Tamil Nadu (2005 Tsunami), the contractors opted to clear the land from any houses and trees before starting reconstruction; loss of vegetation had a negative impact on many levels, for they were used as the source of income and other uses like generating food, firewood, and industrial wood, they provided thermal comfort. They had cultural significance such as health, aesthetics, and cultural value. (28).

In conclusion, we can identify the local context in post-disaster reconstruction by the built environment characteristics and socio-economic and socio-cultural deep-rooted features of a disaster-hit region; the influence accumulates before the disaster and later have consequences in reconstruction outcomes. This persistent influence includes city characteristics after a disaster, such as Land issues, land nature (climate, hard-to-reach areas, high investment areas, high-risk areas, topographic changes after disaster), property value, destruction type, and scale (including infrastructure), the architectural identity and housing types (traditional, modern), the characteristics of land use (irregular or narrow streets, open spaces), and type of settlement (slums, urban, rural, heritage). Examples of socio-economic attributes are (availability of resources, availability of income, and social capital), socio-cultural local context including (lifestyle, family structure, and social-cultural customs), and finally, political contexts that have an impact on reconstruction are (conflict, change of political body during reconstruction program, and public opinion).

Indicators of failure of the reconstruction as derived from the literature include failure to deliver housing as planned (creating Squatter issues, delays, transitional houses turned to permanent, hitting a Lower target of beneficiaries other than planned, declining commitments to rebuild, Inequitable distribution of houses), there are also inadequate housing indicators, (unoccupied houses, lack of resilience, inappropriate design, dissatisfaction, and quality issues); finally, there are practices that indirectly lead to negative impacts on reconstruction: discrepancies between principles and the practices on the ground, reliance upon contractors, lack of multi-directional accountability ,inappropriate Institutional management, recovery fragmentation, and limited participation.

		Management	Enabling conditions	planning	Local context	Time
• 2004 Indian Ocean earthquake in Aceh-Banda	Indonesia	*	*	*	*	*
• 2004 Indian Ocean earthquake in Tamil Nadu	India	*	*	*	*	
• 2004 Indian Ocean earthquake	Sri Lanka.	*	*	*	*	*
• 1993 Latur earthquake in Maharashtra	India		*	*	*	
• 2003 earthquake in Bam	Iran	*		*	*	*
• 2005 hurricane Katrina	USA.		*	*	*	*
• 1995 Hanshin earthquake in Kobe, Japan.	Japan.	*	*	*	*	
• 2010 earthquake in Haiti.	Haiti.	*	*	*	*	
• 2001 earthquake in Gujarat	India	*	*	*	*	*
• 1995 earthquake in Dinar	Turkey.				*	
• 1999 earthquake in Eje Cafetero	Colombia	*				
• 2001 El Salvador earthquake	El Salvador			*		
• 2009 L'Aquila earthquake	Italy.		*			
• 2006 Yogyakarta earthquake, Java	Indonesia		*	*		
• 1999 earthquake, Marmara	Turkey.	*	*	*	*	*
• 1986 civil war	Lebanon			*	*	
• 1998 Hurricane Mitch,	Honduras.		*	*	*	
• 2000 Mozambique floods	Mozambique		*	*	*	
• 1999 Odisha cyclone, Orissa	India		*	*	*	
• 2008 Sichuan earthquake	China.	*		*		

*Table 1-5 Literature review of reconstruction case studies.*

## 1.12. The theoretical framework

This chapter aimed to add to the understanding of post-disaster housing reconstruction and community participation, as well as to review the literature needed to identify the different factors that affect the reconstruction outcome and the factors that affect community

participation. The chapter introduced general definitions of disasters. Disaster management trends, housing reconstruction, and community participation, the literature review on the role of community participation in reconstruction projects shows that there is still a gap between theory and practice. Little research has contributed to effectively applying community participation in reconstruction practice. Therefore, there is a need for a practical framework for ensuring community participation in housing reconstruction. This thesis will relate to the practical aspect of community participation by exploring the "what," "when," and "how." To provide a synthesis for integrating community participation in the reconstruction. The following sub-questions will be studied using quantitative and qualitative research methods.

\_What are the decisions that are most critical to use community participation?

Current research poses many problems in identifying areas most critical to use community participation, significantly as reconstruction projects extend into different areas. The question of which fields to participate in has not yet been explored. Identifying the most critical reconstruction goals to involve the community can optimize community participation in decision-making since it requires time and effort. Research emphasizes community participation to identify community needs; still, case studies of different reconstruction projects show that decisions other than those concerned with community needs often have socio-cultural and socio-economic impacts on the built environment. Moreover, little research has been devoted to the importance of involving the community in urban development decisions, management decisions, and restoring or creating architectural identity decisions.

This chapter introduced a systematic review of the factors affecting reconstruction outcomes in previous case studies to address the previous question. Many issues affect reconstruction; they can be complex and interrelated. There is still a need to identify aspects that form each group and the role of the community in each group of factors. To simplify the factors, we grouped them into the themes of project management factors, providing community needs, equity, architectural identity, and land use.

\_When is it preferable to use community participation?

This chapter constructed a framework for the reconstruction process after reviewing models of the reconstruction process and a systematic review of related activities. The suggested reconstruction process is divided into four phases; each has four groups (coordination, assessment, strategy, and implementation) with enabling procedures related to management

issues grouped by (regulations, logistics, financial, human resources, and monitoring) .This model will be used in the empirical study to answer this research question.

\_How to integrate community participation in reconstruction projects?

Although there are many studies on the importance of Community participation, research on measures for effective participatory decision-making is limited. Measures can be derived from challenges of community participation. However, the literature review shows that only a few works demonstrate clear measures to encounter the challenges; if challenges were less abstract, measures could be developed to correspond to each challenge. This is crucial to facilitate the integration of community participation in reconstruction projects.

The next chapter performed an extended exploration of three different case studies; the exploration will be broken down in chapter three to formulate thoroughly the aspects that affected the outcomes of reconstruction and the decisions made, in addition to a breakdown of factors that affected community participation. Chapter four will use the identified factors that affected the reconstruction outcomes in an empirical study to answer the first two questions (what and when). Chapter 5 will use the factors that affected community participation to investigate the challenges of community participation and corresponding measures to answer the (how) question.

## Chapter 2

# Exploring Case Studies in Housing Reconstruction After Disaster

This chapter explores three cases of built-environment reconstruction after disasters, the 2005 Hurricane Katrina, New Orleans, the 2004 Indian Ocean earthquake and tsunami, the Aceh province, and the 2005 Northern Pakistan earthquake. The criteria for selecting the case studies were to select cases with various planning approaches, organizational approaches, and national capacity; to show how the different approaches affected community participation. Each case presents an overview of the event and recovery approaches, the role of stakeholders and community participation in the recovery, and finally, how the decision-making affected the reconstruction outcome.

### 2.1. The 2005 Hurricane Katrina, New Orleans, United States of America

On August 2005, Hurricane Katrina caused large-scale devastation to the coast from central Florida to Texas. The worst-hit areas were New Orleans and Louisiana. By the time the hurricane hit the city, most of its population was mandatorily evacuated, among the remaining population, more than 1500 people died or went missing, and tens of thousands had to be rescued. 80% of New Orleans was flooded as high winds broke the levee system. The hurricane and the floods caused 1800 casualties, over 770,000 rendered displaced ([Fayazi,2017](#)), and 135\$ billion in damage in New Orleans. The damage in the housing sector was estimated for over 1.2 million houses partially damaged. Overall, over 300,000 houses were severely damaged in Louisiana alone. 140,000 houses were destroyed, and 434,000 were partly damaged ([CHSGA,2009](#)). In New Orleans, 72% of the city's occupied units were damaged, 67% were rental, and 76% were owner-occupied. The destruction not only left casualties and destroyed houses, but it also caused a disturbance in the social fabric; entire neighborhoods were scattered, which caused a social disaster by itself, and many residents did not



*Figure 2-1 Arial view of damage,  
Courtesy of Wikimedia Commons*

return until years later. The rebuilding of the city had delays. FEMA and the state of New Orleans initiated rebuilding the damaged houses, but many people re-settled permanently elsewhere. In 2007, the population in the city was up to 50% less than before Katrina ([US Census Beauru](#)).

### 2.1.1. An Overview of the local context in New Orleans

The city had a significant population decline after Katrina but continued to grow each year afterward. In 2020, New Orleans had a population of 384,000, a significant decline from its population in 2005, which was 455,000 ([U.S. Census Bureau, 2021](#)). Demographic changes occurred after the disaster caused by new waves of migrants; those newcomers caused a rise in rental prices, which caused, in return, the displacement of locals and the gentrification of the city. As a result, the African American population declined by 64% in 2010 compared to 2000 Figures. The white population increased by 22%, and many people from Hispanic and Asian backgrounds were also among the new population. ([U.S Census](#)).

The city's large port provides a strategic economic and transportation hub. Another economic revenue is an oil refining and petrochemical production due to its location near the Gulf of Mexico. However, the city started losing population in 1960 because of less commercial trade in the port, the moving of the petroleum industry to Houston, and the 1980 oil crisis. Poverty rates before Katrina were high. 23% of the population lived under the poverty line in 2004. With an unemployment rate of 35% (considered among the highest in US large cities), More than 25% of households did not own cars ([Gullette, 2006 in Ehrenfeucht and Nelson,2011](#)). This poverty contributed to

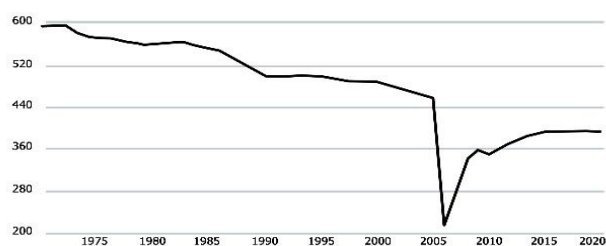


Figure 2-2 population of New Orleans, source: U.S. Census Bureau, 2021



Figure 2-3 shows that neighborhoods with highest poverty had the lowest returning after Katrina, layer of poverty extent and poverty rates courtesy of U.S Census, realized by the author.



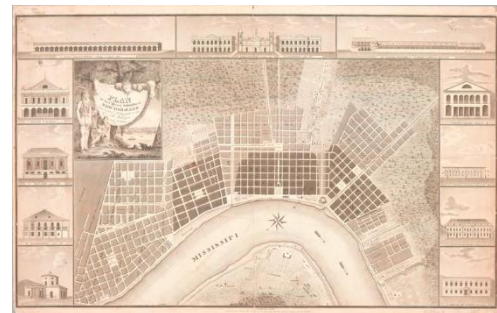
vulnerability to disasters. Renters were among half of the houses damaged, and many had low income and no insurance, which presented a challenge for recovery.

In 2014, New Orleans recovered from the loss of jobs, wages increased, and unemployment decreased. ([National Academy of Sciences,2011](#)). the number of businesses increased even more than it was before the hurricane. Michael Hecht, president, and CEO of Greater New Orleans insurance company, said that historically when a disaster hits a region, the country responds with high cash flow, which was the case in New Orleans; the city received 140\$ billion from federal and other sources to recover the cities infrastructure, ([English,2015](#)). Even though the statistics show a good economic recovery, which does not necessarily indicate a successful reconstruction, the indicators of economic recovery can be attributed to the cash flow and the effects of new settlers moving into the city, but it is not the only indicator of successful reconstruction because the city suffered high rates of gentrification, especially for the low-income. The gentrification issue indicates a less successful reconstruction rather than looking at economic recovery statistics alone.

As for the context of the architectural identity of New Orleans before Katrina, the history of the city contributed to a diverse architectural identity forming, the city was founded in 1718 by the French colonists, following Britain history in the seven year war, then the city was ceded to Spain until 1800 when it was returned to France, in 1803 it was sold by Napoleon to the United States, this history contributed to diversity in cultures consisting of descendants of French or Spanish settlers, Anglo Saxons and descendants of Haitian slaves and migrating from the South, this diversity was reflected in its architectural styles, which rendered in significant amount of preserved historic built environment, where 13 districts are under preservation in addition to other individual landmarks across the city, including the French Quarter, historic housing styles include cottages with large courtyards and distinguished balconies, building heights remained for most of the city history low to mid rise, until



*Figure 2-4 The French Quarter,  
Courtesy of (Greyline.com)*



*Figure 2-5 Plan of the city and  
suburbs of New Orleans in 1815,  
courtesy of digitalcollections.nypl.org*



*Figure 2-6 The corbel in New  
Orleans (McBride,2016)*

the 80s where a cluster of tall buildings were constructed in the Central Business district, which is located north and west of the river, which has similar features to the French settlements, where the streets extends from a central point, a canal street and streets crossing it divide the city into the traditional downtown, and the uptown area. (New Orleans Master Plan).

The architectural housing styles in the city reflect the diverse history of the city. The African style of Haiti culture influenced the shotgun-style house **Figure (2-7)**, which is characterized by a long and narrow layout, with front and rear doors and a narrow porch decorated by Victorian motifs (Data Center, 2016). the French and Spanish influenced the Creole cottage. Cerole cottage has a wood or stucco exterior and a steep roof. The diverse culture in New Orleans injected the utilitarian housing built in the 60s with its unique characteristics. For example, a design element named a corbel, a small projection extending from a wall to support a structure above it, is considered an element used in the utilitarian trend. However, in New Orleans, many corbels were an attractive element in the house, usually containing Victorian ornaments that reflected the city's culture. **Figure (2-6).**



*Figure 2-7 The shotgun cottage, courtesy of Mariane Cusato, 2009*

#### *2.1.1.1. New Orleans cityscape after the disaster*

The built environment in New Orleans had indicators of inconsistent recovery. In some neighborhoods, there were indicators of reconstruction, houses were built, and some were elevated in other neighborhoods. Until 2014, some rubles existed in sight, and more empty spaces were present in the places of destroyed houses, closed schools, and roads that needed repairs. (Arendt and Alesch, 2014). A change in the fabric of society had taken place. The character of a poor urban area changed with other people moving in, and changes in housing characteristics and businesses occurred.

No comprehensive study on how the architectural characteristics have changed after the disaster, Campanella and Rosen in 2016 made a small contribution in this matter; they extracted a random sampling of 5 percent of the 6296 permits issued after the disaster, using google street view and site visits, they made a comparison for the architectural styles and typology of the houses built before, and after Katrina, they found that 5% were judged to be contemporary or modernist in style, 23% were plain or functional, and 72% were in a historical revival or neo-traditionalist style, this means that the individual owners of houses overwhelmingly preferred to reconstruct their houses in some form of historical style. Moreover, the retro style represents that people



preferred local traditional architecture with vernacular roofs (Campanella and Rosen, 2016). Over 80% have a porch, gallery, verandah, or balcony, which are design features used in the French Quarter. However, this adaptation of the historical style was limited to the facades, construction materials, interiors, and contemporary construction technology. The height of most of the houses built was one story with raised ground floor in compliance with FEMA flood insurance requirements.

The Historic District Landmarks Commission greatly influences housing design decisions in the historic district. The lack of civic participation in deciding housing designs was present in the public housing, the private developers, and The Housing Authority of New Orleans influenced HUD decisions regarding this matter (HUD being the federal agency responsible for housing reconstruction after Katrina). Nevertheless, for most houses, the community influences the decisions of the house's exterior designs. However, only a few went for the option to build a unique design by commissioning an architect, and the majority preferred to adopt the pre-Katrina traditional designs that were offered by the "pre-architected design from either an architect's portfolio or a builder's pattern book. According to Zachary Smith, Chief Building Officer for the city's Department of Safety and Permits in 2016, homeowners have, in the past decade, become increasingly immersed in residential design decisions to fine-tune the look and livability of their dwellings." (Campanella and Rosen, 2016).



*Figure 2-8 A montage of styles of post Katrina architecture, courtesy of Campanella and Rosen, 2016*

The previous study shows the community's considerable influence on shaping the architectural identity of New Orleans after the disaster, where they tended towards preserving the historical architectural identity of the city. The capitalist that had investments in oil and shipping decided to change location after the disaster, replaced by increasing development of the small investments in the tourism sector; tourists were attracted to the city's distinct identity. Consequently, the increase in houses with traditional designs influenced by the community participation in architectural identity decisions led to changes in city characteristics, economically and culturally.



Deciding the routes had consequences on the reconstruction of houses after the disaster. In a study conducted by Guthrie and Fan, they found that distance to stops strongly predicts building permits. While residential permits increase with the distance to stops, commercial permits decrease. They suggested that streetcars have the potential to displace residential uses. While increasing mixed land uses in the neighborhoods that lost their commercial uses. Therefore, the decisions related to decentralization in services and traffic on a significant scale as it happens after disasters affect not only the commercial and social dynamic interconnections with different parts of the settlement but also the residential fabric. Adapting new mixed-use use to existing residential blocks has a role in reconstruction and may affect the degree of returning residents after disasters.



*Figure 2-11 relation between building permits issued until 2009 (layer courtesy of Campenalla, 2016), and streetcar lines (layer courtesy of mapsontheweb.zoom-maps.com), realized by the author.*

### 2.1.2. The Role of federal agencies in the Reconstruction

When the disaster impact is beyond the state's response capacity, the Stafford Act allows for federal intervention, which was the case in Katrina. Section 402 of this act allows the President to delegate the roles and responsibilities of the federal agencies in disaster areas. The president delegated responding to Katrina to FEMA (Federal Emergency Management Agency) as a leading role and the Department of Housing and Urban Development HUD as a secondary role. HUD's primary role is to provide housing assistance in case of disaster, and it is the recognized federal authority in this department. However, the Stafford Act allows FEMA to define the responsibilities of other federal agencies in a federally declared disaster, including HUD. Former HUD deputy chief of staff stated that the agency sought a leading role in the housing recovery, but that did not prevail. The decision to limit HUD's role is contributed to the White House Chief of Staff Andrew Card, after a debate between HUD, FEMA, DHS, and White House officials. Therefore, the central decision-making system of FEMA mainly made several vital reconstruction decisions, and HUD secondly. While overall, the affected community did not have much engagement in the decision-making. (Maione,2019), especially in the decisions made by FEMA and HUD. The following sections discuss the critical decisions made by the central decision-making of FEMA and HUD.

#### *2.1.2.1. Issues of housing reconstruction decisions made by FEMA*

FEMA and the New Orleans city officials declared priorities of equitable deliverance of assistance, rebuilding the city's public services, reducing future hazards, and providing livelihood opportunities to increase the returning level of the displaced. Housing was recognized as one of the top priorities (Aldrich and Cook, 2008). The director of Gulf Coast State Recovery stated that long-term housing is a foundation of recovery; another local minister in that region stated that housing is the biggest priority, claiming that jobs can come back. Still, people must have a place to live. (CHSGA,2009). Although housing was declared a top priority, FEMA prioritized the temporary housing type, which negatively affected providing permanent housing.

FEMA's leading response was backed by Section 403 and Section 408 of the Stafford Act. Section 403 of the Stafford Act provided FEMA the authority to channel direct grants to the local government to fund housing rebuild. In contrast, Section 408 allows federal assistance to provide six different types of shelters, including 5- permanent or semi-permanent housing reconstruction and other needs assistance. FEMA decided early into the response phase to use manufactured trailers as transitional houses. They heavily relied on trailers, which created conflict with the local community because they opposed setting them on their private land, delaying the response due to revising plans (Aldrich and Cook,2008). Also, the number of trailers used was not determined by a defined extent or criteria. One FEMA official ordered to "purchase until I say stop"<sup>1</sup>. The impact of such dependency on temporary housing should have been examined. In addition to trouble selecting sites for those trailers, which created delays, this decision was expensive. The total cost of installing and keeping those trailers was 5.5 billion dollars. Later, FEMA's official, David Gratt, admitted that trailers were not cost-effective and could not lead to providing permanent housing. Eventually, FEMA looked into repairing rental houses as an alternative; however, the Stafford Act prevented the program's implementation. In short, the decision to rely on trailers as a housing means was unclear regarding the extent and criteria, leading to a decreased capacity to provide permanent housing.

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<sup>1</sup> Brad Gair email to David Garrat, Kevin Souza, Daniel Craig, Jack Shuback, 2005, quoted from (CHSGA,2009)





*Figure 2-12 FEMA travel trailers, In McIntosh et al.,2009*

The social entrepreneur had a leading role in assisting the affected community by organizing and managing resources for reconstruction. Still, they also had a role in organizing the community to have a role in the decision-making. For example, through organized efforts by social entrepreneurs, the community changed FEMA's decision on the temporary housing location. After the disaster, FEMA decided to use trailers as temporary houses in community-related spaces instead of using land allocated to this need, which is called trailer parks, without considering the proper communities to host those trailers had negative effects. Some communities were prejudiced against the hosted people of their race, income, or education, which resulted in discrimination and local opposition against the presence of the displaced (Aldrich and Cook,2008). Even though decision-makers within FEMA and New Orleans took into consideration the presence of opposition from certain urban-based ethnic communities in making their decisions for selecting housing sites, as evidence for that, a councilwoman from the region stated that she would not place trailers that would intrude the lifestyle of her district, she commented that decision makers should know their districts better (Nelson and Varney in Aldrich and Cook,2008).

However, even though the decision-makers sought to avoid public opposition, delays were noted. A study by Aldrich and Cook (2008) found that the areas selected with high levels of social capital had fewer trailers, and the civil society in these areas mobilized the community against the "threat of trailer parks in their backyards." In the USA, there is a stigma for using trailer parks as a nest for criminal activities, increased traffic, and lower property value. The effects of such social influence on reconstruction were negative; the housing department in New Orleans with FEMA had to revise and then re-revise the list of approved sites for housing, which slowed the rebuilding process. Another reason for opposing the communities of trailer parks as temporary housing is a previous experience of temporary accommodations after a disaster becoming permanent, such as the case in the nearby state of Florida, where trailer parks rendered permanent residency for some of the people who were displaced in the aftermath of Hurricane Andrew.

In addition to relying on trailers, FEMA's early decisions in the first three months had limited housing options for the rest of the reconstruction program, which resulted in delays, denying housing to eligible people, and wasted resources. Overall, here are other factors that affected limiting housing options:

- eligibility issues had limited resources for a more efficient plan. After reviewing 5000 eligibility decisions, over 20 percent were found to be incorrectly denied eligibility. ([The New Orleans Index,2008](#))

- No pre-plans for permanent housing after disasters. The pre-Katrina plan was considered a plan for immediate response rather than one that addressed long-term housing needs. Another reason for not using the pre-plan was that the pre-plans were too complicated. ([CHSGA,2009](#)). which created misinterpretation in the implementation of policies.

- FEMA's decision to avoid expedited building repair program on the ground that the Stafford Act does not allow for the repair of permanent houses. ([CHSGA,2009](#)).

- the frequent changes of plans, which was the case in the rental assistance program, the legal interpretation of the 403 sections forced the program to end six months earlier than intended ([The New Orleans Index,2008](#))

- The bureaucratic institutional process of providing federal funds to affected states usually takes too long and takes high administrative costs, which hindered providing local governments from supporting housing-related infrastructure, such as water, sewage systems, government facilities, and debris removal ([The New Orleans Index,2008](#))

- the absence of a coordination mechanism between governmental agencies caused delays, especially coordinating between decision-making bodies and implementation and resourcing bodies. Furthermore, there were divisions among the program leaders and poor definitions of roles. The government accountability office found that senior leaders among FEMA "had an incomplete understanding of their roles, responsibilities, and reporting and communication lines" ([CHSGA,2009](#)).

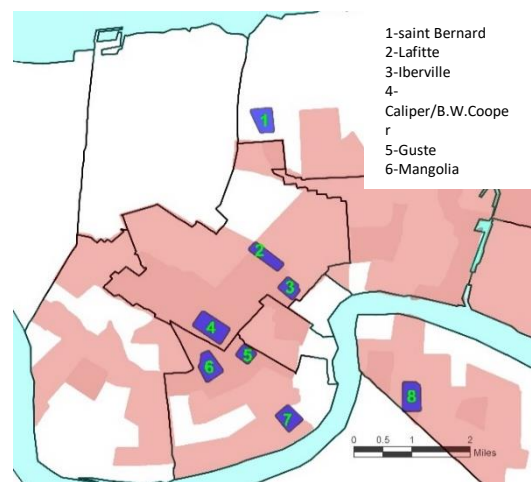
- lack of capacity in trained staff was also reported, shortage of employees, especially in call centers. This lack of capacity caused delays because few numbers if employees were working on many applications.

#### 2.1.2.2. Issues of housing reconstruction decisions made by HUD

One of the major decisions by HUD that had adverse effects on the outcomes of reconstruction was the heavy reliance on voucher programs. Voucher programs resulted in the affected community moving away from their livelihood means and bleeding resources on transitional housing instead of permanent housing. Vouchers are affordable rented units in the private market, in which families pay 30% of their income towards rent, and the government pay the difference. However, the decision to use this housing option was not deemed feasible because units were scarce in the affected region. Lack of funding and discrepancies between HUD and FEMA caused the termination of this program in 2009 (Bennett et al.,2007).

Another decision by HUD was demolishing some public houses. The decision was made even though they did not have structural damage. St. Bernard, C. W. Peete, Magnolia, and Lafitte complexes were demolished and redeveloped, and 2,100 public housing units out of 5,000 were demolished. The previous occupiers were given vouchers or a new place to stay (Green et al.,2011). The grassroots activists claimed that Katrina was used as a pretext to demolish the public housing, which would cause displacement of people with low incomes and gentrification of the city; this decision contradicts their intended strategy, which called for rebuilding various affordable houses while adding new projects to their surroundings.

Demolishing the public houses also raised questions of inequality because the residents of public units were a low-income majority. (Bullard and Wright,2009).



*Figure 2-13 public houses placement in 2011 in neighborhoods with 20 to over 40% poverty (layer of poverty rate courtesy of U.S Census), realized by the author*

The reason behind the decision to demolish the public housing was not clearly explained, it could be the result of considering these complexes as outdated examples from the utilitarian architectural trend in the 60s, and the decision-makers saw the disaster as an opportunity to upgrade as many large cities in the U.S, the city had several public housing complexes built in the '60s and '70s. Commonly, central decision-makers use the disaster as an opportunity to reshape the characteristics of the built environment, which is one of the reasons for the importance of community participation in decision-making to ensure considering the community needs and perspective.

HUD's engagement in the reconstruction also had the following features; lack of funding, adequate planning, and coordination issues between HUD, FEMA, and the local governments. (CHSGA,2009). HUD's lack of capacity was also one of the issues of failing to deliver sufficient units. This lack of capacity is, in part, contributed to institutional management issues.

In short, the lack of planning, funding, and inadequate legal and institutional framework had a negative impact on transitioning into permanent housing and the capacity of HUD to deliver housing to larger affected populations.



*Figure 2-14 Lafayette complex,  
(Amdal,2013)*

#### *2.1.2.3. The reviewing of FEMA and HUD housing strategies after the Katrina experience*

The scale of the disaster on the housing sector and the effect of displacing large numbers of people brought the attention of the political bodies to address housing issues in case of disasters to ensure meeting housing needs in efficient timing and scale for future disasters. Therefore, extensive reviewing was made by the government of the USA for the post-Katrina housing recovery experience and issues that occurred. As a consequence, FEMA developed its strategies. The final strategy formed in 2009 contained comprehensive policies for housing programs. The strategy acknowledged the issues that affected the adverse outcomes of post-Katrina reconstruction. Some of the issues that this strategy acknowledged were first, the need for regular review of regulations and policies and assistance programs, a disaster housing database for housing ownership, whether private or owned by the government, the need for a communication network on the state and local level to coordinate housing policies, and national housing planning. FEMA also recognized the need to mobilize the local resources and infrastructure for recovery. (FEMA 2009 Final Strategy, in CHSGA,2009) The two previous revisions of FEMA strategies show the importance of linking funding decision-making with the local level through rigorous databases. FEMA also acknowledged that conventional housing reconstruction approaches were insufficient. Therefore, unconventional housing reconstruction approaches are linked with the local context, demonstrated in this case study by the need to create various programs to assist the return of the high number of the low-income population in New Orleans. Housing construction rather than assistance programs or rental repair programs were proven to increase permanent housing options.

Also, the strategy addressed institutional management issues. For instance, it delegated the lead responsibility to provide permanent housing after disasters to HUD. This means that After



Katrina, the leading role for providing permanent housing after disasters changed from FEMA to HUD. Giving HUD a more significant role was implemented in response to the 2008 Gustav and Ike hurricanes. However, this agency could not deliver sufficient housing units without solving the issues that hindered HUD's capacity. FEMA later changed its policy to less reliance on HUD because their response depended primarily on the voucher-based program, which would negatively affect the affected community's livelihood if they had to resettle somewhere further from their original community. This case study shows that the decision to deliver more responsibilities to a specialized establishment for housing reconstruction after disasters should be accompanied by the necessary resources and flexibility in regulations.

### 2.1.3. The Role of local state government in the Reconstruction

The local government is the closest to the affected people, so they are more aware of their needs and the overall context. However, the level of linking community participation with local government engagement in decision-making was low. For example, the government ultimately decided whether people could build in a given place ([National Academy of Sciences,2011](#)). The city is locally governed by a system of mayor and council government consisting of seven members. Therefore, the decision-makers on state and city levels were the Louisiana Recovery Authority LRA, the governor's office, and Bring New Orleans back commission BNOB appointed by the mayor of New Orleans; each had initiated their urban planning processes. The Louisiana Recovery Authority LRA had a plan called "Starting Point," which contained their recommendation for rebuilding selected neighborhoods and public spaces ([Urban Lan Institute,2005 in Laska and Leatherman,2006](#)),

#### 2.1.3.1. *The Road Home Program*

Louisiana Governor and the LRA administrated the program with federal funding. The goal was to provide up to 150 thousand dollars to eligible people. However, bureaucracy hindered the reaching of the goal. The staff had to go through a complex process of completing applications, correcting applications, completing initial interviews, finalizing damage assessments, proceeding to close, and closing and distributing funds ([Desolate, 2007](#)). The program was described by The Catholic Charities of the Archdiocese of New Orleans as being "slow and underfunded" ([Catholic Charities of the Archdiocese of New Orleans. 2009](#)). At the end of 2007, only 31% of the applications were resolved, and a \$5 billion shortfall was estimated. The program could only close applications for 23.1% of the city's damaged housing stock ([LRA,2007 in Green et al.,2011](#)).

### 2.1.3.2. The Bring New Orleans Back plan

Bring New Orleans back commission was funded by the Rockefeller foundation, Greater New Orleans foundation, and others, the plan consisted of Their vision for more sustainable, equitable community, with a vision to preserve the architecture, heritage and landscape of the city,(Laska and Leatherman,2006), this plan was created by few government officials including White House officials from the Bush administration, private sectors stakeholders working with a group of experts with little participation of the affected community, the plan proposed the construction of a new regional rail to connect the city to the employment centers and the airport, and creating new parks in regions that were heavily flooded, the approach to choose the placement of the new parks was to let people return and rebuild the city, then evaluate the rebuilding after three years, and remove the neighborhoods that were not up to the standards, and proposing temporary housing for the displaced who were unable to settle. (UNOP Citywide plan)

The public opposed the plan for being "a heavily politicized project that advocated for the creation of greener city through government financed buyouts" (Quigley in Maione,2019), which aimed to shrink the city and change the city's characteristics. This public opposition shows that affected communities usually influence the decisions related to changing the architectural identity of their settlements after disasters.

The city council raised questions about the equal ability of the community to rebuild their neighborhood. This debate led to the refusal of the plan by the city council, and the city council issued a law that promoted delivering aid based on need. The local government's refusal of the plan led to FEMA's failure to deliver funding to initiate the plan because FEMA's policy supported local recovery planning. This discrepancy between local government and FEMA exemplifies the local decision-makers affecting central decision-making.



Figure 2-15 The Bring New Orleans Back plan, courtesy of Times-Picayune,2006

After one year, no plan was implemented, so individual neighborhoods started rebuilding with assistance from the mayor and city council. Seventy-three neighborhoods were recorded to receive such assistance<sup>2</sup>. The building codes were not issued until later into the recovery phase, which resulted in many people rebuilding houses as vulnerable to flooding as they were, with no elevation from the ground or wind resistance measures. The assistance prioritized the recovery of the high ground and damaged areas, which raised questions of equity within the African neighborhoods. Even more, some researchers claim that government policies increased the chances of gentrification by prioritizing the recovery of high-value neighborhoods (Maione, 2019). The media generated those claims of inequality in housing assistance for African Americans and people experiencing poverty. Some researchers like Laska and Leatherman (2006) claimed that African Americans participated in reconstruction planning committees.

In December 2006, the city council initiated the Lambert Plan with 3\$ million of federal funding. The plan involved rebuilding 49 of the city's 73 neighborhoods, with the participation of the community in planning. In contrast, the city council ensured coherence with the overall plan for the city regarding shared priorities and issues.

Engaging the affected communities was ensured through meetings with the locals, the type of decisions that the community was addressing the current conditions (linking expertise with local context), then reviewing the city council's planning concepts and agreeing on goals (providing needs decisions), then choosing the details of the projects and the priority of implementing them.

<sup>2</sup> City of New Orleans (2006) *Mayor, City Council, Civic Leaders Agree on “Unified New Orleans Neighborhood Plan”* available at [www.rockfound.org/AboutUs/FoundationAnnouncement/167](http://www.rockfound.org/AboutUs/FoundationAnnouncement/167).

The plan was finalized after one year of Katrina. Although the city council approved the plan, the plan was suspended a week later because it did not include planning for the "Dry neighborhoods" LRA announced a new plan named "the Unified New Orleans plan"(Olshansky and Jhonson,2008).

#### *2.1.3.5. The Unified New Orleans Plan*

In 2007, the LRA gained funding from the Rockefeller Foundation for the " Unified New Orleans" plan with the affected community's involvement in decision-making. The parties that constructed the plan were the LRA, Rockefeller Foundation, Greater New Orleans Foundation, and City Planning Commission, and a consultant team comprised of a member appointed by the mayor (Maione,2019), one appointed by the city council, a third by the city planning commission, a fourth by Greater New Orleans Foundation and five citizens representing their districts. The teams had regular meetings with disagreements concerning the plan and other managing and administrative issues. The plan consisted of three phases: assessments of needs and goals, identifying project scenarios to achieve goals, then deciding the recovery plan according to the priorities. Community engagement was done by conducting meetings to decide on district-level plans.

The displaced community was engaged in the decision-making, even though that posed a logistical challenge to reach out to them. The communication was done by hiring a third party (AmericSpeaks) to invite the community to participate and record their participation input to analyze the participation level and demographics. Significant logistic efforts were put into ensuring this participation, including providing meeting rooms, computers, keypads for inputting answers, and broadcasting. These efforts resulted in a well demographic representation and effective community participation. The community had a role in deciding key issues (Olshansky and Jhonson,2008). like deciding to use standards that reduce flood risk (decisions related to increasing resilience for future disasters), building affordable housing (providing needs decisions and ensuring equity), and encouraging rebuilding houses close to each other. (a decision related to the community's sense of belonging to their neighborhood)

The plan succeeded in shifting planning from one that had the participation of outside influencers wanting to transform the city to their vision to a plan that reflected the community's interests.

The plan was completed in January 2007 with various priorities and strategies for different areas and an implementation plan addressing the needed resources. The plan also included estimations of costs which reached 14\$ billion in total. However, the plan did not address how to fund the

plan. This shortfall of failure to address financial and institutional constraints while making decisions led to insufficient funds to meet the plan goals; therefore, the plan needed to be more aspirational than practical. There were no specifications on the sequence of how to spend the funds available. Ultimately, real decisions had to be made according to the available funds (Olshansky and Jhonson,2008).

The mayor appointed the Office of recovery management ORM to create an actionable plan from the Unified New Orleans Plan. To do so, the staff reviewed the previous plans' priorities and ideas and analyzed the patterns of settlements. The final approach was to combine several large-scale investments in heavily damaged areas with smaller investments that provide faster rebuilding rates while focusing on commercial areas to generate more private investments and stabilize neighborhoods. This approach efficiently considered the needs of the community with the needs of urban development and connected the planning with the available capacity.

The approach reduced the cost from 14\$ billion to 1.1\$ billion, which was later reduced to 442\$ million (Crutcher,2010). The sources of funds were: federal assistance, state funds, the sale of city bonds, and new bonds backed by city-owned blighted properties (Tang,2011)

the final plan that met state and federal requirements was approved almost two years after Katrina. the plan had several factors that shaped decisions concerning budgeting: (Brunsma et al.,2010)

- prioritizing infrastructure, housing, and commercial projects.
- Prioritizing issues addressed in meetings with the communities
- Supporting actions necessary for rebuilding, like blight removal and target area investment

#### *2.1.3.6. Implementing the plan*

Even when the plan was approved and actionable, attaining federal funding was hindered by bureaucratic procedures, mismanagement, a conflict between authorities, and a lack of capacity, resulting in delays that halted the rebuilding for over three years.

The funds used for the long-term rebuilding faced delays because the state government made the critical decisions on using public assistance funds, and they favored using the aid for statewide programs instead of assisting the heavily damaged areas. This restrained the capability to accommodate funding to local conditions and needs (Stoker and Rich,2006). this preference for the top-down decision-makers for statewide programs reflects the limited ability of the local decision-makers to manage funds, therefore, the limited flexibility of the local government in creating and executing plans.

Moreover, until 2007, the Louisiana state-based eligibility of providing tax-exempt bonds to projects that were first to come instead of prioritizing the most affected areas. Even when this policy changed, a large portion did not receive aid due to local conditions in these areas not matching the recovery bond tool. (GAO a, 2008). Also, the overwhelming workload meant that FEMA had to recruit new staff that was still untrained. Recruiting untrained staff led to mismanagement of documents, like loss of details, losing documents, and lack of documenting decisions which often led to changes in decisions. (GAO b, 2008)

bureaucratic procedures caused delays; the presence of many steps and levels of decision-making complicated the process of approving the FEMA public assistance program. HUD took time to ensure compliance with regulations, select staff for managing applications, and process the applications, which were done in two stages.

By August 2010, the plan and funds were secured, and the implementation phase was initiated. Several challenges were present at this phase, most notably coordinating many projects simultaneously with multiple parties involved, the task of coordinating efforts was given to the Office of Recovery Management ORM, but the office lacked resourced and trained staff. (The New York Times magazine. 2006)

The city focused on investing in recovery projects in 17 zones. However, the resulting pattern of rebuilding worsened the inequality. For example, supermarkets opened more often in higher-income neighborhoods, and the public transportation lines were reduced, adversely affecting the people who did not own cars. (Bullard and Wright,2009)

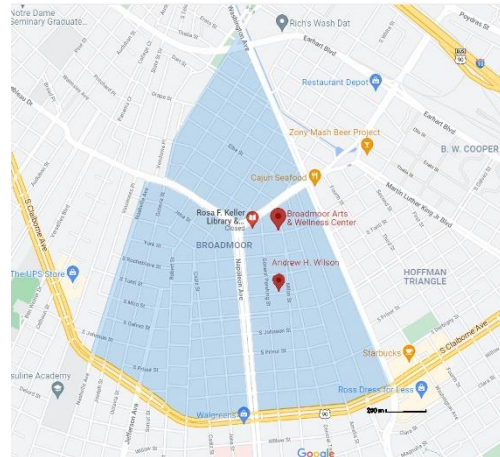
#### 2.1.4. The role of community in the reconstruction of New Orleans: Broadmoor neighborhood

The Broadmoor neighborhood case study will discuss the affected community's efforts and how they affected the reconstruction by examining examples of neighborhoods' reconstruction efforts. The Broadmoor reconstruction process was community-driven, which involved many meetings with the residents that expressed their ideas and needs, hence why it was chosen for a more detailed review. Broadmoor is located on low land between the river's levee and Metairie Ridge. The neighborhood remained undeveloped until the streetcar was established in the early 1900s. During this time, infrastructure was developed, and new residents settled in. Before the hurricane, the neighborhood had about three thousand households, mostly low-income residents.



#### 2.1.4.1. The reconstruction process of the Broadmoor neighborhood

The community started to act after publishing the BNOB plan, which depicted the neighborhood as a possible green space area. The plan sparked a small rally and community meeting held by the Broadmoor Improvement Association BIA. One activist named Hal Roark presented a plan with the same BNOB principles but answered the community's needs. Then, a committee was formed to recruit volunteers, and the meeting concluded with a vote in which most people favored returning to rebuild rather than selling their properties. (Bennett, et. al,2007)



*Figure 2-17 Broadmoor neighborhood and the educational landmarks placement, (google maps)*

The organization helped monitor repopulation progress, promoting the return to the neighborhood by placing lawn signs and initiating a rebuilding plan with Roark and Mark Morice, chief of BIA Cantrell, and Doug advisory (senior at Harvard University) with central roles.

The BIA partnered with Annunciation to provide office space and support fundraising infrastructure. It also had a role in the decision-making. Universities like Harvard and Brad College offered the BIA technical and intellectual support. Funders such as Clinton Relief and the salvation army provided financial support. (Danley,2018)

Planning was initiated by dividing the neighborhood into three sections to facilitate smaller meetings with the community to decide priorities. Differences usually arose in the weekly meetings, which were addressed in separate meetings. Sub-committees were established: one for urban planning, economic development, and public services, and one for overseeing the final plan. The urban design plan was presented in a workshop for review. The final plan created in 2006 included the goal of rebuilding 80 percent of damaged buildings through 5 strategies. The plan also analyzed the conditions before and the current situation in the neighborhood and proposed a few projects for the neighborhood's future development. (Broadmoor Improvement Association Inc. 2006).

The first strategy was developing four neighborhood nodes to support commercial activities. The plan for three different nodes consisted of general concepts such as providing green space and medical facilities. The fourth node had more details, including rebuilding around a school and a

library. The second and third strategies were re-population strategies, through connecting with the displaced and rebuilding houses with the help of NGOs to repair the houses and promoting programs to facilitate home ownership. The fourth strategy was improving life quality through many public service projects. The fifth was an implementation strategy that dealt with time, detailed tasks, and specifying institutional management bodies and partnerships, such as creating Broadmoor Development Corporation BDC. However, this body had little success building housing because it needed more capacity for staff, authority, and funding. ([Broadmoor Improvement Association Inc. 2006](#)).

Overall, the plan was participatory, which helped to identify the community's needs. However, like the Unified New Orleans Plan, it failed to link the priorities to the capacity available because too many high-priority projects did not respond to the capacity available. This failure was because the participatory approach divided the neighborhood into three blocks; the sub-plans identified each block's needs and proposed projects that answered those needs. The final plan added all these projects into one plan, including 110 projects, 74 labeled high-priority projects. Ultimately, the primary strategies were included in the overall city plan ([Scott, 2008](#)).

Nevertheless, there was still a need to decide on priorities and obtain funding for the neighborhood reconstruction. This case study demonstrates that one of the negatives of community participation is that it hinders identifying priorities because participatory decision-making is complicated, especially when the groups are from different backgrounds. Hence, they represent a large margin of different interests that are complicated to synthesize.

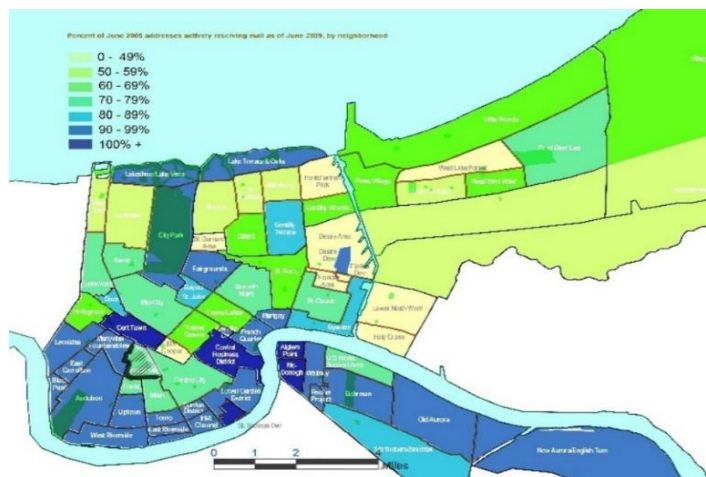
Approving priorities from a wide range of needs can be worked on when decision-makers agree on the criteria. The criteria for choosing priorities were choosing projects with a high possibility of succeeding. The rationale was to build trust and momentum for the reconstruction efforts, thus, convincing more parties to join the efforts. The other priority was to rebuild the school and library, which would also convince more people to return. The rebuilding of these two facilities, Rosa Keller Library and the renovation of Andrew Wilson School relied on volunteers. It raised funding ([Broadmoor Improvement Association Inc. 2006](#)) which proves that community participation in planning increases the sense of responsibility of the community in taking an active role in the implementation.



#### 2.1.4.2. The outcome of the reconstruction process of the Broadmoor neighborhood

After five years after the disaster, the Broadmoor neighborhood had several successes and challenges in implementing its plan in a review of the re-population goal. Statistics comparing the neighborhood with the adjacent Hollygrove neighborhood with a similar population before the disaster showed faster rates of re-population in Broadmoor. However, the re-population in Broadmoor was not even in spatial and racial senses. Housing in the higher income areas had more chances of being repaired, while the poorer areas had twice fewer vacancy rates.

Overall, it was noticed that through effective community participation, the Broadmoor neighborhood increased its reconstruction capacity significantly, which had positive outcomes in increasing the pace of residents returning to the neighborhood. The Broadmoor neighborhood experience proves that community efforts can be institutionalized into having a more professional Role in reconstruction. Even though there were positive outcomes in a few neighborhood-based recoveries, according to Brand and Seidman (N.D), there was competition among neighborhoods for scarce resources. There were no efforts to build the capacity for the community to achieve its goals; therefore, community-based recovery was, for the most part, a spontaneous action rather than a planned strategy.



*Figure 2-18 the percentage of addresses actively receiving mail in 2009, Broadmoor had about 60 to 70% returning rate even being fully fluded in 2005. courtesy of U.S Cenus.*

The case of New Orleans after Hurricane Katrina shows how the institutional arrangements hindered effective decision-making. The institutional arrangements had high levels of bureaucracy, poor definitions of roles, dysfunctional communication lines, weak coordination between decision-making and implementation bodies, and a lack of reporting mechanisms. The weaknesses in the institutional arrangements led to delays, complex plans, frequent changes of plans, and confusion in approving priorities.

On the other hand, the New Orleans case shows a positive experience in community participation in decision-making in the Unified New Orleans Plan. In the grass root initiatives such as the one in the Broadmoor neighborhood, the BNOP shifted the city's spatial planning from a plan influenced by elite groups to one that reflected the community's needs. However, in both

examples, the planning was poorly linked to the capacity available; one reason was the planning approach in both plans divided the affected region into sections and identified the needs of each section, then compiled the needs into one plan without outlining the priorities of the effected region according to the funds available.

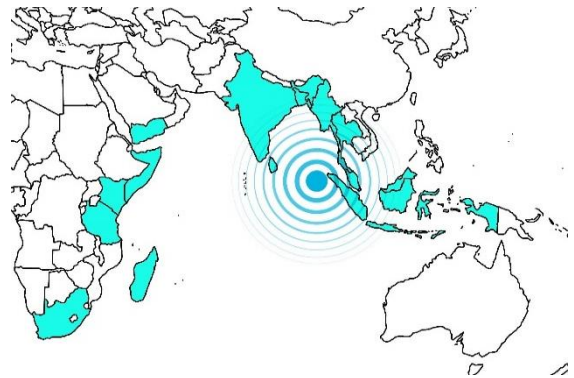
## 2.2. The 2004 Indian Ocean earthquake and tsunami. Aceh, Indonesia

On December 26, 2004, an earthquake of 9.1–9.3 on the Richter scale struck the coast of the Indonesian island of northern Sumatra, Indonesia. The earthquake caused a tsunami that affected 14 countries. Indonesia was the most affected; over 150,000 were killed, and over 500,000 were displaced (Meisl et al.,2006). Two districts among nine districts in Aceh were severely destroyed. Another six were destroyed. Only three districts had minimum damage.

Banda Aceh was the largest city affected by the tsunami in Indonesia. Sixty-one thousand sixty-five people were killed in Banda-Aceh alone. The percentage of mortality was 22% (Rofei et al. 2006). The tsunami caused severe damage to the area, 17,219 houses were heavily damaged, and 4,193 were partly damaged. (BAPPENAS,2005). up to 5 million people have been affected in Aceh alone. Estimations showed that the total loss was 97 percent of the provincial GDP. Agricultural and fishery sectors and small businesses were the most affected. (Ali,2016).

The disaster brought significant attention, and the pledges from national and international organizations reached 800 million dollars (OCHA, 2005). the initial response was through the national effort with military involvement. Then international assistance was allowed. Different countries deployed one of the largest non-combat missions in history. During the

reconstruction phase, 95 agencies participated in the housing reconstruction efforts. The Indonesian government formed the Agency for the Rehabilitation and Reconstruction for the Region and Community of Aceh and Nias (BRR). The agency's mission was to coordinate



*Figure 2-19 Map showing most countries affected by the 2004 Indian Ocean earthquake, (Source: reliefweb, revision hv the Author.)*



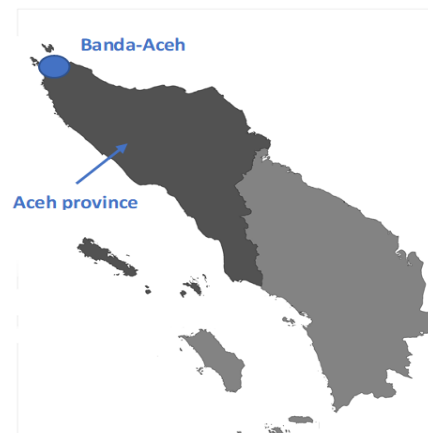
*Figure 2-20 A coastal view in Banda Aceh after two weeks from the tsunami, (Prasad, 2019)*

reconstruction projects. Literature discussing the reconstruction process in Aceh discussed the challenges of reconstruction, such as delays, inadequate planning, poor quality, and inequality, such as in the work of (Boen,2006, Steinberg,2007, Perlez 2006, and Kitzbichler 2011).

### 2.2.1. An overview of the local context in Aceh.

Aceh province was under political conflict for over 29 years before the tsunami between the Aceh Freedom Movement and the Indonesian military. The prolonged social disturbance affected the resilience of the region to disasters. The poverty caused by 30 years of armed conflict was one of the reasons for the extensive damage caused to the housing sector. Moreover, social gatherings were restricted, and community assemblies were decreased substantially; limiting social gatherings had decreased the community's capacity to engage in decision-making effectively by organizing themselves independently from governmental influence.

Aceh province consists of small villages scattered along a narrow strip of the coastline close to the highway, with few urban settlements comprising less than 20% of the Acehnese population. Most of the villages have less than 1000 inhabitants. The region's income sources derive from fishery, farming, and raising livestock. Before the tsunami, the province's rural areas had suffered more from the conflict than Banda Aceh, the capital of the Aceh province. The forming Achenes civic society groups were divided based on demographic, socio-economic, and socio-political aspects, including the separation between rural and urban



*Figure 2-21 Aceh province and Banda-Aceh city location*

operations. The separatists were divided into an urban-based Pro referendum movement and rural-based GAM guerrillas. Bunnell and Miller (2013). Travel between Banda Aceh and other parts was restricted. The previous factors contributed to the city being more isolated from the rest of the province and the central government, ultimately affecting the dynamics between the city and its surrounding rural settlements in the reconstruction phase. The separation between rural and urban settlements led to waves of immigration from rural to urban settlements, where more industries and services were located in urban settlements (Miyata et al., 2018). these demographic changes were not accommodated with administrative changes to support the development of the dwellings. The demographic changes also brought about changes in land use from agricultural to urban, resulting in land price changes. Hence, spatial and socio-economic issues were increasing, presented in increased informal settlements.

The high isolation level between the rural and urban settlements affected the reconstruction of Aceh. It was reflected by the difference in the reconstruction process and the reconstruction outcomes between rural and urban reconstruction. The significant number of victims in Banda Aceh brought international attention, thousands of victims required humanitarian aid, this is partly focused on the response of the aid agencies in the urban Aceh, also, the focus on distributing aid in cities might be in part because it is easier to access and navigate through, prioritizing aid to the urban settlements however led to waves of migrations towards the cities, the NGOs had little understanding of the already ongoing trend of migrations from the rural to the safer urban settlements, which exacerbated the issue even further, the inequalities between the rural and urban were discussed in the Helesinki peace agreement in 2005, in 2006, a law of governing Aceh was agreed upon that defined the relation between Aceh and Jakarta , and between Banda Aceh and the other areas, the law allowed for the province resources to be devolved directly to Banda Aceh administration before being distributed to the other 2 sub provincial demonstrations, the decentralization was contributed by [Bunnell and Miller \(2013\)](#) to conflict related factors such as massive infrastructure damage, and Jakarta refusal to release oil and gas revenues to Aceh.

In short, the NGOs that worked in reconstruction did not consider that the Acehnese was not a homogenous community with the exact needs. They differed in needs and conditions between urban and rural geography. This little consideration emphasized the inequality in distributing resources. It exacerbated the already going migration and political issues, which could be lessened if the donors prioritized the development of the rural areas. The following section details the difference between rural and urban reconstruction.

### 2.2.2. The Reconstruction of Rural Aceh

The primary implementing approach was donor-driven through contractors, with coordination through the BRR as the governmental authority and participation of the affected community. The BRR Coordinated the reconstruction. The implementation was given to national contractors or was self-built. Implementation agencies, NGOs, or a third party monitored the construction quality. While monitoring the construction progress was made by an NGO or the BRR facilitators. The approach for delivering aid in Aceh was mainly through housing delivery without payment obligations. This type of aid was possible because of the funds available. The houses were built through contractors. The approach is a top-down decision-making approach. Other approaches used were loans or self-built.

#### *2.2.2.1. The Role of the Stakeholders*

Reconstruction, in the case of Indonesia, was mainly a donor-driven approach. A large number of organizations participated in the reconstruction. Among 100 participating organizations, 15 accounted for 80% of the houses built (BRR, 2005), most notably the Multi Donor Fund, UN-HABITAT. Implementation was initially attended to be owner-driven. However, the lack of skilled labor among the affected community led to relying on local contractors. The NGOs supervised the implementation and managed costs, quality, and timeframe. They sometimes oversaw the training of labor. Local contractors had the role of implementing the construction. Not all contractors had adequate skills, and some failed to adhere to quality standards, abandoning some projects or building poor-quality housing. Many contracts failed to meet objectives due to weak contracts that led to decreased ability to hold contractors accountable and the lack of supervisory capacity. Many NGO programs working in rural Aceh demanded an organizational structure to coordinate the efforts. The BRR was established mainly for this coordination goal.

#### The role of the local government

After the response phase, the housing recovery process was initiated by appointing the National Development Planning Agency (BAPPENAS) to coordinate the process with the different agencies. BAPPENAS and the Ministry of public works initiated the housing recovery planning. The master plan was released in April 2005, which included zoning regulations. The plan received discontent from the public. Moreover, the BAPPENAS and some central government parties had discrepancies that led to establishing the BRR, which consisted of an advisory board, supervisory board, and exciting agency. The role of the BRR was to coordinate the recovery and develop the programs. The BRR authority was further strengthened at the end of 2005 to become the leading authority in recovery (Steinberg, 2007).

The BRR (The Rehabilitation and Reconstruction Agency) had the role of coordinating reconstruction efforts. through the mechanism of "concept notes." The "concept notes" mechanism is when the NGO that wants to participate in reconstruction presents a housing program proposal. It gets reviewed by an organization for approval, such as the BRR. The BRR monitor implementing the program to assess the progress and quality of construction, all information related to the NGO's program is stored in a database to assist in the decision-making and solve issues during the implementation phase, such as land issues, needs assessment, spatial planning, and defining housing cost ranges for housing types and their infrastructure. (McKeon and Mashrafe, 2016)



## The Role of community participation in the rural reconstruction of Aceh

Before the tsunami, community activities were organized by rituals and cultural norms. Each village had a village leader called (Keuchik), a religious leader (Teungku), and village elders (Tihapeut). These Figures usually play the role of making decisions in village meetings. However, the 30 years of conflict in the region contributed to how decisions were made in the reconstruction phase. While there was some form of independence in decision-making, heavy surveillance and intimidation of the community hindered the decision-making process. The conflict, therefore, affected the decision-making process after the disaster. Another form of decision-making gathering means was through "family and neighborhood gather" and "village institutions." (Thorburn,2007)

Although the decision-makers emphasized the importance of engaging the affected community in the reconstruction, their role was limited to consulting them through the Village Development Committee (VDC) to learn about their housing needs. The VDC consisted of elected committee members and a chief. They acted as the presenters of the affected community interests, such as ensuring the needs of the vulnerable were met, managing community expectations by informing them about the progress and acting as the connector between the community and the other stakeholders.

The case of Indonesia provide us with a positive example for community participation, A survey by University of Syrah Kuala in cooperation with UN-HABITAT published two years after the tsunami showed that most beneficiaries outside Banda -Aceh were satisfied with the houses, however, in Banda-Aceh the majority of beneficiaries were not satisfied with their houses, this indicates that the decision of community participation led to more positive outcomes in places where it was implemented like in the places outside Banda-Aceh, a report by the Aceh Community Assistance Research Project (ACARP) conducted field work through three years after the disaster in several Acehnese villages, it concluded that in the villages that had more involvement of the non-governmental local bodies, and in the villages that integrated their decision making with the different stakeholders had performed better than the villages that were led by a single Figure (mainly the village head), this approach of having group decision making was also found to increase transparency and accountability, the local reconstruction efforts were coordinated with the government through the village head (Keucik) who was a local leadership Figure that had the role of facilitating governmental involvement in the recovery, or through having leaders of the recovery programs being part of the government. (Thorburn,2007). the process of participation was as follows:

The housing reconstruction process used to differ according to the land availability and assessment; usually, Working groups are established consisting of 5-15 households, selected by the committee or elected by the community, then the community conduct self-surveys to assist damage and defining beneficiaries for new houses, the community work in spatial planning with the professionals, Community land mapping: The participatory spatial planning example in Aceh was through community mapping, which included members of the community drawing a map of their community prior to the tsunami with all the roads and buildings, this map later becomes a reference in developing the spatial plan of the reconstructed village.

The affected community also participated in discussing housing designs, the implementation planning was then conducted, and proposals were presented; when approved, funds were disbursed into the group bank account, and the construction phase was initiated; the World Bank managed the information through the Management Information System, where they could solve problems by checking data on the name of facilitator, name of the beneficiary, and progress of construction, In Banda Aceh, among 52 villages, a reported 39 were recorded to had carried out planning processes, this is due to as mentioned earlier, the weak capacity of the local governments after years of conflict. (Ochiai et al.,2009)

the following activities are included in a typical process of participatory reconstruction process:

- Organizing community and electing committees and working groups.
- Conducting surveys.
- Setting spatial plan:
  - Land reuse discussion.
  - Topographic survey.
  - Community land mapping.
  - Housing plot draft.
  - Discussion of village plan scenario.
  - Scenario signed by residents, representatives, and government officials.
- Setting implementation plan.
- Signing community support program.
- Applying for housing grants.
- Obtaining funds through a group bank account.
- Construction activities.

During the planning phase, two types of governmental facilitators conducted meetings in villages. Facilitators were structured in groups of one senior facilitator and another five members, tasked to manage around 200 housing projects; they issued weekly reports to their seniors. There were two types of facilitators, one with technical backgrounds that worked in designs, and the other type had the role of socializing with the community and working on selecting, training, and organizing community groups to work in the reconstruction. Some of these groups were formed for monitoring and reporting, and solving issues that occur among beneficiaries; another committee was selected to work on knowledge transferring from the experts by a "learning by doing" approach, where they learned seismic resistant construction techniques such as how to bend iron for bracing, rigid joints, material ratios, they also had training in housing design and field supervision. The facilitators also had the role of assisting the committee in collecting data and assessing the damage to define beneficiaries.

During the implementation phase, the recruited facilitators assisted in site preparation, teaching the community groups how to manage construction materials resourcing and evaluate material quality. They later worked in monitoring and inspection during construction and in financial management by supervising the use of funds. The facilitators reported all related data to the BRR officials.

Some projects fully engaged the community in the reconstruction process. Other projects only involved the community in the design or implementation phase. Some implementation agencies limited their meetings with community representatives and officers; a study by [Azmeri et al. \(2017\)](#) showed there were areas where it had low community participation, which caused unoccupied houses due to poor quality of services, and dissatisfaction with the design of the houses.



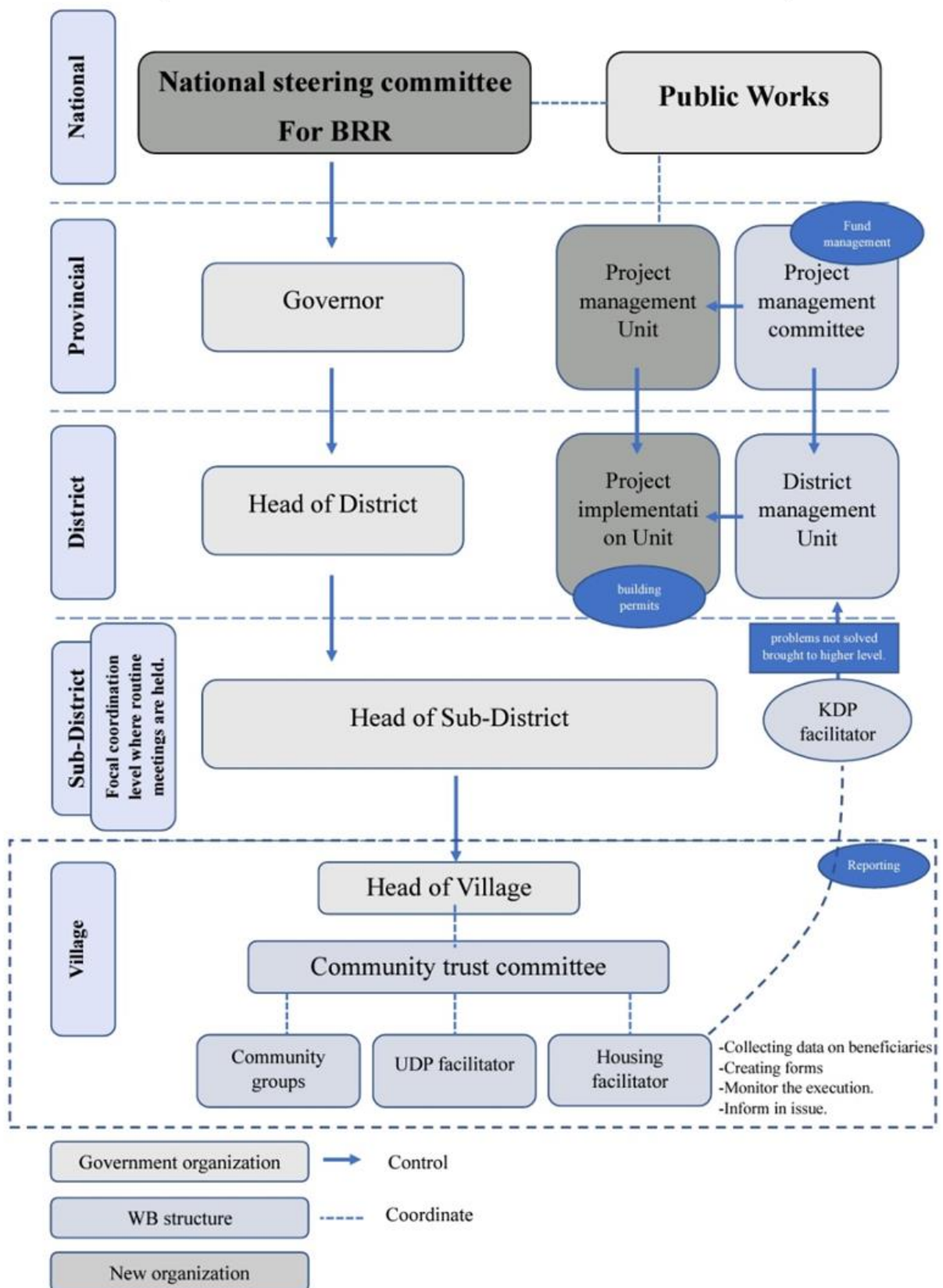


Figure 2-22 Organizational structure for Aceh reconstruction (WB, 2005), realized by the author

### Community participation in relocation decisions

One of the most impactful decisions that could be made in the reconstruction process is building on-site or relocating. Many damaged areas were not rebuilt on-site, especially the settlement along the coast, as they were regarded as hazardous and were relocated to transitional houses waiting for permanent housing reconstruction (Daly and Rahmayati, 2012). Relocation decisions were not linked to the importance of familiarity to the survival in livelihood means and the built environment but somewhat related to the availability of land, which was challenging due to the significant number of families that needed relocation. There was the need to relocate 1200 families due to having their houses permanently flooded. The relocation usually is challenging because of the need to acquire land and the need for the beneficiary's consent. Other challenges include the challenges of providing construction materials and the provision of adequate infrastructure.

We examined the relocation decisions in this section by reviewing two case studies: the relocation of Gampong Baro village and the compound of Panteriek.

The Panteriek village was approximately three km south of Banda Aceh city center. The new site location of the compound was in a previous swamp land before the tsunami. There were discussions among village leaders to create a park on this site. The site is a few meters away from the previous village location, with a river crossing behind the new compound. The site was previously private ownership that was sold to the BRR.

The compound's population was not all from the old Paneteriek village, which had about 1055 inhabitants, while the new compound had 3209 inhabitants by 2011. Newcomers occupied the compound from surrounding areas; the settlers worked mostly in fishery, construction, trades, and services.

The relocation decision was made mainly by the participating NGO, which planned and designed the settlements without community participation. BAPPEDA and the NGO initially did the housing allocation but later changed to the mayor of Banda-Aceh and the NGO due to discrepancies between the two agencies. The NGO allocated 200 homes. The mayor allocated another 200 before changing the partnership to the BRR and finalized the allocation with 300 homes through the lottery system.

The new compound integrated new public services, such as a primary school where the village did not previously have one, a health clinic, and a sports facility. However, there was segregation between the occupiers of the compound and the villagers in the old site. This segregation was because the new occupiers of the compound were from different areas. Socio-cultural issues were observed in the village; the new communities had different traditions, such as in funerals, and the new inhabitants had shown little participation in funeral rituals; for example, there seemed to be minimum interaction between the two communities (Panjwani, 2013).



*Figure 2-23 arial image of the Panteriek compound before 2004 and after 2009, (Panjwani,2013).*

The original village was located on the coastline; due to the disaster impact, the original site was submerged, which made the relocation decision unavoidable. The submersion of the old village also caused a loss of data, making it difficult to obtain population or damage data before the tsunami. The new location of the settlement was close to the coastline, near a main road on an elevated hill. The closest village to the new site is the village of Durung. A religious leader previously owned the land in the nearby village.

The relocation involved many actors, including a new village head, the village secretary, and several NGOs. First, the community was approached by an NGO offering to build houses when the land was available. Villagers sought the help of other NGOs to provide the funding to buy the land. After negotiations with the neighboring Durung village, the land was transferred to the authority of Gampong Baro, interactive communications were conducted between the community and the NGOs during construction, and the villagers even helped build houses themselves, and the villages engaged in planting rehabilitation.

The built houses adhered to the BRR guidelines, mostly the 36 sqm per unit, which did not comply with the community's long-term needs. Also, livelihood issues were shared, which resulted in changes in their economic activities. While most villagers used to work in the fishery, their income sources changed to agriculture and sales; also, the new settlement lacked public services, such as a school and waste management. (Panjwani, 2013).

The most noticeable difference between the two cases is in the participation level in the decision making, the relocation process of Gampong Baro was participated, the villagers had a role in

acquiring the land and in the construction, while the Panteriek compound had low level of participation, even though the compound had sufficient public services that the Gampong Baro lacked, the socio-cultural impact of the non-participatory process in reconstruction of the compound had challenges to reverse negative impact on the recovery of the village, it is true that the Gampong Baro village lacked services, but integrating these services to achieve successful recovery was more accessible than the resolving the socio-cultural impact in the Panteriek compound, where the new compound was integrated into the existing village structure and the occupiers of the new settlements were mostly from outside the original village, it is noticeable that the lack of community participatory decision making often lead to negative socio-cultural impacts.



*Figure 2-24 the new settlement of Gampong Baro, (Panjwani,2013)*

#### *2.2.2.2 the Outcomes of Reconstruction of Rural Aceh*

##### Fragmented recovery due to lack of cohesive plan and management

The housing recovery plan faced several revisions through the first two years due to changes in budget, understanding of the local context and constraints, and changes in the institutional arrangements; this caused confusion among the many NGOs participating in the recovery. Over 12000 projects were being implemented between 2005 to 2008 in Aceh by more than 300 agencies (Kitzbichler, 2011); the considerable number of agencies and funds involved needed coordination which was managed by the BRR, however, the lack of cohesive plan in managing reconstruction by the local government led to inequality in delivering houses, like the lack of uniform database, while many victims did not receive housing aid, some others were able to obtain two houses from different agencies, which when detected were deemed illegal and the houses were left unoccupied, also, some areas had more success in achieving houses number goal than other areas, this was due to approximately to coastal areas where it was more challenging to access, or due to land issues, moreover, conflict areas were often neglected, and as mentioned earlier, NGOs preferred to implement recovery projects in urban areas like Banda-Aceh city because it was more accessible and better resourced, which affected the rural areas recovery.



*Figure 2-25 building houses on shoreline, and the lack of spatial planning in Lambung village, (NAD-Nias,2009).*



Also, due to a lack of governmental support in managing resources, challenges of availability and costs of construction materials arose. There was no plan to control resource competition among aid agencies or contractors, local production and transportation capacity, and high demand for specific materials. The previous factors increased material costs, leading to NGOs' lower engagement over time.

Another issue was the poor recovery of infrastructure, which was the government's responsibility; lack of infrastructure was a common complaint among many constructed housing settlements, such as lack of sanitation and water systems and roads linking the constructed houses to the main transportation lines.



*Figure 2-26 An aerial view of the relocated housing complex from China Charity in Neuheun, with a spatial plan implemented. (BRR/Arif Ariadi).*



*Figure 2-27 no integration between spatial planning and the constructed houses. Here we can see that houses built left with no proper layout planning, accommodating roads or infrastructure (Boen,2012)*

The construction materials cost increased significantly because of weak governmental management, which led to a decline in the NGOs and other agencies' engagement, where they avoided making additional commitments; this issue of declined commitment led to a 20% shortfall in reaching the agreed goals with the participating NGOs. Another negative outcome was neglecting to require the participating agencies to provide infrastructure. The level of transparency varied throughout the villages. Even though all villages were subjected to the same accountability and reporting requirement from the district government, BRR, and donors, the accountability outcomes varied among the villages. Another accountability-related issue is the avoidants of the participating parties to engage in rehabilitation compensations, where their preference was more in the guideline of providing new houses rather than delivering cash compensations. (BRR,2006), that can be attributed to poor regulating contracts between the NGOs and the government.

### Poor quality

Before the tsunami, the construction industry faced challenges due to the conflict in the small private sector. Local contractors depended on governmental contracts such as roads, bridges, and small to medium-scale construction projects, which created unhealthy competition among contractors; they did not invest in developing their human or technological resources. Depending on the local contractor to implement reconstruction was a popular approach used by aid agencies in donor-driven projects; this approach accompanied a bottom-up decision-making process where the community defined its needs. However, quality control was not appropriately practiced by the parties responsible for supervision which lacked a sufficient number of trained supervisors. The lack of socio-cultural factors in the housing designs, lack of seismic resistant features, not adhering to specifications of the drawings, concrete mixture issues, low-quality materials, and low-quality workmanship were all results of the issues of poor quality control. There was a significant amount of poor-quality constructed houses. For example, an assessment by LOGICA CHAMP found that out of 24,000 houses, 8000 were of poor quality for inhabitation and needed to be reconstructed. (LOGICA, 2007)

Overall, there was no agreement among decision-makers on the standards to be required. Some organizations referred to the Sphere Projects, others to the UNHCR Emergency Handbook or the Hyogo Framework. Every organization adopted its vision in housing designs, resulting in various house areas, layouts, and forms. For instance, the Canadian Red Cross built houses using imported timber, while many others were built using concrete and masonry.

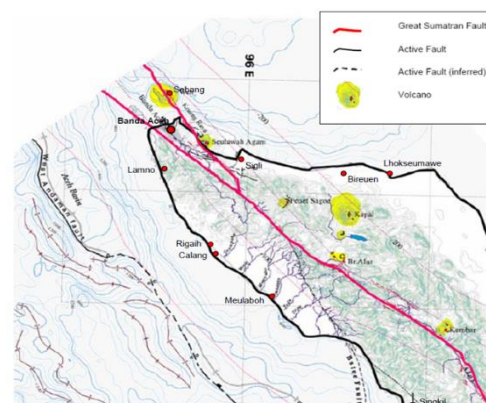
### Lack of mitigation implementation strategies.

Indonesia is a disaster-prone country, especially in floods. During Indonesia's recorded history of disasters between 1815 and 2014, floods were the most occurring (5204 times-18860 victims), while the disaster type with the most significant victims was earthquake and tsunami, occurring ten times with 167,779 victims (BNPB, 2014). Two earthquakes hit Aceh in 2013. An examination of the damages done by Okazaki et al. (2015) revealed similar damage patterns to the 2004 earthquake. Seismic-resistant standards were already available in Indonesia, mainly the Indonesian seismic design code and the 2005 Building Code for Aceh, issued in 2005 to provide minimum requirements for single-story houses, including building type, form, and technical requirements. However, contractors did not follow these standards because of a lack of proper government monitoring and regulation mechanisms. Many houses were built after 2004, indicating the absence of commitment to the seismic resistant principle in the 2004 reconstruction.

The responsibility of disaster management is outlined in law no.24 in 2006, which stipulates the central government with disaster management operations; this law defines the role of the central government and non-governmental organizations. However, [Ali et al. \(2018\)](#) demonstrated through a case study the lack of understanding of disaster management of stakeholders at the level of decision-makers. The researchers outlined the understanding at the conventional level. Also, developing disaster management strategies was not prioritized, which could be a reason for the lack of capacity for disaster management at the institutional level. The mitigation policies made after the tsunami mainly prohibited building 500 m from the shoreline, but no implementation mechanisms were formed. [\(BAPPENAS,2005\)](#). Many communities from this coastal area refused the relocation plans, mainly because they work in the fishery, and relocation means they would not be at close approximate to their livelihood. The previous issues led to the failure to create the green belt that the BRR had planned. The disaster also changed the coastal region's spatial planning regulations. In 2007, the government of Indonesia issued Law No.27, which stated that the coastal area should be managed to be part of tsunami mitigation. However, no significant changes were made in the coastal area's land use for mitigation purposes. [\(Ahmed, 2013\)](#).

#### Absence of a master plan that integrates rural-urban settlements

The BRR worked with other agencies in spatial planning in rural settlements. After they set the budgetary requirements, they identified the priorities. Then they set the location of the future housing to be constructed using available data. However, land issues were a challenge to this process. Some organized groups claimed land, sometimes at the expense of the most vulnerable. To tackle this issue, the BRR and the



*Figure 2-28 geographical features that contribute to increased hazard risks, (Lubowski,et.al,2009)*



*Figure 2-29 pictures of damaged houses after the 2013 earthquake, (Okazaki,2014)*



*Figure 2-30 the vertical escape building . (suppasri,et.al,2015)*

National Lands Agency (BPN) initiated the "Joint Land Titling" project to purchase and donate land to the neediest. Implementing this approach included developing the strategy, acquiring information, training to register staff, and identifying beneficiaries. (BRR,2006)

Another issue that arose from the lack of master planning was that most constructed houses were built in the exact location without an assessment of the location was hazardous. The BRR made this decision because the assessment requires time, even though UNICEF and UNOP officials suggested relocating schools to safer areas based on soil strength assessment. Moreover, environmental issues were also almost neglected in the master plan, waste management in particular; wastes were dumped close to the residential areas or coasts. (Lebowski, et.al, 2009)

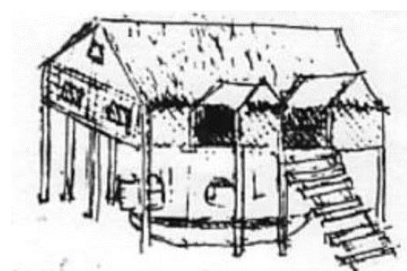


*Figure 2-31 houses built in proximity to the riverside in Alue Naga, (NAD-Nias,2009).*

#### The lack of socio-cultural factor consideration

There was a lack of consideration of the socio-culture context in the design aspect of planning reconstructed houses. For instance, the mechanism of top-down decision-making through setting housing standards through the BRR caused standardized houses (usually 36 m2) regardless of family size. Families in the Islamic culture usually keep close relationships. The head of a household usually tends to have their children marry and keep living in the same house or nearby. Many families found difficulties in keeping their lifestyles as the newly constructed houses did not accommodate their traditions.

Because of the higher demand for constructing more “modern” housing styles made using concrete, bricks, and steel, the Acehese communities preferred modern house styles to reflect their affluence; having the traditional housing style less desirable led to decreased skilled laborers building in this style over time. There was also increased adoption of industrial building materials and techniques after the tsunami and less adoption of the traditional Acehese house.



*Figure 2-32 the traditional Acehese house sketched in the 1800s, (Erna and Izziah,2019)*



Even though the donors had opted for building modern style houses in confirmation for the Acehnese community preferences, the new houses layout and size did not accommodate the lifestyle and needs of the community, the traditional Acehnese house consisted of a 2.5 meter raised bamboo floor supported by wooden joists, a palm leaves roof with king style rafters and posts, and timber planks were used for walls, the houses were considered spacious and the area under the house were used for relaxation, working place, or animal storage, the front section of the house which has a balcony is used to host guest, while the middle section contain bedrooms, and the kitchen is located at the back of the house, the house usually has two entrances, main entrance in the front, and the back is for providing privacy to the family from guests, which is a cultural norm to provide privacy for females from male guests, floor area is around 100 m<sup>2</sup>, (Dall 1982 in Ahmed and Obrien,2009) the new built houses were different from the traditional, reconstructed houses were about 36 m<sup>2</sup>, built with reinforced concrete post and beam space frame with masonry infill walls and light weight metal trusses supporting a metal roof (Kitzbichler,2011). The layout consisted of a living room and two bedrooms, a bathroom at the back of the house, and a small terrace containing the kitchen, in the form there is a narrow terrace; this layout did not consider the gender segregation that was essential in the traditional layout; there was lack of diversity in providing area floor appropriate to the family size, owners opt; as a result to modify their houses by adding a porch for instance.



*Figure 2-33 modifications made to a house, (Ochiai, 2015)*

The significant number of new houses rebuilt that had a different style from the traditional Acehnese house brought to the area caused significant changes in the housing typology. New building materials, techniques, and designs were brought by the international and local agencies that participated in the reconstruction, such as the “Bungalow” type, a building with reinforced concrete, masonry, and corrugated steel sheets. (King,1995)

#### *2.2.2.3. Discussion for the Reconstruction of Rural Aceh*

The rural reconstruction of Aceh case raises questions about the donor-driven approach, and the importance of the governmental authorities in housing reconstruction, There was a high reliance on the aid agencies in the case of Indonesia, and this was reflected in the high expectation from the local community for NGO assistance, and the low involvement of the government in managing recovery, as the government role (presented in the BRR) was to coordinate the NGO involvement,

monitor the recovery progress, and to set guidelines without complying force, this low involvement of the government institutions as a leading role in planning and setting regulations associated with the plans led to fragmentation of recovery efforts, seen in low involvement of NGOs in difficult areas, such as rebuilding in conflict areas, difficult to access areas, or their avoidants to participate in repairing houses.

Another issue related to the BRR role was the lack of mechanisms to solve the issues during the construction. The BRR had the role of facilitating and coordinating, and setting guidelines; these in-authoritative roles were not sufficient to hold NGOs accountable. It is known that NGOs' involvement in reconstruction decreases over time, and without proper accountability measures, many NGOs did not renew their contracts or finished their projects with low-quality standards. Finally, even though community engagement was advised thoroughly, there was a lack of community engagement mechanisms where their feedback was ignored in many cases by the decision-makers, and their participation became a mere formality.

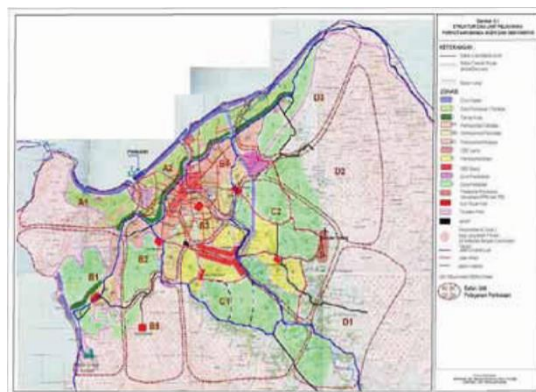
It can be concluded that in a situation where the beneficiaries have no role in the decision-making, organizational accountability becomes essential. Also, in the donor-driven approach, the presence of mechanisms to regulate the responsibilities of participating NGOs is essential. Moreover, having a way to communicate the local context and the needs of the locals to the NGOs was essential. Donors tend to engage in reconstruction with ready-made programs based on their analysis. They often tend to misinterpret the local context, especially the sociocultural aspects, or prefer to implement fast projects to advertise their achievement. However, considering achieving recovery at a fast pace is required, this should not be at the expense of overlooking the sociocultural contexts.

Another critical issue was investing in increasing NGOs' capacities to manage housing reconstruction projects and developing regulations in this department. Another issue that arose from the donor-driven approach was that some national and international agencies use post-disaster reconstruction as an opportunity to achieve profits through contracts that offer expertise. This marketization of aid, however, can be encountered by emphasizing transparency.

The lack of governmental authority in Indonesia case highlights the importance of such authority in terms of building local capacity, whether institutional capacity, managing resourcing, developing mechanisms to manage the reconstruction, and setting master plans for the development on the regional scale, while one of the critical roles of the local community and local government in the decision making is providing a contextual reality to the decision-makers, as for the NGOs, their focus should be on facilitating the implementation of housing projects, building

capacity, and monitoring with the collaboration of other parties, the delayed establishment of the BRR, and the lack of staff capacity, resulted in delays in assessments and setting standards, which created confusion and incoherent recovery because donors implemented their own standards, the presence of efficient organizational structure, and land-use planning are all factors for coherent recovery, depending on donor-driven approach with weak governmental role led to issues of balancing between the available capacities, the requirements needed, and equity in distributing aid, more specifically:

- decreased accountability due to weak governmental resource management and the lack of regulations
- lack of consideration of the sociocultural aspect of housing recovery by donors.
- Lack of monitoring to implement standards.
- lack of a master plan that integrated rural-urban settlements recovery, which led to inequity in recovery



*Figure 2-34 the 2005 master plan of Banda-Aceh with the buffer zone showing in green, (Banda Aceh City, 2005).*

### 2.2.3. The reconstruction of Banda-Aceh

While the reconstruction in rural Aceh was participatory for the most part, the decision-making in Banda-Aceh was top-down decision making. The following sections discuss this approach's effects in urban areas.

#### 2.2.3.1. Land-use planning in Banda-Aceh City

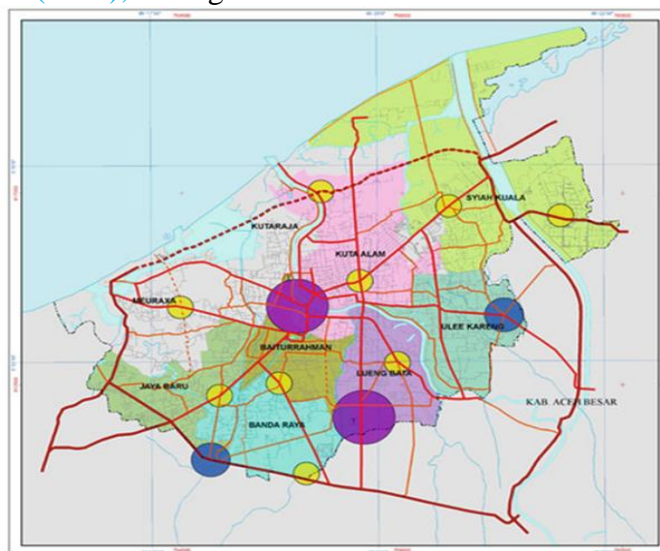
The main document referred to as a master plan was the "Master Plan for the Rehabilitation and Reconstruction Aceh-Nias," organized in its final form by the National Development Planning Agency. The document later became legislation in 2005 by a presidential act No.30. the regulation failed to address several issues that later became a factor in the shortfall of achieving holistic and equal recovery, especially in the departments of land use, setting standards, and infrastructure planning.

After the disaster, the BRR constructed the land use plan for the city as a formal guideline for the reconstruction process. The plan divided the city into three zones: conservation zone, promoted zone, and restricted development zone, where any development within two km of the shore is

restricted. This restriction was later changed due to demand from the affected community that was excluded from the decision-making. Many reconstructed houses were built in the restricted zones due to demands from the fishery community for their houses to be built in the coastal area. USAID and other agencies worked on recovery projects in the city to solve the complaints by the community. Implementing a bottom-up approach allowed for community participation in the decision-making, which resulted in defying the guideline. (Matsumaru et al., 2012).

The most significant change in the city land-use planning after the disaster was issuing of Law No.4 2009, which regulates the city's land use to adopt disaster mitigation. With this law, the local government of Banda-Aceh made the decision to establish a new central business district in addition to the already existing one in the middle of the city, which would contribute to restructuring the spatial planning of the city by creating multi-central businesses, and the new one being further from the shoreline between Kexamatan Lueng Bata and Kecamatan Banda Raya (Figure). Also, this new law planned to increase the conservation area to 21%, which included heritage sites and natural preservation areas. (PEMKOT, 2009)

The reason for this decision can be attributed to economic development. The official saw the disaster as an opportunity to push for macro-scale urban development projects in the city, a pattern seen in the New Orleans example. Panjwani (2013), through his interviews with the officials, showed that the Banda-Aceh spatial plan was formed quickly. In realizing the "missing opportunity for development," some officials started encouraging the city's development to the southwest from the coast to increase the economic growth in the south to become a sub-city of Banda-Aceh. Governmental officials described their reasons for encouraging concentration development in the south as a "risk reduction measure, to achieve Aceh green goals, land in the south was being amongst the most affordable" (Panjwani, 2013).



*Figure 2-35 Master plan for Banda-Aceh for 2009-2029, maroon circles represent central business districts, blue circles represent sub-central business districts, (PEMKOT Banda-Aceh, 2009).*

#### 2.2.3.2. The decision to build a memorial museum.

The BRR decided to establish a luxurious tsunami museum and other memorials to showcase the amount of effort and funds put into the reconstruction and commemorate the victims of the big event. The BRR initiated A competition to implement the museum project. The committee that chose the winner design insisted on the BRR, Nurdin AR, with nine experts.



*Figure 2-36 the tsunami museum,  
(suppasri,et.al,2015)*

The intention behind the decision to invest in memorial landmarks in the reconstruction phase is debatable in the case of Banda-Aceh. In the stated intentions, the BRR claimed that the museum would serve to commemorate the global memory, as stated by the manager of the tsunami museum: “The museum is a global museum attracting international attention” (Dewi,2015). However, these claims of establishing the museum to reinforce the local culture and the effect of the disaster in it are not evidently clear in the implementation of the museum. The majority of the contents of the museum include the physical causes of the event and the activities and facts of the emergency response. Rodrigo mentioned that the museum serves as a landmark for a tourist attraction (Rodrigo,2011). It is also possible that the creation of the memorials by a top-down decision mechanism after disasters are meant as a political statement to strengthen the sense of collective identity at the national level after the crisis, to serve the remembrance of the disaster as an essential event in the contemporary history of the nation and a contributor to forming their identity.



*Figure 2-37 the interior of  
the tsunami museum  
(indoindians.com)*

The architectural identity was fundamental in Indonesia, with 30 years of ongoing conflict at the time of the event. The conflict created a need for enhancing the sense of belonging, shifting the public debate away from the conflict into the memory of the event, in which the establishment of landmarks served as a political means by the central government decision-makers.



*Figure 2-38 the historic  
Baiturrahman mosque  
(indoindians.com)*

The claim that the memorial was built for political intentions rather than cultural preservation was backed by the exclusion of the locals in the development of the museum. And the decision to have



the displays as scientific content rather than cultural ones were made by the central government and the ESDM (a main funding contributor).

Another decision related to the sense of belonging emphasized the Islamic identity in the reconstruction efforts. Religion is essential in coping with major trauma affecting communities on a significant social scale. The emphasis on the sense of belonging was interpreted in the Islamic characters influencing the urban symbols, such as the design of the tsunami museum. The museum has a heavy Islamic influence in its design, shown by the presence of Quran recitations and the name of Allah



*Figure 2-39 The big ship memorial, (suppasri,et.al,2015)*

written on the top of the memorial piece, where the light comes to a dark room where the names of the victims are displayed (Dewi,2015).

In another related topic, the engagement of international herniate agencies after the tsunami contributed to deciding on the government to promote tourism, which was done by prioritizing the restoration of heritage buildings and promoting the Baitruhman mosque and the tsunami museum for tourism. However, promoting religious buildings for tourism is not always viewed positively by the local community; this kind of tourism can create cultural tension despite its economic benefits because tourism is usually associated with funds, and some tourists have to learn the dos and don'ts to avoid negative perceived attitudes towards the locals' cultural norms.

#### *2.2.3.3. Discussion for the reconstruction of urban Aceh*

The decision-making after the tsunami in Banda-Aceh was dominantly top-down, with an influence of international institutes. The promotion saw them of tourism through heritage preservation; and the creation of new landmark buildings for political or economic purposes, with little evidence of the engagement of locals in these decisions or consideration of the impact on the local culture.

Medium to large-scale projects are usually developed through top-down decision-making, influenced by political and economic contexts. The political and economic influence on the reconstruction decisions from the government affected the architectural identity by creating more Islamized urban memorials and restoring Islamic heritage buildings. The changes in the architectural identity changed the city's cultural identity towards a more consciously Islamic city because the urban fabric represents the cultural identity of its inhabitants.

Top-down decision-making is the most common approach to reconstruction (Twigg et al. 2001); this form of decision-making increases the vulnerability of the victims, or the decision made is influenced by political means which may not serve the interest of the victims; it also more often lead to neglecting the socioeconomic and socio-cultural factors which decrease the ability for the community to have an effective recovery from the disaster. The way that the master plan for Banda-Aceh City was issued is an example of a top-down decision that was later changed to a "bottom-up" decision.. It also demonstrates that macro-scale planning is usually a top-down decision-making process that tends to see the scale of destruction as an opportunity to push for urban project plans on the basis of economic and political gains of the elites; this approach of decision-making usually causes objections from the local community leading to changes of plans.

### 2.3. The 2005 Northern Pakistan Earthquake

On the 8th of October 2005, an earthquake measuring 7.6 magnitudes on the Richter scale struck Kashmir and Jammu region in Northern Pakistan and its surrounding areas, causing extensive damage to livelihood and property. Seventy-three thousand people were killed, over 100,000 were injured, 3.3 million were displaced, and over 600,000 houses were destroyed or damaged.

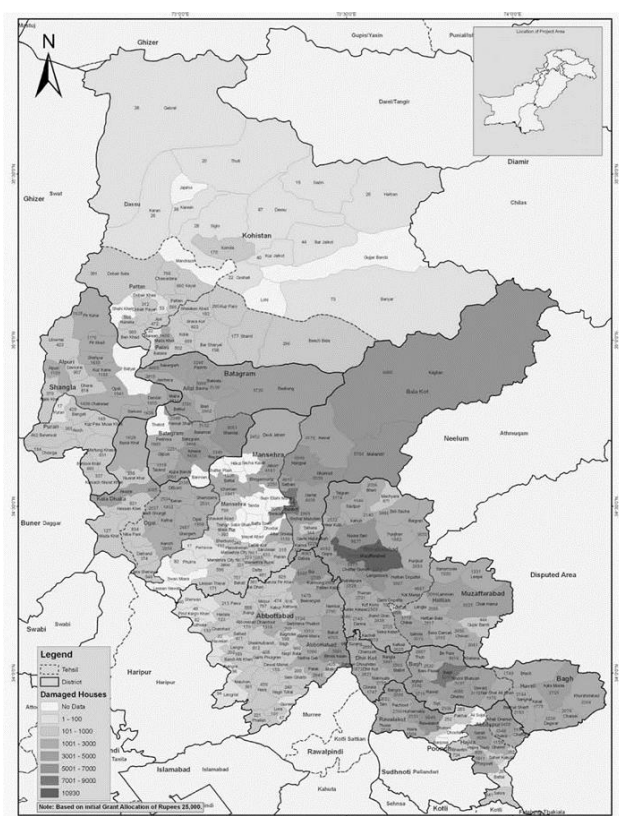
(Corsellis and Vitale,2008),

(Middleton,2008), (Coppola, 2006)

The affected area is in rough terrain in the Himalayan mountains, and the earthquake struck at the beginning of winter, which exacerbated the urgency of providing shelter to avoid the other humanitarian crisis from cold-induced deaths. The provincial

government was overwhelmed, and in response to the crisis, the national government created a Federal Relief Commission, consisting of army generals and governmental officials, to coordinate the emergency response with the national and international actors.

The international actors (namely the Red Cross, Red Crescent, the UN, and NGOs) chose to test a newly developed approach in humanitarian aid called the “cluster approach,” this approach was



*Figure 2-40 damaged houses by the earthquake, (Arshad and Athar,2006*

developed to avoid problems in previous experiences in duplication of efforts caused by humanitarian agencies working dependently. The cluster approach aims to increase coordination by grouping stakeholders into clusters to improve information management, thus ensuring more transparency and equality in distributing aid. The approach is considered the basis system of participatory decision-making in post-disaster reconstruction projects, open meetings at the local level where the local community can attend and discuss humanitarian relief needs and progress and form decisions related to the emergency phase, which was a valuable lesson in the importance of affected community perspective into consideration while taking decisions, this approach was one of the reasons to adopt the owner-driven approach later for housing reconstruction.

A report from the Asian Development Bank estimated that 1.234 million were allocated to reconstruct new housing units, another 30 million for capacity building, and the World Bank provided 220\$ million. ([Government of Pakistan, 2009a](#))

### 2.3.1. The institutional arrangements

The government of Pakistan follows the federal system, which from a constitutional point of view, means that disaster management is the responsibility of the federal units. While the government of Pakistan should have the role of setting standards and regulations, this federal system was not applied in the institutional arrangement. In this case, the ERRA had a central institutional structure that extended its role into providing strategies and implementation mechanisms to implement these strategies. This institutional structure was established because the provincial governments did not have the capacity for implementation in light of the significant scale of destruction.

These discrepancies between the need for a flexible, decentralized structure to implement the reconstruction and the system of governance in Pakistan caused a discussion between the two bodies that led to adding an extra tier of provincial entities within the institutional structure, and the ERRA was established in its final form in May 2006.

The final form of the institutional structure was the ERRA, headed by the prime minister, members from each provincial government, and civil society representatives. In addition, provincial structures were created: the Provincial Earthquake Reconstruction and Rehabilitation Authority (PERRA) and the State Earthquake Reconstruction and Rehabilitation Authority for Kashmir (SERRA). Finally, the District Reconstruction Units (DRU) was established as an implementation management body at the field level, with a district-level Reconstruction Advisory Committee (DRAC) to govern the DRUs.



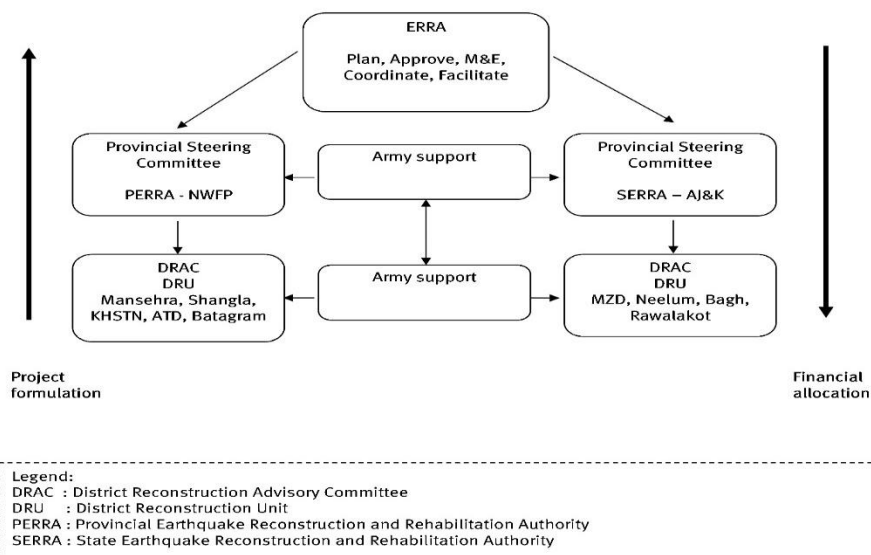


Figure 2-41 ERRA's functional Structure (Source: ERRA, 2005)

These established bodies (PERRA) (SERRA) (DRAC) were supposed to provide guidelines and hold ERRA accountable. However, these bodies did not have the financial authority, which rendered the ERRA the central authority. ERRA was considered the authority that works at the federal level, divided into planning, implementation, and monitoring departments.

This model of decentralized authority was influential in the case of Pakistan; it provided enough flexibility to overcome the bureaucratic procedures imposed by the provincial governmental systems. It provided a streamlined decision-making system linked to the implementation bodies and monitored using their own central, regional, and district monitoring bodies to approve the release of funds sufficiently.

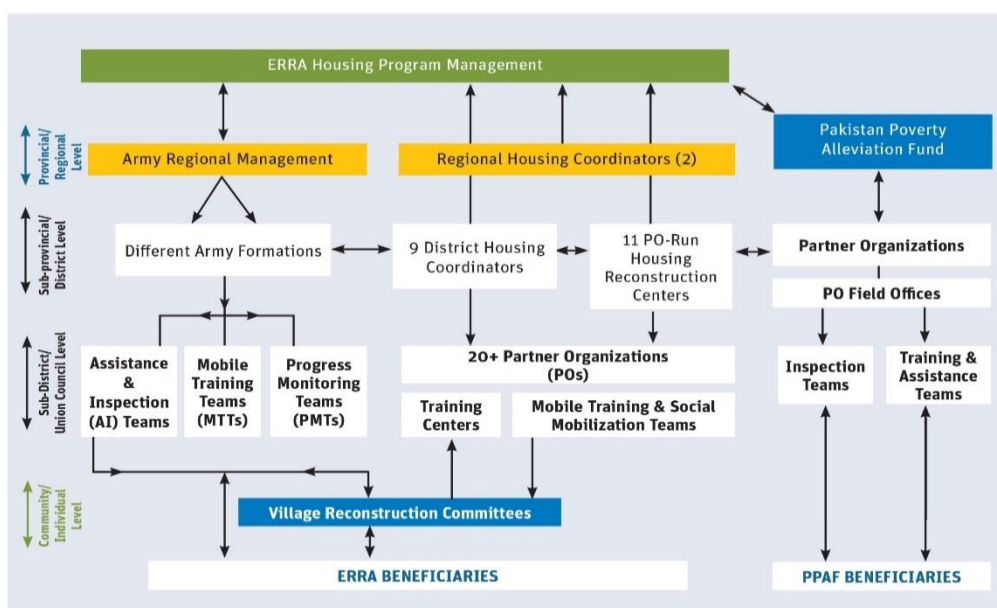


Figure 2-42 ERRA's Organizational Structure (GFDR, 2014)

So ERRA was the primary governance entity for rural reconstruction. At the same time, the World Bank was the primary donor. The supervising role was given to the Pakistan Army and Pakistan Poverty Alleviation Fund (PPAF), a national organization that previously worked on community development projects with World Bank. Finally, the UN-HABITAT and the Swiss Agency worked on technical assistance.

The involved NGOs were distributed among various geographical areas as a partner organization to work with the Union council of each area. The partner organizations were distributed depending on their capacity regarding the number of human resources, ability to manage reconstruction, financial resources, and previous experience working in the same area. In areas that did not have NGOs assigned as partner organizations, the Pakistan Army worked with its union council.

When technical issues emerged, UN-HABITAT experts gave technical support to resolve the problems emerging. The partner organizations' personnel had extensive training in construction techniques and social mobilization, and these organizations, in their turn, trained locals in building techniques. However, many recorded cases were reported of none compliance with technical specifications due to a staff shortage in some areas.

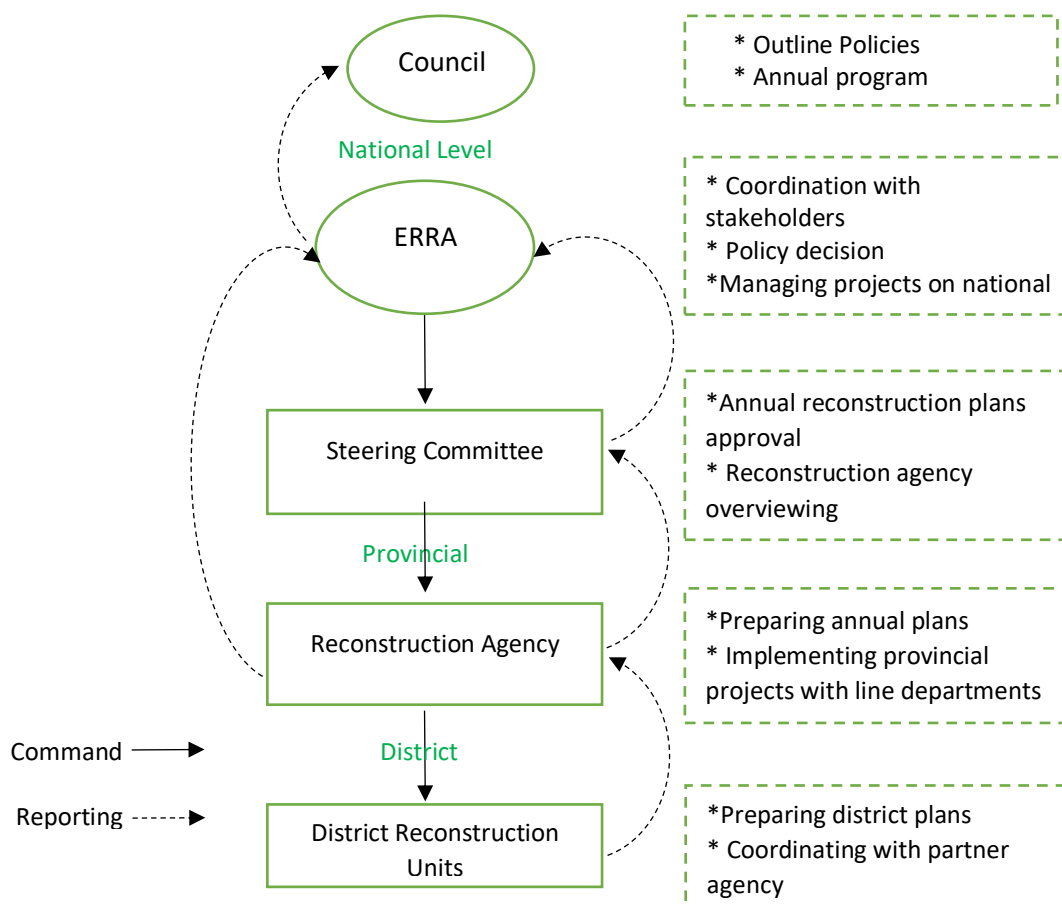


Figure 2-43 Pakistan housing reconstruction institutional structure

### 2.3.2. The Rural housing reconstruction in Pakistan

The UN and other international aid bodies presented a framework for housing recovery to the government of Pakistan in November 2005. The principles focused on livelihood rehabilitation, subsidies, and building using local knowledge and capacity. It can be assumed that the previous experience of the owner-driven approach in the relief phase, the significant scale of destruction, and recommendations from international agencies all had a role in the decision to use the owner-driven approach. Also, utilizing a housing strategy had delays because of prolonged negotiations to form the institutional structure, which allowed for further pushing the narrative of using an owner-driven approach. In the phase between the disaster and forming the ERRA, some initiatives provided examples for training locals on building shelters using salvaged materials and corrugated steel sheets. These shelters, in some cases, were transferred into permanent housing.

All the previous factors resulted in the rural housing strategy of an owner-driven approach with phased conditional grants, using many inspection workers to inspect the progress and quality of reconstruction and approve the release of grants, and providing training programs and managing supply chains to maintain the availability of materials.

The owner-driven approach was decided early, but the main discussions centered on choosing the building techniques, designs, and implementation mechanisms. The World Bank argued that reinforced concrete was the safest option and easier to train. In contrast, the UN-HABITAT argued that concrete buildings would be vulnerable to future disasters if not built correctly. Therefore, the UN-HABITAT recommended using traditional building techniques with earth-resistant features. The recommended approach meant flexibility was needed to set design types rather than imposing specific designs, and with the consideration of the diverse local contexts throughout the regions, consideration as the available materials, local skills, and the environment.

Another decision that affected achieving a holistic housing recovery was separating the housing strategies as urban and rural; this decision was made because urban planning was considered complex due to interrelated issues of urban planning, providing infrastructure, and land issues. Another possible reason could be the ERRA's desire to adopt "building back better" in developing strategies for the socio-economic development of the urban inhabitants. The approach was in contrast to the Indonesian case presented in this thesis, where the decision-makers issued a hazard zone policy to clear the land from local fishermen in favor of pushing for tourism projects.

Differences in urban and rural construction were showcased in humanitarian agencies avoiding the involvement in urban reconstruction, partly because it needed technical expertise; which was

scarce in the developing country, so they sought to concentrate their resources on rural reconstruction. Also, ERRA did not have expertise in urban planning. The United States Office deployed a sole urban planning expert for Foreign Disaster Assistance.

As a consequence of the decision to separate strategies based on urban and rural, the rural reconstruction housing programs had positive outcomes by adopting the owner-driven approach, with good satisfaction levels and adaptation of traditional housing technologies. However, urban reconstruction did not have the same positive outcomes. Issues of coordinating infrastructure and reconstruction of houses and issues of unsatisfactory re-settlements challenged achieving successful reconstruction.

ERRA mentioned that the guiding principles and strategies that accompanied those principles were chosen based on international experience and "the specific context of the Pakistan earthquake"(Arshad and Athar,2005). We discuss those guidelines and why they were chosen based on the specific context of Pakistan after the earthquake, exploring the experiences of this case and lessons learned from negative practices, and how local context and challenges affected the reconstruction.

#### *2.3.2.1. Ensuring Owner-Driven housing reconstruction.*

Probably one of the most prominent approaches in this case. According to (UN-HABITAT, 2007), owner-driven "was relied upon heavily in the aftermath of the earthquake" (Coppola, 2006). The use of this approach in Pakistan was mentioned in (Tibaijuka and Mangkusubroto,2009), (Amaratunga and Haigh,2011), (Arshad and Athar,2013), (Bappensa,2005), (barenstein,2012), (Coppola 2006), (Maly,2017), (Corsellis and Vitale,2008), (Gfdrr,2012) and others following this approach led to implementing series of strategies to accompany it, and has risen series of issues to comprehend.

The owner-driven approach is discussed in the well-known handbook from the world bank (Jha et al., 2010) as one of five approaches to implement in disaster housing reconstruction. The handbook defines it as: "conditional financial assistance is given, accompanied by regulations and technical support aimed at ensuring that houses are built back better" It was first implemented on a small scale after the 1993 earthquake in India, then implemented after



*Figure 2-44 Donor Conference, (Gfdrr,2014)*

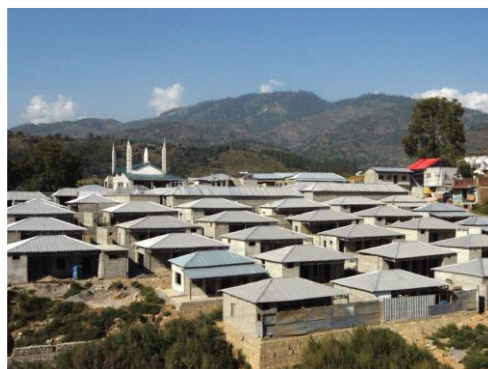
Gujarat 2001 earthquake, in Bam, and after the tsunami of Sri Lanka and Thailand 2004. (Amaratunga and Haigh,2011)

According to (barenstein,2012) and (Arshad and Athar,2013), Pakistan's government adopted the owner-driven approach because Gujarat's positive experience inspired this approach, where it was first used on a large scale. Another reason was probably the number of international agencies that adopted this approach and promoted it then. The World Bank, the International Federation of Red Cross Societies (IFRC), and the Swiss Agency for Development Cooperation are some of those noticeable agencies (Tibajuka and Mangkusburoto,2009), but whether this approach was appropriate to use in this case or not will be discussed in later.

After the damage assessment, the government determined that rural housing reconstruction was a priority. To address that priority, the government-funded 2\$ billion programs. In this program, cash grants will be provided in tranches to individual bank accounts. While beneficiaries will have to use their resources to subsidize additional costs and carry-on construction work with assistance provided by government or international agencies. The release of tranches depended on inspection to verify adherence to seismic-resistant construction methods and materials. (Trohanis and Read,2010) (Coppola, 2006).

#### Advantages and disadvantages of the owner-driven approach

As mentioned before, World Bank's handbook advocated for the owner-driven approach. They described it as empowering, dignifying, sustainable, and cost-effective in many post-disaster contexts (Jha,2010), (UN-HABITAT,2007). GFDRR (2012) and Maly (2017) further assert high satisfaction levels because of the direct participation that will ensure meeting beneficiaries' needs. Fengler et al. (2011) proclaimed that cash grants, a strategy associated with owner-driven reconstruction, could help provide the most needed short-term, especially for the vulnerable. It also creates purchasing power which helps in advancing the reconstruction.



*Figure 2-45 built houses in Pakistan, (GFDRR,2014)*

However, (Jha,2010) asserted that this approach is "context-specific" and, therefore, should be adopted after consideration of those contexts. Pakistan case is a good example of this assertion, (Tibaijuka and Mangkusburoto,2009) pointed out the drawbacks of using this approach in Pakistan and concluded that most of them are context-related and could have been avoided if more comprehensive details of how to adopt and implement this approach according to the on the ground realities.



*Figure 2-46 affected community participating in a meeting, (GFDRR,2014)*

As for the disadvantages of the owner-driven approach in the Pakistan case, according to (Taheri Tafti, 2012), the lesson learned from using owner-driven reconstruction in different contexts has rarely been solved. Pakistan case highlights the importance of considering the context-specific characteristics of housing arrangements and tenure patterns and how they affected the success of owner-driven construction.

\_Ownership issues in the old areas of the city: Traditional inheritance practices in the Islamic country of Pakistan results in properties with multiple ownership. Those issues were prevalent in the old areas.

\_The existence of polygamous households in the city: Policies overlooking this condition had issues concerning what was defined as family or households.; which led to the program targeting house owners regardless of the condition of the occupiers, where they might be left excluded.

\_City's predominant domestic pattern and household type: since the program was based on the number of houses affected and not the number of households, if more than one family lived in one house, only the owner received the grant, which led to issues of defining whom the owner is or excluding families from the grant.

\_Lack of uniform capacity to manage reconstruction meant that vulnerable households (females, injured families, low income) had hardships meeting the strict policies to receive grant tranches. It is advised to consider this and provide additional support to the vulnerable (Fengler et al.,2011) noted that the high migration rate of men resulted in uncertainty about the ability of women to engage in manual labor.



They were overlooking those local factors while making policies that included beneficiaries or no fair distribution of funds packages, where the middle income received multiple packages for one damaged house. In contrast, the ones in most need received only one or no grant. (Tibaijuka and Mangkusburoto,2009) In addition, landlords who received the money were reluctant to rebuild houses only for tenants to occupy them or only gave the tenants small amounts of grants (Adams and Harvey, 2006 in Corsellis and Vitale,2008). Delivery of payments was another issue; the government opted to distribute the amounts through bank accounts but faced issues with delivering in remote areas or small villages with no access to banks. (Fengler, et. al,2011)

Taheri Tafti and Tomilson (2013) Suggest using owner-driven as one among other approaches, while Davis,2011b in Tibaijuka and Mangkusburoto (2009) recommended using a "user-driven" approach, where the aids are targeted to households regardless of their tenure status. (Tibaijuka and Mangkusburoto,2009)

#### *2.3.2.2. Ensuring seismic safety*

Studies done by the Agha Khan Foundation indicated that in Pakistan's housing context, poverty led to having fewer housing repairs than needed, causing incompetence of the housing structures against hazards, especially since they were already built on earthquake-prone land using " sub-standard building materials and designed with little earthquake resistance" (DN and PA, 2008, Halvorson and Hamilton, 2010 in Sankaran, et al.,2014). Therefore, a few factors have led to creating vulnerabilities that worsened the damage from the earthquake impact, the lack of regulations for structural safety, poverty that led to the use of cheap materials and negligence of repairs, poor quality control, loss of traditional skills, and knowledge gap on seismic resistant construction are primary contributors. (Bothara, 2007) in (Mumtaz et al., 2008)

The presence of those conditions affected choosing reconstruction strategies, and the large scale of damage caused by the earthquake created by the poor performance of structures of seismic loads has led to adopting the principle of ensuring seismic safety. The emphasis was apparent by the presence of multiple policies and processes to ensure implementation; this guiding principle, for instance, developed a variety of seismic-resistant structural designs; some of those designs promoted the use of a traditional construction type that is produced from local materials and local labor.

The use of traditional construction made from wooden frames with mortar infill (known locally as Dhajji) came after an interesting observation. Houses that held the most damage were built with reinforced concrete. In contrast, traditional construction labor had good performance on



earthquake loads because they were more suitable to the soft soils of the region than reinforced concrete structures. ERRA recognized that this type of construction was found to be more resilient to the effect of the earthquake than reinforced concrete structures used, so they promoted the use of it. They also held training programs for the locals on the knowledge required for rebuilding the houses to be earthquake resistant, provided assistance, inspection, and certification of seismic resistant construction, they even went to conditioning the release of reconstruction grants with compliance with seismic resistant housing standards. (Bappensa,2005). (Ulla et al.,2012)

The extensive damage caused by the earthquake allowed for the development of the methods of construction to include more earthquake-resistant structural elements in the previously used construction methods, so the ERRA developed a menu of designs that were then approved by the cabinet to be a formal part of the national building code of Pakistan. Based on local materials and methods already used in the region (Arshad and Athar,2005), this helped in achieving locally motivated reconstruction and improving the building performance for future built houses by practicing the improved techniques by the locals, hence enhancing chances of long-term sustainability, and provide livelihood source options for the locals.

Improving the construction technology is similar to the approach "build back better," which was a trend in disaster reconstruction at the time. It was not the term used. Instead, the term "build back smarter" was used because the rebuilding cost in the approach "build back better" could not be achieved in the Pakistan context (Secretariat (a),2012). Instead, building back smarter terms meant to do reconstruction differently but not necessarily with the need for a high level of technical sophistication or significant funds.

Although the construction guidelines developed by ERRA looked into the local context by developing traditional construction, they missed some important local contexts that caused complications. For example, "the guidelines advised that the distance between house and background should not be less than the height of the house if the house were to be constructed on a slope. Compliance with this advice was impossible in many areas because of a lack of space." (Mumtaz et al., 2008)

In addition, even though traditional construction was advised, the guidelines did not touch upon resource challenges, heavy wood harvesting made the material scarce, and removing large quantities needed of stones from slopes could increase the chances of landslides due to soil stabilization. (Ali,2007), (Sankaran, et.al,2014). The resourcing challenges emphasized the need to consider each localized area before making a general policy, especially in large disasters or making exceptions for conditions noted in some contexts.

## Training programs

Training programs are usually necessary for the owner-driven approach, where owners would hire laborers, use their labor, or both. Thus, each owner-builder needs to understand earthquake-resistant building techniques" (Arshad and Athar,2013). It is also important to train the locals involved in reconstruction to prevent houses from being built as they were before and return to the vulnerable state.

The building boom in the disaster-affected areas resulted in many "unskilled individuals joining the construction sector. Therefore, the training programs were "cascaded training" for their efficiency in training large numbers of people across a wide area. Cascade training is when a group of master trainers trains field-level trainers from partner organizations who will train mobile field teams and finally train the masons and artisans. (Arshad and Athar,2005). Detailing the program curricula was done by a discussion forum including a diverse range of partners (the Housing Strategic Working Group). Arshad and Athar (2005) stated that a team from Nepal contributed to developing the curricula, proving the value of international experience in knowledge transfer. However, the fixed curricula used caused misinterpretations on some levels. Mumtaz et al. (2008) advised conducting testing and analyzing issues in the interpretation of new technology by the workmanship and issuing additional activities to reinforce the proper use of the technology.

Overall, the experience of Pakistan in using local resources (materials and labor), and efficient knowledge transfer from international and national expertise to the local level, which help in building livelihood in the long term, all correspond to sustainability principles.



*Figure 2-47 affected community training on reconstruction techniques (GFDRR,2014)*



*Figure 2-48 distributing information on building techniques, (GFDRR,2014)*

### Assisted and Inspected Reconstruction

Due to the conditional release of grants on following seismic resistant construction standards, ERRA established a system of assistance and inspection; trained teams were mobilized to this purpose; since there was an insufficient number of participants in teams, army personnel from the engineering corps and representatives of communities were involved. The teams had to deal with issues of non-compliance. The delays in issuing policies or strategies of reconstruction had people start reconstruction with the same non-seismic resistant techniques. To counter this emerging issue of none compliance, ERRA established a non-compliance referral where UN-HABITAT and other partners assessed the houses' needs to be compliant with standards (Mumtaz et al., 2008). Then detecting problems and issuing a manual for owners on how to correct them (Trohanis and Read, 2010). However, those "remedial measures" required higher skill and response capacity from engineers and craftsmen because of the process of analyzing and finding solutions (Mumtaz et.al, 2008).

#### *2.3.2.3. Ensuring equity*

Although this principle was not stated directly in ERRA manuals, it is concluded from different strategies with the same theme.

### Providing legal aid

The ERRA collaborated with the Asian Development Bank and the Norwegian Refugee Council in establishing legal assistance centers to provide legal counseling and in-court representation of tenant disputes among other types of non-habitat types of disputes (Harper, 2009). Additionally, ERRA centrally tracked data on complaints to determine trends and problems.

### Uniform technical assistance.

Uniform technical assistance is assured by assigning one partner organization to be responsible for each union council at the village level and support at the district level by UN-HABITAT. That was also present in 36 union councils, UN-HABITAT operated by eight housing reconstruction councils that provided technical assistance, monitored reconstruction progress, supported the NGOs, and developed policies and strategies. One policy ensured that no individual donor-built houses were allowed to avoid inappropriate designs and arbitrary selection of beneficiaries or "variations between the



*Figure 2-49 affected community participating in self built houses in Pakistan (GFDRR, 2014)*

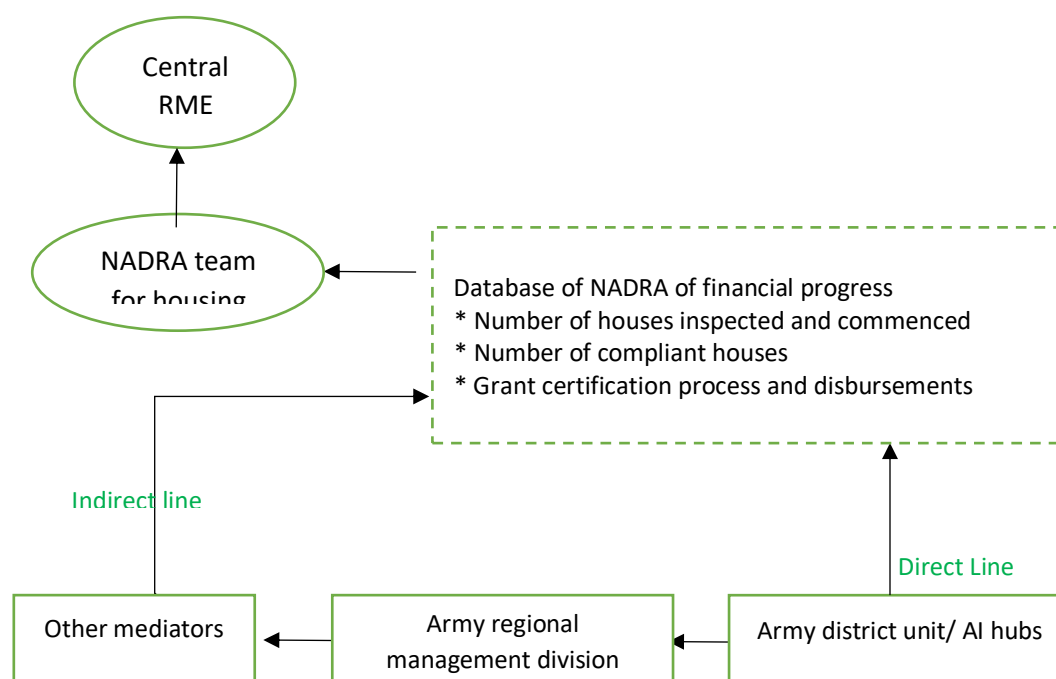
official technical or financial assistance each beneficiary household is eligible to receive." (Mumtaz et al., 2008). Consequently, some donors did not want to participate indirectly, which led to the loss of some funding. (UN-HABITAT, 2007).

### Beneficiary Eligibility Verification.

After conducting a damage assessment of the affected area, a database was used to validate the authenticity of beneficiaries. While conducting surveys, the teams signed legal agreements that specified mutual responsibilities. (Fitzpatrick,2010), the memorandum of understanding increased security for tenants that could face evacuation while preserving the rights of "hereditary tenants." A manual for eligibility criteria, validation rules, and information was reviewed to assess adherence to criteria. Finally, a grievance process was set to deal with exclusion appeals.

### Monitoring and evaluation.

Establishing a database facilitates the response (Fengler et al.,2011) point out that creating and maintaining a database can help mitigate long-term recovery. The database helped broaden the assistance program in Pakistan to more vulnerable households. The monitoring and reporting system helped manage the flow of information and, therefore, decision-making. ERRA was able to look up "a certain number of houses reconstructed at what level"; therefore, it could identify issues and act upon them, like relocating resources where it is most needed (Arshad and Athar,2013).



*Figure 2-50 RME (reporting, monitoring, and evaluation process for ERRA housing program, (GFDRR,2014, realized by the author)*

#### *2.3.2.4. Malpractices, their effect, and lesson learned, or not?*

In 2015, a 7.5 magnitude earthquake hit Afghanistan, affecting some of the regions that were affected in 2005, Shangla district was one of them, and it was the fourth most affected by the 2015 earthquake, which raised the question of the reasons why resilience was not achieved with the new houses that were only ten years built after 2005 earthquake, and what lead to their failure, even though that one of the main emphasized principles of 2005 disaster was ensuring seismic resistance, which was proven not to be successfully achieved, according to (Ismail and Khattak, 2015), many of the houses were damaged due to lack of diagram, lack of confinement at the corners, lack of wall to foundation connection, or inappropriate foundation, and the use of inappropriate materials like adobe or irregular masonry, so what malpractice of 2005 reconstruction that led to lack of resilience,

There were factors for the failure of reconstruction that persisted after the 2005 reconstruction: Lack of awareness, negligence of seismic resistant practices, lack of repairs, choosing affordable materials that do not adhere to safety codes, and building in earthquake-prone areas. Even with all the policies implemented, like issuing regulations, choosing the appropriate materials, choosing the appropriate construction type, conducting training programs, and conducting public information campaigns. Here are other malpractices that might have contributed to those vulnerabilities:

People started reconstruction before ERRA could issue policies and regulate the materials and the appropriate construction types (UN-HABITAT). They started reconstruction in their old non-seismic resistant ways, using affordable materials. The increased materials costs due to high demand and time constraints made people look for cheap and fast alternatives. They used hollow concrete blocks and metal sheet roofs, while ERRA guidelines advised the use of concrete, steel, and bricks, all were too expensive for the affected. Another unrealistic guideline was concerning the distance between houses when there was no adequate land area to implement that guideline.

Ignoring the local context while deciding policies regarding material availability and affordability by ERRA and the delays made issues of non-compliance that contributed to the missed opportunity of building resilient houses. Modifying non-compliant houses later was unrealistic because modifying needed more skills than was present, especially since training took time and the grants that could be obtained if non-compliant houses fixed the seismic resistance issues were insufficient.

Furthermore, flaws in choosing sites to rebuild were an issue. Hazard mapping was not conducted because of disagreements on the lack of specialized consultants, which constrained the ability to relocate due to a lack of information concerning hazardous land ([Fitzpatrick, 2010](#)), which meant that many people still lived in hazardous land.

There were also issues of institutional arrangements. While governments have a vital role in reconstruction, their support is not consistent over a long time, which makes long-term monitoring unsustainable, so constructors of houses lessen their appliance of seismic safety codes. Finally, even when building codes were issued in 2007, there were no strategies to implement them consistently. It is important to have a long-term monitoring mechanism with requisite authority, a clear mandate, and necessary resources for sustainable recovery,

### 2.3.3. The Urban housing reconstruction in Pakistan

One of the most complex challenges in urban reconstruction is the issue of tenure. Each multi-story building had many owners or renters, and solving the ownership issues and providing housing for renters was challenging. Therefore, many urban affected people squatted in governmental buildings or set up informal shelters in various open spaces such as parks around the urban areas. Another challenge was dealing with the significant amounts of debris.

In July 2007, ERRA published its strategy for urban reconstruction. The strategy had the following priorities: ([Government of Pakistan, 2007](#)): Developing long-term plans for urban areas that adhere to the slogan "building back better" and integrating social services into housing.

The urban reconstruction was similar to rural reconstruction, it was owner driven, and the amounts of the grants were similar. However, they were given in one tranche. The differences with rural reconstruction were that no training programs that adhere to each local context were initiated, and supervising the implementation of seismic resistant techniques was given to the local authorities, the local authorities lacked the capacity for the task. No changes were made to increase staff and build capacities of local authorities, so constructed houses quality issues were predominately evident.

The delayed issuing of the urban reconstruction strategy led to the government coming to allow people to reconstruct houses in a hazardous location, but after submitting proof of adherence to the building code, also, and in despite of issuing the strategy of urban reconstruction,

The significant amount of displaced people led to the decision to provide transitional shelters in Saudi Arabia. The prefabricated units did not provide participatory decision-making in their



design; the units were placed on private land, which was also further from the participatory decision-making that the urban reconstruction strategy aimed for in adopting an owner-driven approach.

The reconstruction process failed to address the issues mentioned above. This failure was in part due to the process of decision-making in developing the plans. Officials from the government in a bureaucratic setting carried out the process of setting the master plan. There was a lack of mechanisms to ensure community participation in the decision-making. Also, the lack of pressure from the civic society played a role in neglecting the issues of urban reconstruction, there were small protests, but they lacked organized efforts to offer practical proposals, and the media made little effort to demonstrate these issues. Finally, the NGOs working on civic society rights were occupied with rural reconstruction, which limited their involvement in the overwhelming issues of urban reconstruction.

#### The role of participatory decision-making in relocation decisions

Balakot town had heavy destruction scale in the aftermath of the 2005 earthquake. The fact that it was located on a fault line led the path to consider the old town a hazardous location and unfit for reconstruction. The decision-makers decided to relocate the town to another site 20 kilometers from the old location called Bakarial. ERRRA purchased the land after giving landowners compensation.

The relocation plan faced resistance from the affected community, who did not want to lose their livelihood based on tourism activities, so urban planners and decision-makers sought to ensure continuity in developing land use plans. The plan was to convert the old town of Balakot into an amusement park with light steel structures for retail activities.

After the disaster, the government opted to develop the governmental institutional structure related to future disaster management. The following section shows how it differentiates from the institutional arrangements of the 2005 earthquake reconstruction rural program that had relative positives in managing reconstruction.

#### The disaster management institutional structure after the 2005 earthquake

The disaster management institutional structure after the 2005 earthquake had a top-down decision-making hierarchy. It consists of the National Disaster Management Commission NMDC as a top authority and formulates decisions at the national level. The next in the decision-making hierarchy is the National Disaster Management Authority NDMA. The prime minister chaired them. The NDMA's prime task is coordinating between the different stakeholders and overseeing

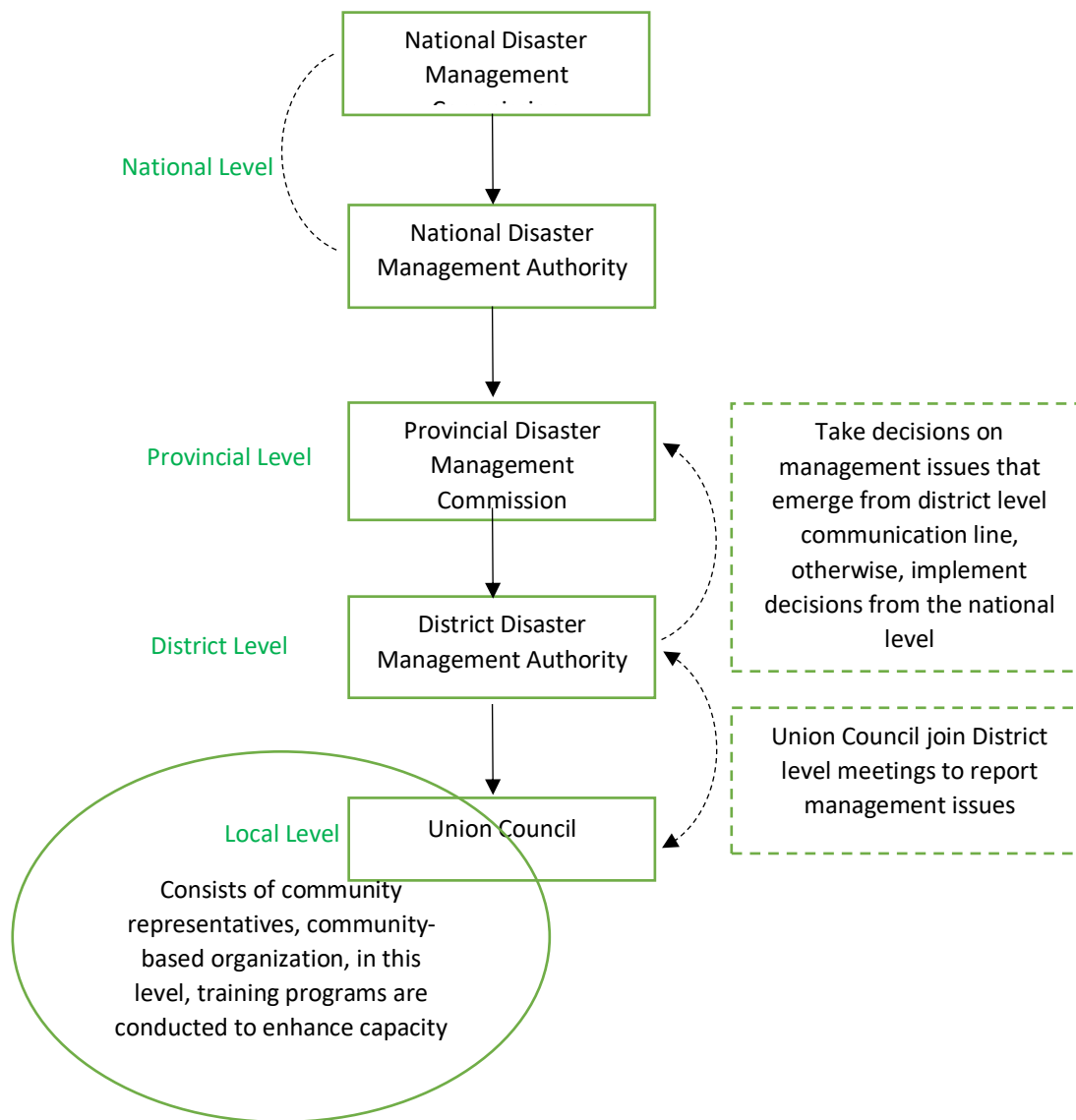


the NMDC plan implementation. The next level is the provincial government PMDA, which sets the regional disaster management policies under the national commission guidelines. It also coordinates technical assistance to the local government and monitors the implementation plans on the provincial level.

The local government can form a District Disaster Management Authority DDMA to organize emergency response and coordinate with the PMDA, the last in the Union Council hierarchy, which allocates resources to the local government and represents the local communities in the meetings with the decision-makers.

Although the reconstruction process after the 2005 Kashmir earthquake was decentralized and had an acknowledgeable level of success using the owner-driven approach, the disaster management institutional structure that was formed in the aftermath of the earthquake was not based on the successful institutional model applied in the reconstruction, but on a top-down decision-making process that had little success in implementing mitigation projects in the following years in the local level,

Those shortfalls in the institutional arrangements demonstrate that the successful experience in rural reconstruction housing after the 2005 earthquake was not widely acknowledged and integrated into the disaster management structure. This narrow acknowledgment leads to the assumption that even though an owner-driven approach is encouraged in post-disaster reconstruction, community participation in decision-making is still an undiscovered territory. The owner-driven approach is limited to the implementation phase, and the integration of participatory decision-making in the long-term disaster management and risk reduction policies is still challenged by neglecting structures.



*Figure 2-51 Institutional Structure of disaster risk management in Pakistan (by the author)*

The government of Pakistan has opted to develop national plans for managing disasters. Institutional development proves to be a critical factor in successful disaster management. Even one experience is not enough to provide a sustainable disaster management system if it does not enable down-to-top mechanisms in decision-making, building capacities of local authorities to manage disasters while providing transparency to avoid corruption. Failure of the disaster managing system was demonstrated in the lack of efficient recovery indicators from Institutional arrangements that were developed in this regard. The top-down institutional system lacked proper implementation mechanisms. Even though Pakistan had a previous successful experience establishing efficient institutional settings, the experience was not reflected nationally.

In a recommended down-to-top disaster management framework, representatives of societies work as a link between the community and implementing agencies. They participate in developing

pre-disaster strategies that fit their local context, needs, and resources. They also can work in linking governmental entities with potential donors. This approach trains civil society in disaster management to respond quickly and efficiently in disaster-prone areas.

Post-disaster experiences offer an opportunity for developing a national recovery framework after disasters that pass the recovery phase into mitigation and forming resilience-related strategies because funds are available, and politicians are pressured to change policies. People are more aware of risks, so all stakeholders are motivated to change policies toward resilience. Thus, it is recommended to integrate long-term recovery and mitigation planning in the participatory decision-making process.

#### 2.3.4. Discussion for the Pakistan case study

To summarize, housing reconstruction in the Pakistan case reveals a gap in rural and urban reconstruction progress. Rural reconstruction had more success than urban reconstruction. One critical factor contributing to rural housing success is institutional arrangements. ERRA coordinated the efforts and monitored the following policies, the government and UN-Habitat provided technical assistance and training programs, and World Bank provided financial support. This effective distribution of roles has contributed to building 530,000 houses in challenging terrain in three years. One hundred two thousand were built with traditional building technique that has earthquake-resistant features.

The decision-making in rural areas had a higher degree of community participation, even though urban areas involve more shared infrastructure and services for larger groups of people, while in rural areas, every household can hold much of their infrastructure on their own. The design of the reconstruction process in Pakistan proved effective. With the proper guidance, this process allowed the communities to build houses by their local norms, and the approach of cash grants managed to provide a good level of equity. Affected communities in rural areas were consulted on the land use development process. NGOs were highly active in these areas, working in training programs, information management, and developing plans. However, their engagement was short-termed.

Even though both rural and urban reconstruction were declared owner-driven, urban housing did not receive the same positive outcomes as rural reconstruction. The rural housing strategies showed flexibility and creativity in using traditional construction techniques. Therefore, the decision-making process will be compared in this section between rural and urban areas to identify

the sources of shortfalls in the urban reconstruction process. Here are some of the factors that contributed to the different levels of success of the owner-driven approach in the Pakistan case:

Even though the displaced people from urban areas were provided with transitional shelters, the lack of space to set up these shelters or infrastructure was a critical factor in hindering the community participation process in the decision-making. Another factor was the bureaucratic complexity of urban construction and the involvement of many sectors in the decision-making of urban construction, paralyzing the processes of setting land-use maps and planning infrastructure. The fact is that the construction implementation was contractor driven added to the delayed planning for reconstruction.

The complex issues of urban reconstruction include land tenure issues because more people are involved per square meter and the cost difference between urban and rural construction. In addition, rural areas have fewer regulations and constraints on building than rural areas. All these factors led to a bias among NGOs to avoid urban reconstruction.

Moreover, there was no balance in the building capacities of local authorities for managing reconstruction. More efforts were channeled towards building capacities of the local authorities in rural areas rather than urban areas. Neglecting capacity building contributed to a lack of resilience in urban areas.

There is an added importance in creating dedicated institutions to manage reconstruction after large-scale disasters. These institutions should be backed with a legal framework that allows these institutions to act with the existing jurisdictions, having one optimal institution, like in the case of Pakistan, the ERRA, provided a streamlined coordination mechanism that eventually added to the capacity to implement projects, where the implementation was delegated to the district levels,

ERRA had the following features that optimized its efficiency in managing reconstruction:

Decentralization: ERRA had a level of decentralization while maintaining a connection with centralized lines of authority, ensuring uniformity in reconstruction priorities across districts and programs.

Clear roles: ERRA had a clear role with no overlapping responsibilities. However, ERRA did not have a clear exit strategy to transfer disaster management from the recovery phase into the mitigation and achieve sustainable recovery. This missed link between transferring disaster management in the phase of recovery into mitigation contributed to the weaknesses in the disaster management institutional structure formed by the national government after the disaster. The development of disaster management systems after a major disaster could be more efficient if

rooted in the successful experience of establishing ERRA and with a transparent transfer of responsibilities of long-term recovery.

Institutionalized participatory decision making: by enabling village-level reconstruction committees, and engaging community-based organizations, this coordination between government sectors and civil society was ensured by integrating the participation into the institutional structure rather than leaving participation to fewer formal arrangements.

Integrating international and national expertise: ERRA managed to develop policies based on balancing the inputs of local experts that are well informed with the local context of Pakistan and the added value of engaging international experts that are informed in best practices in post-disaster reconstruction. Moreover, the Joint funding mechanism contributed to donor confidence and financial transparency, and the efficient monitoring system also added to donors' trust.

Overall, the following observations were made after exploring the three case studies:

#### In New Orleans:

In the case of housing reconstruction after the Katrina hurricane, civil society had a critical role in developing the reconstruction plan at the urban planning level, the neighborhood level, and in forming the housing styles of the city.

At the urban planning level, the affected community rejected the first plan, which was not participatory; that plan opted to make significant changes in the city fabric, most notably changing "poor neighborhoods" into parks.

Few neighborhoods organized efforts to plan and implement reconstruction projects, and the projects implemented reflected the community's needs. In contrast, in some neighborhoods that did not organize their efforts, city officials determined the implemented projects, which caused further segregation between neighborhood development among people with low incomes and not poor.

In a non-participatory decision, few public housings were decided to be removed, regardless of their damage scale; this decision was argued to cause displacement to the African Americans.

The individuals decided on the styles of the newly constructed houses and preferred the traditional style; this reinforced the decadent and unique architectural identity of New Orleans, which had a rich history of architectural styles derived from French, Spanish, and American city history.

#### In Aceh, Indonesia

At the urban planning level, after the disaster, Banda Aceh city officials issued legislation that prohibited building within 500 meters of the shoreline, which was deemed hazardous, the city officials had plans to develop this area for tourism development, and it opted to make a new business center in the edges of the city, these plans were not participatory, the affected community refused the plans, and since the NGOs were responsible for reconstruction and the government had a facilitator role, these plans were rejected. Ngos built houses in the hazardous zone in response to fishermen's demands.

Community participation plays a role in relocation decisions; in exploring two cases of two relocated villages, in the village that had the affected community had a role in selecting the land for relocation, the village had positive outcomes in the socio-cultural and socio-economic development of the inhabitants, in contrary, in another village were the affected community did not have a role in selecting the land for relocation, the land was chosen to be adjacent to another

existing village, but the residents of the new village had a different background which caused cultural tension between the inhabitants.

The majority of the constructed houses were in modern style. The NGOs decided on the style of the constructed houses; the government decided the size of the houses, the constructed houses in the majority did not confirm with the traditional Acehese house; these new houses did not accommodate the traditions and needs of the inhabitants and changed the architectural identity of the villages away from their traditional features.

In an attempt for tourism development and perhaps political agenda, the Indonesian government decided to construct a few projects that feature heavy Islamization influence, namely a museum for the victims of the disaster that had Islamic designs and the rehabilitation of Islamic buildings such as mosques, these decisions were made regardless of the affected community opinions, which may affect the city features into a more Islamic style influence, this impacts the community socio-cultural changes in the long term.

Achieving holistic development at the rural and urban levels was not achieved in Indonesia; this was not done because of the already going disparities between urban and rural political environments, and because the reconstruction was NGO based, this affected resourcing, in result, different levels of community participation was made in the reconstruction.

#### In Northern Pakistan

A high level of architectural identity preservation was observed in the Pakistan case; this was done by the decision to use traditional housing techniques. The community had a role in facilitating the implementation of these decisions by actively participating in training programs and self-built projects.

Lower levels of architectural identity preservation were in urban reconstruction, in part due to the lack of capacity of the community to participate in the more complex building techniques in the city, where training is more complex.

Chapter Two showcased three case studies. The first case is the city of New Orleans in the United States of America. Even though the city is located in a developed county with significant economic and technological resources, recovery efforts showed high delays and confusion in decision-making because of inflexible institutional arrangements and unclear organizational structure. The case showed positive initiatives in participatory decision-making but with little integration with the master spatial planning of the city. On the other hand, the cases of Aceh province in Indonesia, and Pakistan, both developing countries, showcased more flexible



organizational structures with more potential for organized community participation. The case studies also discussed different issues affecting reconstruction outcomes, such as the rural-urban difference in planning and their effects and donor-driven and owner-driven approaches to reconstruction. In the next chapter, we identify the variances of community participation as identified in the case studies, those variances (or factors) later used in the empirical study.

## Chapter 3

### Factors that Affected the Case Studies

This chapter compares the case studies in chapter two regarding the factors that affected the reconstruction outcome, the role of community participation, and the factors that affected decision-making. We identified the patterns of issues in each case and grouped similar issues into one singular factor. The chapter also discusses applicable measures for effective community participation in decision-making.

#### 3.1. Factors that affected reconstruction outcomes in the case studies

Many factors affected the outcomes or reconstruction in New Orleans (USA), Aceh (Indonesia), and Pakistan case studies. We identified (36) different factors, and this section identifies the factors without specifying categories. We also examine the role of community participation in the factors that affected reconstruction projects.

##### 3.1.1. Defining mechanisms for providing construction materials.

Resourcing is one of the factors that affect housing reconstruction. Failure to deliver housing and poor quality in Indonesia resulted from deficient material sourcing. High demands for specific materials were high, and the competition for limited resources caused delays and corruption. The government had a weak role in managing the resourcing deficiencies; they lacked a proper plan for the production and transportation of materials, and the lack of coordination mechanism in resourcing contributed to the prices of the inflated materials. The inflation was responsible for the illegal logging of timber, which caused quality issues and environmental problems.

Moreover, sand and masonry mining impacted biodiversity, increased flooding, and soil erosion. Although the legal framework was already illegalizing these actions, there was not much of an enforcing mechanism, [UNEP,2007](#). The inflated prices caused delays and NGOs' declining commitment to rebuilding ([Jones et al.,2016](#)). Similarly, in Pakistan, heavy wood harvesting made materials scarce, and removing large quantities of needed stones from slopes could increase the chances of landslides due to soil stabilization. ([Ali,2007](#)), ([Sankaran, et.al,2014](#)).

The role of managing procurement is usually delegated to the local government. The market-oriented resourcing requires "continual government participation"; this does not necessarily mean

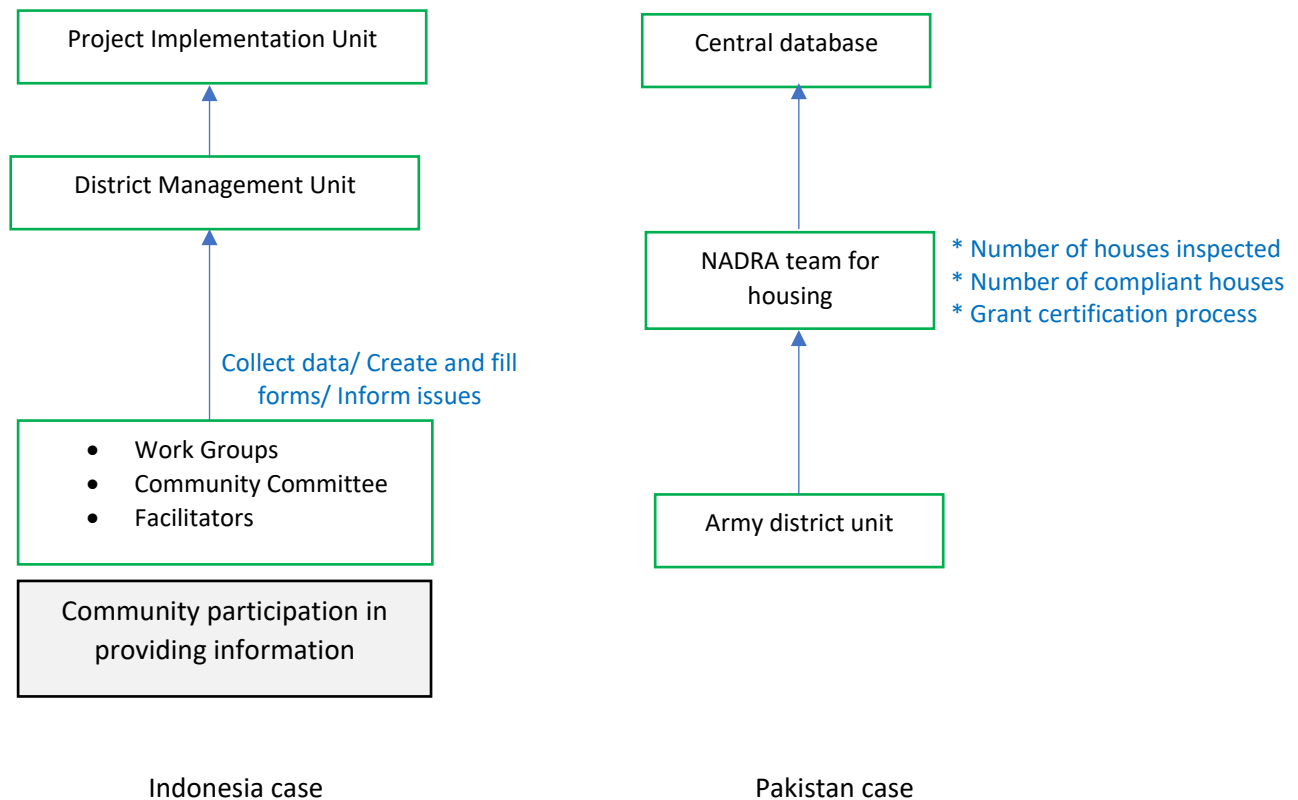
that the government gets involved in resource procurement. In Aceh, for example, the government was only responsible for resourcing arrangements and monitoring the process, so it was beneficial for the government to plan the mechanism and limits of resourcing facilitation. (Chang, et.al (a),2010).

Even though resourcing is usually the role of the government, there was in Indonesia an example of a community participating in creating a mechanism for providing construction material: a team of an NGO coordinated their efforts with the locals to secure storage space; their efforts were able to reduce the costs for over 3000 houses under reconstruction.

### 3.1.2. Providing reliable information for planning

The presence of timely and credible information is critical in making decisions. In disaster reconstruction, information is essential to evaluate the impact of disasters and capacities available, to make effective recovery decisions, like priorities, cost of reconstruction, expected outcomes, and building capacities, which can be achieved by a monitoring and evaluation system. However, it was demonstrated in the case studies that reliable information systems were hard to achieve. The information system in Aceh was based on labor-intensive, low-tech systems. In the information age, the working of information systems in disasters should have more attention in the mitigation phase.

The lack of reliable information in New Orleans led to inequality in receiving grants from multiple sources, whereas others received none. The Federal Emergency Management Agency (FEMA) conducted the process for determining grant eligibility. The agency had issues of limited control to identify verification, which led to significant fraud cases (GAO, 2006). The unreliable information created confusion and chaos that impeded the efforts. The issue of defining eligibility was also present in Indonesia before establishing a database of the BRR. The established database recorded NGO programs to assist in decision-making. The case in Indonesia showcased a down-to-top information mechanism where the community workgroups created and filled forms on beneficiaries. A facilitator reported the information to the district management unit to make decisions based on information delivered by the community committees. In the Broadmoor neighborhood in New Orleans, The BIA created an online database to track the community's needs and monitor recovery status.



*Figure 3-1 A comparison of the information mechanism between Indonesia and Pakistan case studies*

### 3.1.3. Increasing the capacity of skilled labor

In Indonesia, most of the community work in agriculture and fishing; hence there was a lack of skilled labor in building. The local government relied on contractors but did not consider avoiding the negatives of this approach. The effects of relying upon contractors caused delays in preparing sites for rebuilding and providing logistic utilities. Also, the houses did not meet the beneficiaries' requirements; using prefabricated components (like an indoor kitchen) was not culturally accepted. In Pakistan, the training program was one of the key approaches used in the reconstruction program. The role of the community in this program was more on implementing fixed curricula. A team of experts, including international experts, developed it. They had no role in detailing the program curricula. In both cases, the community had a limited role in decisions related to labor requirement plans.

### 3.1.4. Increasing the capacity of working staff in reconstruction management

The owner-driven approach in Pakistan required the use of a large number of inspection workers to inspect the progress, the quality of reconstruction, the approval of the grants, and managing supply chains, the shortage of management staff was not appropriately covered, which caused the issues of none compliance of technical specifications. Similarly, the delays in preparing sites for reconstruction in Indonesia were due to insufficient working staff in local government and related ministries. The low capacity of management staff was also evident among the local government staff in New Orleans; the untrained staff led to confusion in decision-making because of a lack of documentation. In comparison, the civic society initiative in New Orleans showcased an example of the ability of the community to increase the capacity of reconstruction management staff. In Broadmoor, the organized committee from the neighborhood coordinated with the local government to convey contracts to provide home ownership financing programs.

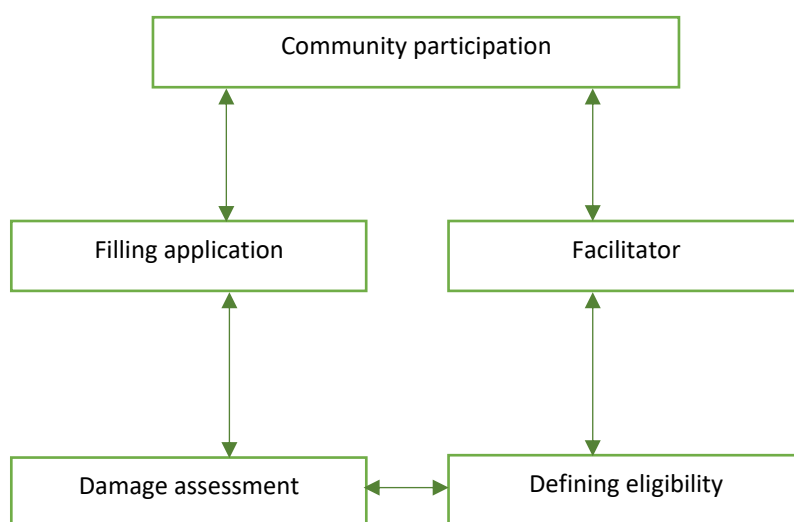


Figure 3-2 The role of community participation in Assessment in Indonesia. Source: WB

### 3.1.5. Providing tools for overcoming bureaucratic procedures.

One of the factors for the lack of accountability toward reconstruction in Aceh was the "perceived need for accountability to donors in an uncertain fiduciary environment" [Daly and Bassard \(2011\)](#); this limited community participation due to the strict bureaucratic procedures that were not reachable to the beneficiaries ([Lizarralde et al., 2009](#)). Formal and strict accountability measures may hamper community participation because it complicates the procedures and increases the uncertainty of the efficiency of participatory decision-making.

Bureaucratic procedures were one of the critical factors in delaying federal funding for implementing plans in New Orleans. Community initiatives in New Orleans showed a positive example of the community's ability to provide more flexible reconstruction management tools. In the Broadmoor neighborhood, the community could create a more flexible decision-making system than the governmental institutions, which had a bureaucratic system and overlapping decision-making processes. The initiative of organized community efforts such as in Broadmoor shows that smaller societies can especially operate effectively in micro projects with innovative approaches and greater flexibility than larger entities.

#### 3.1.6. Linking expertise with local context and priority of needs.

Community participation has a critical role in providing the local context necessary to interpret a given reconstruction principle into a locally specific plan. For example, in Pakistan, where owner driven was one of the main principles, this internationally crafted approach was knowledge transferred to Pakistan after reviewing its positives in the emergency phase. However, any given approach should be interpreted according to the local context for a more detailed plan, for even if one approach had positive results in one case, it could not be implemented in other cases without considering the local indicators if they suit this approach or the other. For example, [Tibaijuka and Mangkusubroto \(2009\)](#), when discussing the drawbacks of the owner-driven approach in Pakistan after the 2005 earthquake, mentioned that most of them were not inherent problems of the approach and "could have been addressed if the knowledge transfer had provided a more comprehensive picture of the of the on the ground realities of the adoption and implementation of this approach." Those on-the-ground realities can be related to capacities available, local conditions, constraints, or needs. In Indonesia, the housing reconstruction in terms of planning and implementation was described by the BRR as being fast-paced and "in isolation from the local political, economic, and social environments. " This means that the donor-driven approach in Indonesia did take little consideration for the local context, which meant that the existing local capacity in terms of trained staff and available resources was overlooked. Also, the community's needs and preferences were not adequately integrated into the planning, which had long-term effects on their living conditions.

Local input is especially important when international agencies have a more active role, such as in the case of Indonesia. For example, some NGOs failed to identify local partners with expertise, which led them to rely on foreign experts and staff, which put a strain on the budget that could be used to provide other priorities. Similarly, in Pakistan, The involved NGOs were distributed among various geographical areas as a partner organization to work with the Union council of

each area. In New Orleans, not only the governmental institutions showed signs of inefficiency, but even NGOs such as the Red Cross and the Salvation Army; this is in part due to their inadequate understanding of the local context, while the civil society initiatives, such as local churches, filled the gap of providing aid for developing projects based on the needs of the people that reached out to them. Moreover, the BIA (organizational structure for Broadmoor civic society reconstruction initiatives) based their strategy on the capacity of the neighborhood rather than outside sources or unrealistic expectations, complying with advice from urban expert Ahler.

However, there are some types of input that community participation has a limited role, such as kinds of assessments that need high technology and expertise requirements that must be planned on the regional level. For example, The lack of technological knowledge and expert staff to conduct topographical and hydrological surveys and assessments resulted in the construction of 16 villages in high flood-risk areas.

#### **3.1.7. Creating political support for reconstruction plans**

The affected communities often had little confidence in plans that affected their housing and livelihood recovery after disasters. A recovery plan with community participation increased the approval and public support. The stronger the civic society, the more decisive influence they had on changing plans. The civic society in New Orleans conducted organized demonstrations to oppose the Bring New Orleans Back plan, leading to the local government's refusal of the plan. The community in the USA had a powerful influence on the political status that led to a higher ability to change plans, in this case, to stop the decisions made based on the interest of small groups, especially the plans that include investment interests. Adversely in Pakistan, despite small protests demanding more support for urban reconstruction, the lack of a strong civic society prevented significant policy changes.

#### **3.1.8. Planning adequate implementation arrangements**

The inadequacy of the implementation arrangements in Indonesia, such as planning implementation from remote areas, caused higher costs and delays, leading to a declining commitment to rebuilding. Moreover, there was dependence on contractors. Even though the reconstruction approach in Aceh was set to be community-driven, many private and international NGOs agencies did not adhere to this strategy; instead, they drifted to the use of contractors, which resulted, according to (Coffey and Trigunarasyal,2012), in none resilient structures, culturally inappropriate, and more costly. The involvement of many contractors and implementing



agents affected the reconstruction negatively, making donors less involved in implementation activities and decreasing accountability. Accountability towards the community depends on the direct involvement of the community in decision-making, transparency in sharing information, and the type of relationship between agents and beneficiaries. (Daly and Bassard, 2011) All previous factors relate to community involvement in implementation arrangements.

In another example, the lack of an implementation plan was a critical deficiency in the reconstruction of New Orleans, which was attributed partially to the change of administration that was a top-down decision-making mechanism. In contrast to governmental interventions, there were community initiatives in implementation arrangements; community participation in implementing recovery was through case management and securing resources by raising charity or partnerships. Examples of the influence of community on recovery can be found in the Broadmoor neighborhood, where the community implemented small projects to recover services and facilities.

In Pakistan, stakeholders agreed upon policies relatively early, but many discussions were made about implementation arrangements. The UN-HABITAT advocated using traditional materials, but this usage should be applied differently in each region according to the diverse local contexts throughout the regions, especially in terms of available materials, local skills, and environment. If it is vital to plan implementation according to the local context, it is more appropriate to plan them in a down-to-top mechanism.

#### **3.1.9. Providing local workgroups.**

Strong local groups were a factor in efficient rural reconstruction in Indonesia. Indonesia's local workgroup system was the core unit of organized community participation. With the help of a facilitator from the BRR, this organized unit could compensate for the local governments' weak capacity after years of conflict. Similarly, in Pakistan. A Union council was created in each affected area to work with the NGO partner organization but with a less influential role given. In New Orleans, workgroups were spontaneously made by each neighborhood initiative rather than imposed organizational structure to manage reconstruction. Hence why those initiatives did not turn into a holistic plan; this resulted in unequal recovery rates for each neighborhood.

#### **3.1.10. Increasing monitoring capacity to manage funds**

The example of reconstruction after Katrina shows that large amounts of funding do not lead to successful results necessarily if not accompanied by efficiency in management. The option of

using trailers was too expensive, which limited funding for permanent housing reconstruction programs. This choice of spending on temporary houses limited the funding capacity to fund the recovery plan made by the city's local government. Only 411\$ million were provided to implement the plan.

Moreover, one of the reasons for delays in reconstruction in New Orleans was that the decision to release funds was central. The state government distributed the funds to various programs rather than channeling the funds toward the recovery of the heavily damaged area. This favoritism for programs shows a case of mismanagement of resources. The existing legal framework can hinder the flow of aid, which was the case in responding to Katrina, where funding was channeled through ad hoc legislation, which caused the local government to estimate the needed aid before knowing the size of issues or constructing plans. Legal issues prevented the flow of funds to the housing rebuild and repair program; the Stafford Act did not provide the legal background for FEMA to coordinate funding to HUD. The legal restraints were not addressed until 2008, when Congress passed a law to solve this problem.

On the other hand, the BRR ensured funds management according to updated information using a database, so funds could be channeled where needed. Pakistan had a similar mechanism to manage funds. A database was established to validate the authenticity of beneficiaries.

When generous funds are appropriately managed, this can positively affect recovery. For example, it was noted that the generous funds Aceh received for their reconstruction had strengthened institutional management. New institutions were established, named the Indonesia Disaster Fund and the National Board for Disaster Management. Those institutions helped to optimize policies for more efficient recovery. ([Hallegatte et al., 2018](#)), Furthermore, they helped in more control over the reconstruction process, therefore having faster reconstruction. The reconstruction of villages in rural Aceh had elements of community participation in managing funds, which was assured by releasing funds necessary for the reconstruction of houses by a group bank account after approval by the village committee.

#### 3.1.11. Creating mechanisms for monitoring

Indicated by the absence of services accommodations in the house, and/or poor-quality materials, and/or low seismic-resistant features. The previous indicators raise the question of the absence of codes within the agencies that work in international humanitarian aid in permanent housing reconstruction. Regulating codes are available for agencies that work in humanitarian relief and emergency response, such as the Sphere Project standards and the Red Cross. The poor quality in

Pakistan and Indonesia was attributed to the lack of competence of some NGOs to manage reconstruction projects, such as the lack of adequate supervision and the lack of qualified staff in managing construction work within the NGO staff. The organizational structure in Indonesia included local workgroups, and one of their roles was to monitor implementation activities. The community committee had mainly the role of reporting the World Bank workflow scheme. They did not participate in deciding if the monitoring mechanism was efficient on the ground. It is possible that if the community had a role in creating mechanisms for monitoring, that would increase ownership of the monitoring activities and therefore increase efficiency in monitoring.

### 3.1.12. Linking private and public efforts.

Poor coordination with the government in New Orleans hindered civil society from positively impacting the reconstruction. Instead, the community relied on partnerships with NGOs, volunteers, and the private sector to build capacity, and the community had the role of organizing, coordination, and leadership. The communities had the potential to organize efforts for recovery, as demonstrated in the Broadmoor case by their comprehensive plan and ability to establish partnerships as an implementation tool through building credibility. For example, The BIA in the Broadmoor neighborhood, through collaboration with urban planning experts such as Ahler, managed to arrange summer internships and recruit students from universities to assist in creating tools to implement neighborhood-crafted plans, such as databases. This collaboration between private sectors like Harvard University and civil society increased capacity and efficient planning.

In Indonesia, the government selected a few relocation sites. However, few NGOs refused to participate in situ construction because of challenges in land identification, lack of infrastructure, and remoteness to the sources of livelihood for the resettled population. If the decisions to choose



*Figure 3-3 An example of a map provided by the BIA online website shows the progress of recovery of houses. Source: (giscorps.org)*

relocation land were participatory, it would encourage more engagement from NGOs and not cause a lost opportunity of obtaining aid.

#### 3.1.13. Developing a timeline for finishing reconstruction projects

Delays in initiating reconstruction programs had similar consequences in Pakistan, New Orleans, and Indonesia. In the three cases, delays caused the affected community and NGOs to initiate their reconstruction projects, which caused different issues in each case. For Indonesia, it prevented identifying eligible groups, and this caused some individuals to receive multiple aids. In Pakistan, the community sought to rebuild in anticipation of the upcoming winter, and many of the houses built did not adhere to the policies of resistant building codes issued later by the ERRA. In New Orleans, the delayed plans caused fragmented neighborhood recovery. It is known that reconstruction planning needs time to be initiated because of the issues of obtaining funding, creating an organizational structure, and other enabling conditions. However, it is essential to share a realistic agenda with the affected community on the reconstruction timeline to manage the surge of individual initiatives to minimize their negative consequences.

#### 3.1.14. Developing coordination mechanisms between government, NGOs, and community.

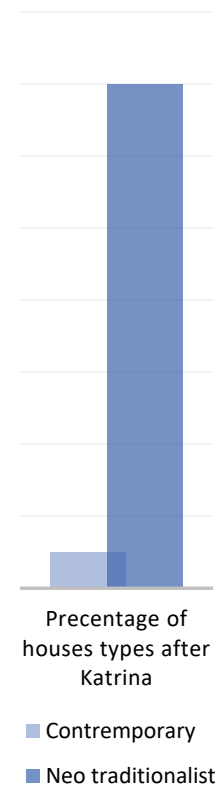
Not only the lack of coordination between governmental bodies was the main reason for the government's failure to respond efficiently after Katrina. Nevertheless, the lack of coordination between the local government and community initiatives also leads to less capacity for the community to act on a larger scale. The community had to deal with a fragmented government recovery system, which made passing their efforts through bureaucratic procedures more complex. For example, the recovery in the city's different neighborhoods was uneven. The Treme neighborhood had a slow return of residents. The Lower mid-city experienced more demolition to build new hospitals.

In contrast, the Broadmoor neighborhood had a fast recovery. They worked on individual projects like restoring public buildings such as schools and parks instead of organizing their efforts into a more holistic plan. [Ali,2016](#) compares the centralized approach with affective coordination in Tohoku, Japan, after the earthquake in 2011 and the factionalized approach in the post-Katrina USA. in Japan. Even though the response strategy was planned at the state level, the effective collaboration between the community and state agencies contributed to the coordination efficiency. In contrast to the USA, the lack of clear communication lines and overlapping duties were the reasons for delays and inadequate recovery efforts.

### 3.1.15. Linking Planning to the architectural identity

After disasters, communities prefer to live in a built environment similar to their living condition before the disaster, which is especially relevant in the rural context, "where individuals adhere strictly to their traditions." (Lizarralde et al.,2009). The use of trailers in New Orleans caused broad opposition from the community, which did not accept such accommodation in their immediate built environment. Similarly, in Mississippi, Communities opposed the construction of affordable housing due to the "perception of social problems accompanying the type of affordable housing developments" (Fitzpatrick, 2010). Consequently, the local authorities did not approve permits for constructing low-cost housing consisting of prefabricated cottages in post-Katrina reconstruction to avoid lowering the property values in the region even though the cottage's costs were high. (The Washington Post,2009). The comparison between the two states showed how decisions often impact the affected architectural surrounding, thus impacting their social lives, either by breaking the continuity of the architectural identity or not providing their needs for future developments, especially micro-projects that support their livelihood or services necessary to support their recovery. It also shows how the community often influences changes in architectural identity. Significant social events also influence the architectural identity after disasters. The process of gentrification affected the city of New Orleans's urban characteristics, where new youthful residents brought more globalized cultural vibes into the city, and new service and commercial buildings, such as restaurants, all had different architectural styles.

In contrast, newcomers did bring new architectural styles into the city. We observed that the housing architectural styles tended to preserve the traditional architectural styles in the reconstructed houses, an architectural choice made by individuals that reconstructed their houses but had a collective impact on the city's architectural identity. We observe that communities have a role in forming the architectural identity of their built environment and that they mostly prefer



*Figure 3-4 A comparison between the percentage of houses with the contemporary type and new traditionalist type that were reconstructed after Katrina. Source: Campenalla and Rosen*

a sense of familiarity and continuity with the previous architectural identity even when the mixed-use environment, services, and economic activities change within the settlement.

We also noticed a tendency to embrace the historical architectural identity after the disasters in Pakistan and Indonesia. In urban Aceh, the decision-makers considered using Islamic influence in the design of the memorial museum and a few historic restoration projects to emphasize the Islamic architectural identity. Contrary to the previous examples, we saw that in rural Aceh, NGOs sought to build with reinforced concrete, masonry, and corrugated steel sheets in response to beneficiaries' preferences, regardless of preserving the traditional Acehnese housing type. A decision by the NGOs with less consideration for the impact of the concrete housing, many occupiers showed little satisfaction with the new houses' designs and materials.

### 3.1.16. Considering cultural diversity characteristics during the planning

There is often an increase in the adaptation of the region's cultural identity in the housing designs after disasters, and choices of housing designs by the affected community in New Orleans after Katrina shows that after disasters. In the case of Katrina, as previously discussed, the affected community, rather than opting for contemporary housing designs, regardless of the income level, could contribute to an increase in local civic pride after a crisis. On the other hand, top-down decision-makers may have subjective views regarding the built environment's influence on cultural diversity. They may use the disaster event as an opportunity to change characteristics that may positively or negatively affect cultural diversity. For example, top-down decision-makers demolished a few public housing complexes, although they did not have substantial damage. The rationale behind this because public housing had negative reviews among some planners because they reflect the utilitarian attempts trending in the 60s influenced by "rationalist" planners like Le Corbusier. A book in 1961 written by Jane Jacobs noted the adverse effects of the waves of utilitarian attempts to impose order and efficiency in urban planning was reflected by the trend of public housing construction projects across cities in the USA. She argued that this trend rejected the layers of complexities generated by the natural fabrication of settlements by human beings living in a community. In other words, the planners saw the disaster as an opportunity to demolish the public houses because they saw them as repercussions of the utilitarian trend that did not reflect a settlement's social and cultural diversity. Community participation is essential to considerations of sociocultural factors; therefore, the community may have a role in discussions related to reconstruction decisions that impact cultural diversity.



### 3.1.17. Enhancing the sense of place and spatial belonging affects planning.

In Aceh, the government did not adequately consider the effects of spatial belonging when making relocation plans, which failed those plans. Most people preferred staying on the site, making the policymakers reevaluate their strategy to provide temporary housing rather than replacement houses distant from the affected area. Furthermore, some NGOs refused participation in relocation plans because they feared that resettling affected communities throughout distant locations would cause a loss of social cohesion. (Da Silva, 2010). Spatial belonging can be related to social or economic drives. For example, the community refused the relocation plan of Balakot town due to fear of losing the means of income based on tourism. Realizing this fact, the decision-makers were able to work with the locals to provide similar livelihood means in the new location and ensure a degree of continuity.

In the post-Katrina USA, people who moved from New Orleans to Houston, brought together by the fact they migrated after the disaster to the same area, became a cohesive community. Even though they were of different ethnic backgrounds, they accommodated each other temporarily and attended the same activities as churches or therapy. This togetherness helped in a collective mass return of the community to its original state. (Sapat and Esnard, 2016). The presence of a collective sense of belonging resulted in the mass decision to return, rebuild, and address issues on the neighborhood scale, which increased the implementation of recovery by assuming an active role in making decisions, management, coordination, and increasing capacity. Another demonstration of the effects of spatial belonging was the broad refusal of the Bring New Orleans Back plan. Even though the plan had a vision for sustainability and preserving local identity, the fact that the plan ignored the sense of belonging caused the plan's refusal.

### 3.1.18. Ensuring equity in distributing houses

Issues of equity in distributing housing and services were prevalent in the three demonstrated cases. In New Orleans, the rebuilding pattern showed signs of variant recovery rates. For example, supermarkets opened more in the higher-income neighborhoods, and the newly constructed projects aimed at development were characterized by high investment projects, which meant they were implemented in fewer quantities. They could only benefit the adjacent neighborhoods instead of distributing microservices projects throughout affected neighborhoods according to their needs.



In Pakistan, one of the driving factors for choosing an owner-driven approach was to ensure equity in distributing housing. For example, a member from the ERRA named Nadeem Ahmed asserted that it is unacceptable to create "islands of excellence" in a sea of misery. Perhaps this statement was influenced by the previous experience from another reconstruction program, where quality houses were built for the few, and the majority did not have the same aid level.

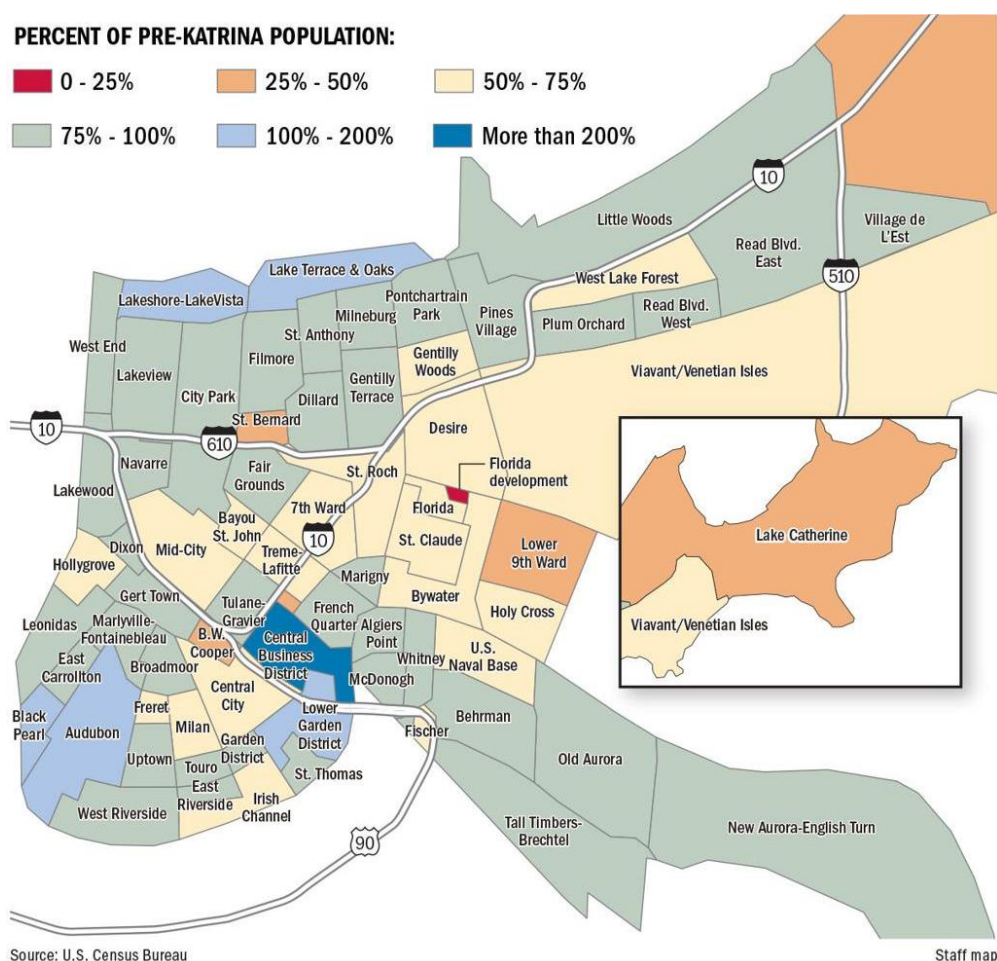


Figure 3-5 An uneven recovery of neighborhood population in 2020. Source: U.S Census Bureau

### 3.1.19. Avoiding disparities among society layers

The compound of Panteriek in Aceh suffered from disparities among their societal layers since there was little consideration of the cultural difference between the old inhabitants and the newcomers. The decision to integrate the new residents with different cultural backgrounds was not participatory during the reconstruction phase. As noted by [Daly and Rahmayati](#), the sociocultural aspects of reconstruction were only discussed in meetings and were not accompanied by clear implementation strategies.

[Ali,2016](#) pointed out the racial prejudice in post-Katrina "weakened relief efforts." This racial segregation, in turn, contributed to lower income for African Americans—consequently, high- and concentrated-poverty neighborhoods formed in New Orleans. Research by The Ohio State University found that New Orleans neighborhoods with higher concentrations of African Americans were primarily “low opportunity” areas with limited access to quality schools, jobs, and safety ([Kirwan Institute for the Study of Race and Ethnicity in NAACP,2006](#)). The indirect impacts of the disparities among society layers for the success of a reconstruction project include increased vulnerability in the face of disasters, or it might lead to social tensions that characterize the built environment with patterns of imbalances in the quality of the built environment.

### 3.1.20. Protecting the interests of vulnerable groups from the impact of gentrification

The case of New Orleans presented how failing to provide affordable reconstruction programs led to gentrification for the most vulnerable. The people with more financial resources or who owned the houses had more chances of returning than lower-income or renters, partially of African descent. Moreover, the landlords of poor socio-economic status were unable to participate inland program that provided zero-interest loans to rental properties that would make affordable rents which ended in failing the program. It was reported that no affordable rental units were built, while two-thirds of the "conditional award" dropped out in New Orleans, and the tenant had to find new rental housing away from their livelihood ([Stanfield et al., 2008](#))

The low-income individuals or renters are not the only victims to be considered among the vulnerable "vulnerable groups" after a disaster, including cases that differ in each local context. In urban Aceh, only landlords were identified as eligible for aid. Consequently, the government had to issue a policy of free land and housing for renters and squatters after two years after the disaster. (BRR, 2006). Likewise, Landlords in Pakistan were reluctant to rebuild houses for tenants to reoccupy them. The three cases show how the interests of the tenants, in particular, were overlooked in the reconstruction policies. A suggested approach to ensure the interests of the vulnerable is to integrate a down-to-top entity within the organizational structure, such as in the case of rural Aceh, where a form of community participation called the "village development committee” was formed to represent the affected community interests, including the needs of the vulnerable. The community committee had various roles that did not affect their efficiency but supported the organizational structure in a noncomplex workflow.

### 3.1.21. Ensuring public transparency during the decision-making process

The ambiguity in the causes of the decisions to demolish the public housing in New Orleans led the grassroots activists to raise tension, claiming that Katrina was used as a pretext to demolish the public housing. Public transparency, if ensured, could have prevented the speculations over the causes of these decisions and toned down the public tension and accusations of prejudice against the class of the population that inhabited the housing.

In Indonesia, the locals perceived their local government as corrupt because the local authorities would halt actions or distort information. For example, Oxfam investigated thousands of dollars of aid money that went missing, halting their reconstruction program, which had victims lose their chances of housing assistance.( [Coffey and Trigunaryah, 2012](#)), Overall, the level of transparency varied throughout the villages, even though all villages were subjected to the same financial accountability and reporting requirement from the district government, BRR, and donors, villages with a higher level of community participation had better transparency.

### 3.1.22. Supporting strategy for the vulnerable when relocation is unavoidable.

Relocation decisions are often confronted in recovery planning. Relocation can be a mitigation process to prevent losses in future disaster scenarios and concentrate resources on developing the designated area. However, relocation can have negative economic and social impacts on the affected community, especially for vulnerable groups. Relocation can disrupt the social fabric between people or between people and the resettlement, for it can disrupt the sense of continuity and intensify the feeling of loss. This disruption can lead the affected people to reject relocation plans, such as in New Orleans, where the displaced rejected the BNOB plan. The plan sought to relocate displaced people to safer areas and to reduce the "urban footprint of New Orleans" ([Stanfield et al.2008](#)). Road Home Assistance presented relocation plans in New Orleans, where they offered compensation of up to 150 thousand dollars. The options for the beneficiaries were to either sell the property to the state at a fair price and move out or repair their houses. The option of relocation was not offered in this approach. Not considering the needs of the vulnerable groups created inequalities in the recovery program. ([Simunovich,2008](#))

People in Banda Aceh avoided relocation arrangements into new houses provided by the Indonesian government during the emergency phase. Instead, the victims preferred staying in their damaged houses while waiting for reconstruction, which changed policies from providing replacement shelters directly to temporary shelters in situ for the victims. ([Da Silva,2010](#)). In

general, including the community's perspective in the relocation arrangements is crucial to minimize the negative impacts. Providing a sense of architectural continuity with the pre-disaster settlement is one way to minimize the psychological, social, and economic impacts on the community. Therefore, the community can provide perspective on the architectural continuity elements and priorities that will be beneficial to integrate into the new relocated settlement.

### 3.1.23. Linking livelihood and services to housing

The affected communities often prioritize maintaining their livelihood over participating in the relocation plan. For example, the affected people in Aceh preferred to remain in temporary housing rather than move away from their livelihood necessities; there is also the example of the Gampong Baro village, where villagers had to change to agriculture and sales instead the fishery.

One of the first decisions planners must make when outlining a reconstruction strategy is prioritizing the order of sectors to be addressed, such as building infrastructure, community services, and facilitating livelihood. The reconstruction strategy in Indonesia prioritized housing, but planning infrastructure and services were not coordinated accordingly. The result was that housing was built relatively quickly, and infrastructure was not built in a parallel timeline; therefore, many houses remained unoccupied or sold by the beneficiaries because they lacked appropriate infrastructure. They preferred to stay in shelters that accommodated infrastructure necessities like electricity, water, sewage systems, and public transportation. (Da Silva,2010).

Livelihood and services can be as important as housing to the affected community. Suppose it is advised to engage the community in housing decisions. In that case, it might be just as essential to engage them in livelihood and services decisions when making decisions related to housing reconstruction. There is an acknowledgment of the importance of coordinating the previous sectors to provide adequate housing to victims. However, ensuring the community's satisfaction with the services of their houses is rooted in the beneficiaries' preferences. Therefore, it is worth investigating the importance of consulting the affected community regarding housing needs and how they prefer linking their houses to their livelihood and services.

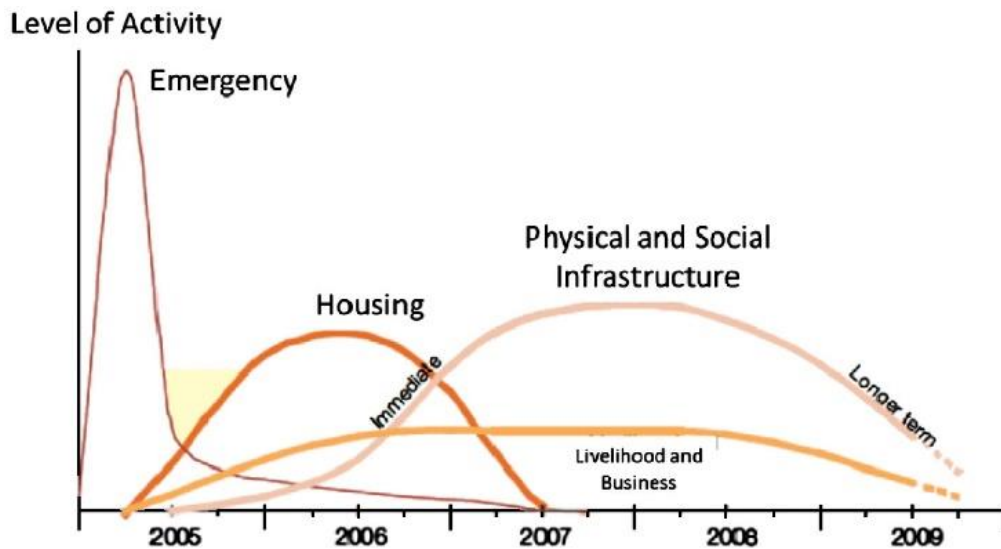


Figure 3-6, timelines for sectors recovery in Indonesia case, shows the variance level of activities, especially in linking infrastructure to housing recovery. Source: BRR

#### 3.1.24. Considering family structure and lifestyle during housing design

Accommodating the locals' lifestyle in housing designs is important in making suitable designs. Some of the international NGOs in Aceh did not consider this factor when designing the houses. They opted to build a "modern" indoor kitchen instead of an open fire kitchen, which was seen as more of a "downgrade". The result was that the beneficiaries used amounts of funds provided to build a wooden structure with zinc roofing to make the open cooking space they prefer, even though this amount was at the expense of buying glass windows or painting walls. The new houses did not consider the Islamic customs of gender segregation in the housing layout designs. Moreover, despite the family size, the standardized houses were inappropriate for the community's cultural tradition, with which many family members keep close relations—causing difficulties in accommodating the new house to their lifestyle. Engaging the community in decisions related to the effect of cultural norms on housing is important in NGO-driven reconstruction because it is difficult for international agencies to comprehend the cultural context. However, the preferences of the affected community are subjected to many variables; some may look for "upgrading" into modern houses that exude social or economic status, while some prefer accommodating the lifestyle.

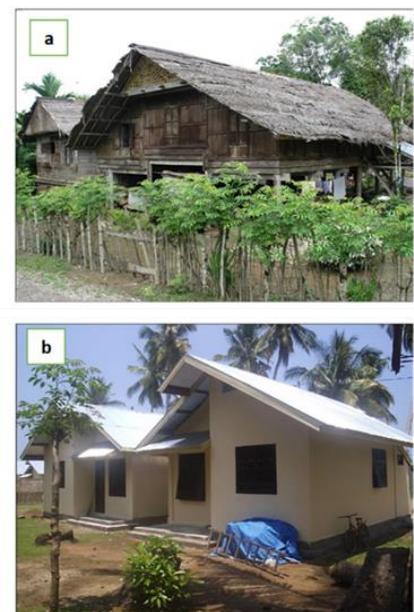


Figure 3-7 a) the traditional Acehnese house, b): a house built by Oxfam, (kitzbichler,2011)



Moreover, some of the community preferences on housing design may contradict the architectural identity decisions at the urban design level since both (community preferences on housing designs and architectural identity) have the same factors that affect them. The factors that create the architectural identity are spatial organization, time organization, semantic organization, general design principles, building shape and form, building materials, and the relationship with context. (Torabi and Berahman, 2013) Therefore, it is important to consider how the preferences of the community in housing designs will affect the architectural identity, preferably finding a balance between achieving the satisfaction of the affected community and creating an architectural identity that adheres to urban design principles such as sustainability, and creating a sense of continuity that serve the disaster recovery as a more holistic approach.

#### 3.1.25. Providing spaces and facilities to increase social interaction.

It is important to consider the social relations within a community by gathering them into close neighborhoods to avoid social segmentation. "Social mobility must be considered, and future projections should be made." (Arslan and Unlu, 2006) The decision-makers in urban Aceh South developed tourism projects by building a museum and restoring heritage buildings, such as Abdulrahman Mosque, while the rationale for this decision was to promote tourism. However, it also aids in increasing social interaction in the city and enhances social cohesion after a disaster. In New Orleans, a few projects were initiated to provide social places for the residents, such as playgrounds, tennis centers, and parks.

Even in typical situations, the participation of the local people in urban planning decisions is low, especially the decisions related to green spaces or public spaces. In the context of reconstruction after disasters, the available spaces for reconstruction have complex issues. Therefore, decisions related to providing spaces and facilities to increase social interaction may encounter a conflict of interest with the local community, so it is recommended to identify the conflict of interest in the urban planning of spaces after a disaster.

#### 3.1.26. Adapting to future changes and requirements

The owner-driven policy implemented in Pakistan meant that there had to be a system of ensuring owners comply with manuals to receive grants. The established ERRA non-compliance referral helped detect problems in the released manual according to practice on the ground to update the manual for owners and release other versions to include how to correct trending problems in a building. Updating plans is necessary to ensure stakeholders' consistent support over time. The

government of Pakistan had issues sustaining sufficient monitoring, which made constructed houses less appliance to seismic safety codes.

Issues of adapting to changes not only concern reconstruction decision makers during the reconstruction phase but extend towards longer-term recovery, especially in planning land use. The 2015 zoning ordinance law in New Orleans, which is a law that deals with issuing permits for issuing this law, may hinder adaptation to future changes. It created inflexibility in updating and using as needed.

In Indonesia, the demographic changes resulting from waves of immigration from rural to urban settlements resulted in changes in land use from agricultural to urban. Not adapting to these changes caused socioeconomic issues and increased informal settlements. After the disaster, the decision-makers did not consider adaptation to future changes after recognizing the pattern of immigration from rural to urban by planning more balanced urban settlements and providing an increased level of decentralization of services in the rural areas. Therefore, the issues of informal settlements have gradually increased since the disaster.

Planning reconstruction while considering adapting to future changes and requirements is somewhat tricky. A sense of uncertainty is associated with disaster recovery projects, so adding the element of community involvement in planning for future requirements might overwhelm decision-makers; this does not mean that the community may not have a role in this factor. The community can be vital in providing the data necessary to identify patterns and forecast changes.

#### **3.1.27. Rationalizing the use of resources**

The government of Pakistan advised using traditional materials, but it lacked the plan and logistics to manage resources. Therefore, there were many cases of illegal logging. Likewise, in Indonesia, building in the traditional style increased the demand for timber, adversely affecting the forests and the challenges to obtaining the large amount of timber needed for rebuilding. Due to deforestation and urbanization, timber prices were high even before the tsunami. The prices increased with great demand after the tsunami, and many materials were used, such as aluminum, zinc, cement, and timber. The high demand for materials had negative environmental and safety effects because mining activities were conducted near roads or bridges, risking making infrastructure unstable and increasing the risk of landslides. Community involvement in decisions related to preserving natural resources can create a sense of belonging. It also creates awareness and a sense of responsibility for harmful practices, ultimately reducing the human practices that harm the environment.



### 3.1.28. Supporting political sustainability

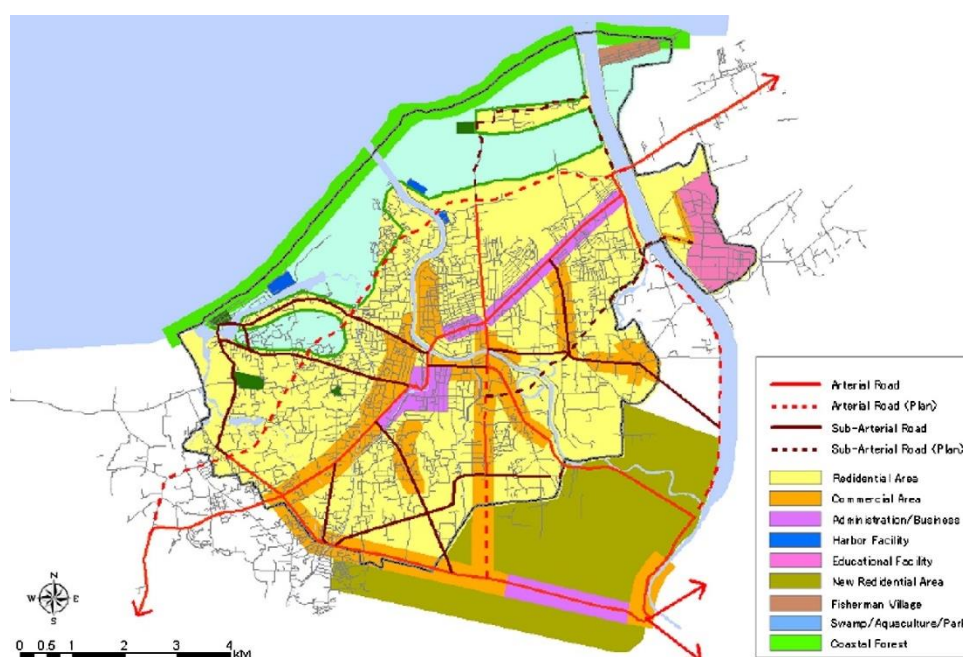
Community participation may increase the understanding of how the organizational structure functions. It also helps empower the community to make decisions, increasing political awareness. In contrast, the lack of community cooperation based on political issues hinders the recovery efforts. The lack of cooperation in Aceh, for instance, was due to the tensions from ongoing political conflicts in Aceh, which led to an inability to provide logistics like storage areas, assistance, and construction materials between villages because of a lack of cooperation between the habitants of these villages. The military's involvement in relief activities in conflict zones between Indonesia and Sri Lanka added to the issue. The area had active violent events between the army and guerillas of the "Free Aceh Movement," so the locals were cautious about the presence of the army in fear they would claim their land, and the army was reluctant to provide aid in case they would form a supply line to the rebels.

### 3.1.29. Consolidating the Urban economy while considering its effects on the community

Equality in disaster recovery is a critical indicator of the success of the recovery. The state of inequality in New Orleans claimed to be present before the disaster, reflected by the economic and racial segregation in parts of the city. Even more claims of inequality persisted after the disaster; something noticed in case studies is that the conditions before disasters often prevailed or worsened after the disaster hit, and the neighborhoods with lower income or had more African Americans suffered from inequality in receiving aid related to housing recovery. At the same time, the city plans preferred to focus on large projects to attract investments, raise the value of the neighboring houses, or attract tourists. The decisions to focus on large projects that attract investments were top-down decisions. Such decisions could create inequality in development between neighborhoods, which results in an unsafe, unhealthy city overall, which contradicts the intention for city development.

In contrast to the claims of inequality, [Collins \(2015\)](#) notes that the planning process in the UNOP, which included an innovative approach to engaging the community in a formal participation process, improved the planning process that was usually based before the disaster. The UNOP improved predictability by engaging the community in providing the necessary local context and community approval of the plan. The planning process also facilitated the decisions for businesses to invest in the city but with a degree of consideration for their effects on the community.

The decision made by the local government of Banda-Aceh to create a new central business district was mainly driven by the desire to establish economic development project. The economic development project is often the narrative used to seize opportunities caused by the changes in the urban characteristics caused by the destruction of disasters. The narrative is the same for building the museum as a landmark for tourism attraction. Another top-down decision based on economic development was the prohibition of building in coastal areas. The community refused this decision because it would cause relocation of their houses. The NGOs rebuilt the houses on their original houses based on the preferences of the community, ignoring the policy that stated to prohibit building 500 m from the shoreline, which shows that participatory decision-making has a role in economic development decisions; it also shows the critical role the community has on decision making can sometimes even affect implementing policies.



*Figure 3-8 The master plan for Banda-Aceh, shows the relocation plan for the shoreline into new residential areas southeast of the city. Source: JICA*

### 3.1.30. Providing response methods to future disasters and increasing the community's ability to respond to possible disasters

The second earthquake in Aceh in 2013 caused similar damage patterns to houses to the destruction caused by the 2004 earthquake and tsunami, which further asserts that seismic-resistant standards were not followed. Even though the Indonesian seismic design code provided comprehensive requirements, to achieve a sustainable recovery, policies should issue the response methods to reduce the impact of possible disasters; those policies should be accompanied by

proper monitoring and regulating mechanisms from the government. Engaging the community in forming mitigation policies may increase their keenness to implement them.

It was shown through the three case studies that community participation increases satisfaction. In addition, their involvement increases their capacity for decision-making by increasing a sense of togetherness and confidence. Their involvement also can give them more realistic expectations and understanding of their condition, which can benefit long-term development planning and increase their attachment to their environment. Engaging the community in disaster management in the mitigation phase may also increase the community's capacity to act more efficiently in case of future disasters. The Indonesian government formed a disaster management organization after the tsunami of 2004, which included community participation in forming disaster mitigation projects. The mechanism of community participation was through meetings, reviewing the city council's planning concepts, agreeing on goals, then choosing the details of the projects and the priority of implementing them. All of the previous activities create an accumulated experience that increases the community's capacity for disaster management.

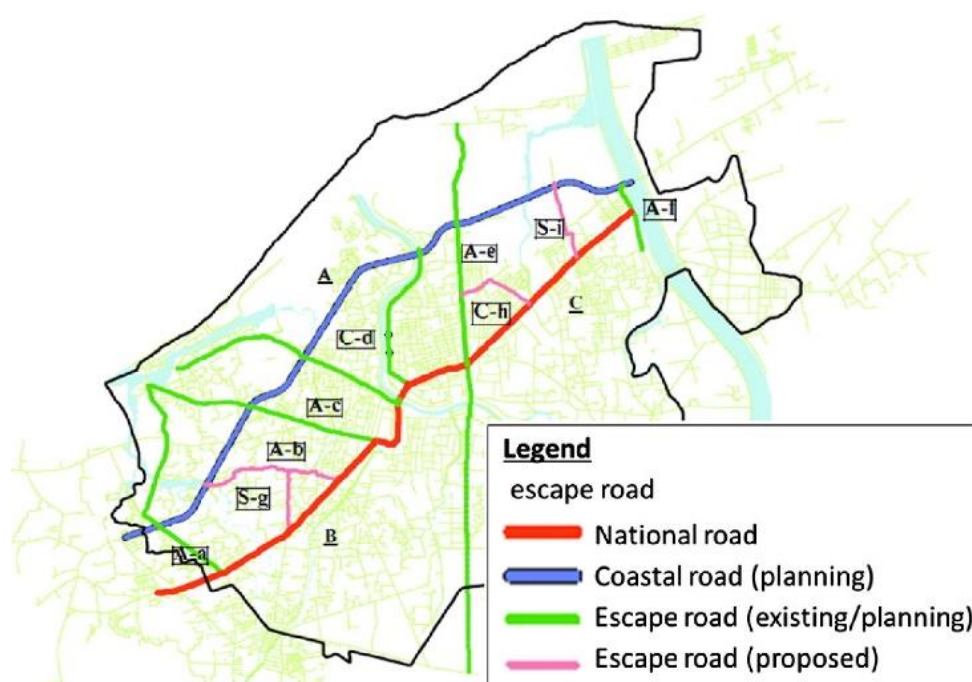


Figure 3-9 The transportation plan for Banda-Aceh after the disaster shows the newly planned escape roads to mitigate new disasters. Source: JICA

### 3.1.31. Providing linkage with the surrounding environment

Ensuring cohesive and holistic reconstruction is one of the most critical issues in successful reconstruction. It is crucial to link each community decision-making unit with a uniform plan to achieve holistic recovery. In Pakistan, the decision-makers sought uniform technical assistance in

all regions by linking the union council unit with district-level planning. Also, no individual donor-built houses are allowed to avoid inappropriate designs and arbitrary selection of beneficiaries.

The planning for reconstruction in New Orleans was done through each neighborhood-related organization; then, the plans would be combined into one plan for each district, then into a master plan for the city, which adopted the plans for large projects such as the Milan project, projects aimed to increase interconnections with different parts of the city. Such as the development of Louisiana and Claiborne avenues as major commercial corridors aimed to facilitate interaction among residents of at least three other contiguous neighborhoods, each with unique characteristics. Furthermore, the building of a police and fire substation and a connecting playground on the eastern periphery of the neighborhood is aimed to serve as an important bridge between Milan and Central City neighborhoods. (Brunsma et al.,2010)

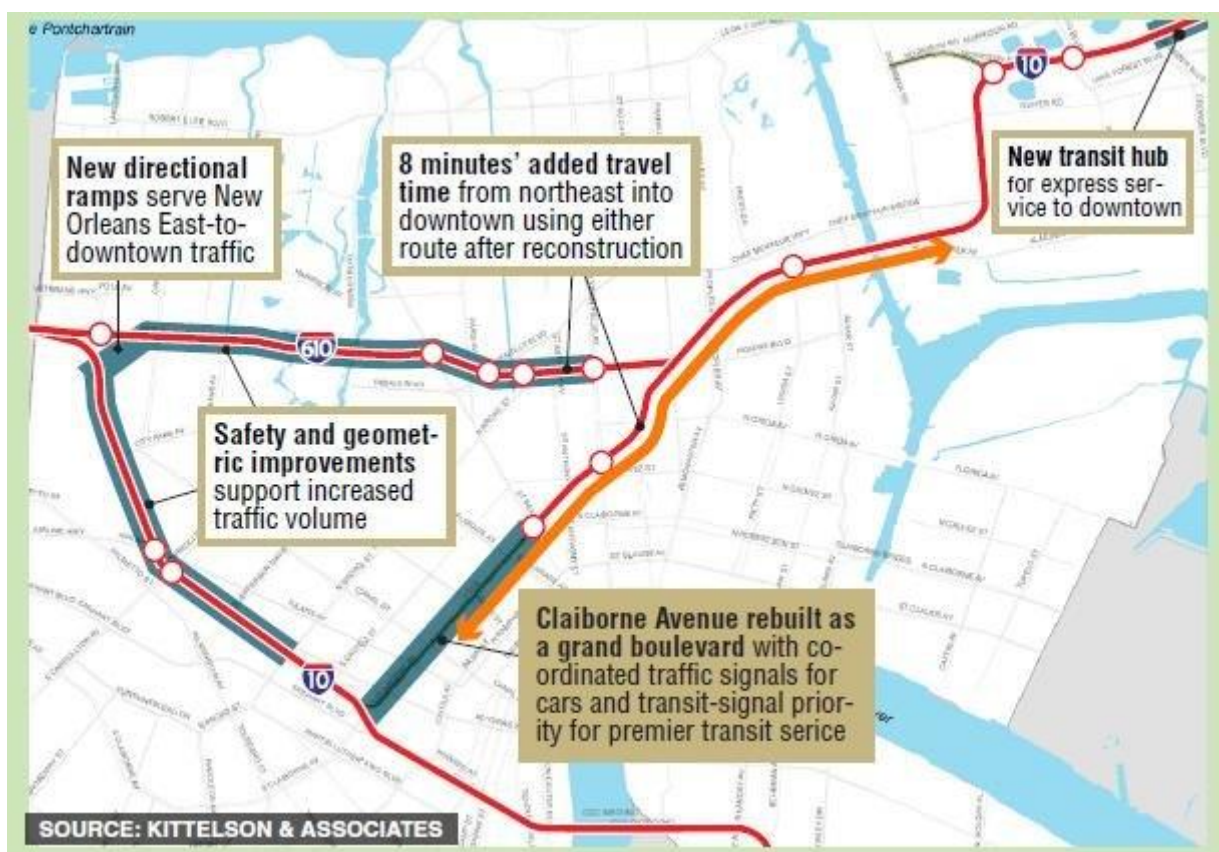


Figure 3-10 The Plan for Claiborne commercial corridor to increase the linkage with the surrounding environment. Source: Kittelson and associates

### 3.1.32. Linking Urban and rural development during planning



In the cases of Pakistan and Indonesia, there were prominent differences between rural and urban reconstruction. This difference is usually due to the complexities of urban reconstruction in comparison to rural. For one, land issues are more prominent in the urban context because, in an urban context, a lower percentage of people own their houses, exacerbating the issues of tenants. Furthermore, land space for reconstruction is less than in rural contexts; finally, international agencies and NGOs mostly do not have the capacity for urban reconstruction, and they tend to avoid participating in the programs of urban housing recovery.

It is not implied that there should be a unified plan for urban and rural reconstruction. On the contrary, the significant difference requires different planning. For instance, since urban reconstruction usually requires more time to implement than rural reconstruction, this affects the strategy of choosing a type of shelter according to each context. Usually, transitional housing is the strategy for urban reconstruction, while it is more feasible to build permanent houses in-situ or relocated settlements for rural contexts. (Jha et al., 2010) However, linking plans is essential to avoid the issue of fragmented recovery, which is one of the critical issues of reconstruction.

The historic political disputes in Aceh had created a division between rural and urban Aceh based on demographic, socio-economic, and socio-political aspects. The disputes led to the urban Aceh being more isolated from the rest of the province, ultimately affecting the dynamics between the city and its surrounding rural settlements in the reconstruction phase. Another contributing factor to the lack of linkage between urban and rural reconstruction was the reluctance of NGOs to engage in urban reconstruction due to overwhelming land issues, a similar issue in Pakistan of separating the housing strategies as urban and rural. This decision was made because urban planning, especially for NGOs involved, was considered complex due to interrelated issues of urban planning, providing infrastructure, and land issues as an indicator of neglecting urban planning in Pakistan. ERRA, for example, had only one urban planner expert deployed by the United States Office for Foreign Disaster Assistance.

### **3.1.33. Considering decentralization in services and traffic**

One of the results of the lack of decentralization between urban and rural Aceh was that the NGOs focused on distributing aid in cities because it is easier to access and navigate. The lack of decentralization in services between rural and urban Aceh led to migrations toward the cities. This issue was so influential that a law governing Aceh allowed the province's resources to be devolved directly to the Banda Aceh administration before being distributed to the other two sub-provincial administrations. The decentralization contributed to a massive lack of infrastructure. Similarly,

most of the focus in New Orleans was on housing reconstruction. Little effort was put into linking the recovery of housing to the recovery of public services and livelihoods. The focus was on building large rather than small, more widespread projects, which caused the unbalanced distribution of services, further deepening the equity claims for low-income neighborhoods.

Decentralization in services and traffic is an essential consideration in urban planning projects; urban planning decisions are usually delegated to the national or local government. It is suggested that urban planning decisions in disaster recovery have a transparent decision-making process to avoid equity issues for the most vulnerable groups of society, especially the decisions related to the distribution of services and the decision that affect increasing the price range of properties.

#### **3.1.34. Balancing between mass and space during planning land use**

After Katrina, the American Society of Civil Engineers announced that the flooding resulted from a failing levee system; this influenced land use planning by making decision-makers set buyouts without specifying a particular flood risk area. However, for whoever wanted to sell their house, this cannot be described as a deliberate relocation strategy to impose some land use plan for development. These land use management decisions led to a “checkerboard housing recovery, because of random buyouts, with densely populated neighborhoods coming back in bits and pieces, leaving some very sparsely populated” ( Maly et al., in Banba and Shaw,2017). Complex land issues heavily influence housing reconstruction; the complexity of land issues and the objective of providing housing may lead to decisions that neglect the effects of such decisions on the urban pattern, such as causing unbalance between mass and space. It is necessary to identify the decision-makers responsible for assessing the effects of housing reconstruction on urban patterns and land use to avoid such side effects

#### **3.1.35. Compatibility between characteristics of old settlement with the new one.**

The NGO-driven approach in rural Aceh, with a lack of holistic planning by the central government, led to various characteristics within the same area. Each NGO adopted its vision of reconstruction, which resulted in various house areas, layouts, and forms, changing the characteristics of the settlements without a proper plan.

Another urban planning consideration after disasters is assessing the adaptation of housing reconstruction to the previous mixed uses. For example, the development of the streetcar line after Katrina unintentionally changed the city's mixed-use environment by increasing commercial use along the line. Therefore, increasing commercial development and reintroducing mixed land uses

to traditional neighborhoods that lost neighborhood-scale commercial uses caused a displacement of residential uses.

The community can be a powerful influence on key decisions that affect urban patterns, such as stopping the decisions made based on the interest of small groups from the public or private sectors, especially in areas with solid investment interests, such as the case in BNOBP, that aimed to shrink the city and change the city characteristics. Nevertheless, on a smaller scale, the community could not influence decisions that affected the urban pattern. The government had the decision whether people were able to build in a given place or not. The affected community did not have much engagement in the decision-making in the urban patterns.

### 3.1.36. Considering the effects of land nature on reconstruction

In Indonesia, even though the decision to relocate has negative impacts if not considered or planned carefully, and there are numerous cases where building on the site was a better decision, there are instances where the decision to build in situ had bad consequences. Bernstein demonstrated an example where some villages in Aceh were forced to rebuild houses in the exact location. Even though the land had suffered topographical changes after the tsunami and a large percentage of the land became too Low to allow for safe building, mitigation efforts were implemented by The Rehabilitation and Reconstruction Agency of Aceh and Nias (BRR), like landfilling or embankments. However, these mitigation procedures did not decrease the vulnerability of rebuilding this hazardous site. The embankments, for example, blocked the water and sewage systems and landfilled compromised houses built previously by another NGO (Barenstien, 2007).

Several houses were built in the same high-risk flooding areas even after Katrina. Land nature in New Orleans is only considered in building permits; the local government guided reconstructed houses to have a rise on the ground floor. The mitigation adjustments were, therefore, only made at the housing design level. In contrast, building on low ground and depending on engineered levees and floodwall protection systems in New Orleans persists today.

Another example is from Pakistan, where some guidelines did not anticipate the effects of land nature, like the guideline that stipulated the distance between the house and background should not be less than the height of the house if the house were to be constructed on a slope. However, lack of space prevents compliance with this guideline.



### 3.2. Factors that affected decision-making in the case studies

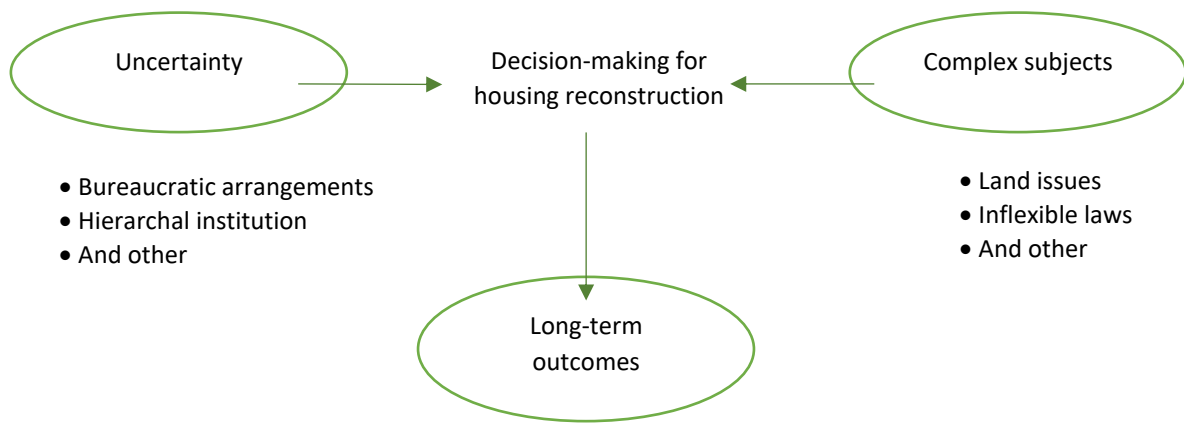
Several factors affected decision-making in the case studies—factors related to governance, fragmented decision-making systems, the influence of economic development, and implementation complexities.

The inflexibility of governing laws aggravated decision-making in New Orleans. Policies and their interpretation of them promoted using a specific type of housing reconstruction. FEMA did not consider repairing houses because the general council interpreted the Stafford Act as not allowing for repairing permanent houses. Moreover, the Stafford Act allowed FEMA to define the roles of other agencies, including those specializing in housing reconstruction, such as HUD. FEMA limited this agency's role, limiting its capacity to implement permanent housing reconstruction projects.

The lack of information decreased the efficiency in decision-making. For example, Pakistan's decision-makers had difficulties making relocation decisions because of the lack of specialized consultants to conduct hazard mapping. Common issues in disaster recovery are land issues and issues of eligibility. The two are complex subjects that hinder the ability to predict the outcomes of reconstruction decisions. Especially land issues, "land issues often constitute the main obstacle to housing resulting in displaced being relocated to remote and/or hazardous sites" [Sapat and Esnard, 2016](#).

Governance in housing reconstruction refers to the institutional arrangements through which decisions are taken and implemented to advance housing recovery. In the context of housing recovery, having a rigid institutional structure in the form of hierarchical and overly bureaucratic arrangements can hinder effective decision-making; this is derived from the fact that disaster recovery is characterized by uncertainty, which demands flexibility.

Another reason for the need for flexibility in the making of institutional structures is that decisions are made based on different priorities of stakeholders, sometimes competing priorities. Therefore governance in the decision-making process is the key to reconciling competing priorities and mediating through a significant amount of principle systems and local context factors in a high level of uncertainty. In short, the reconstruction process requires critical decision-making about complex subjects with long-term impacts based on confined information.



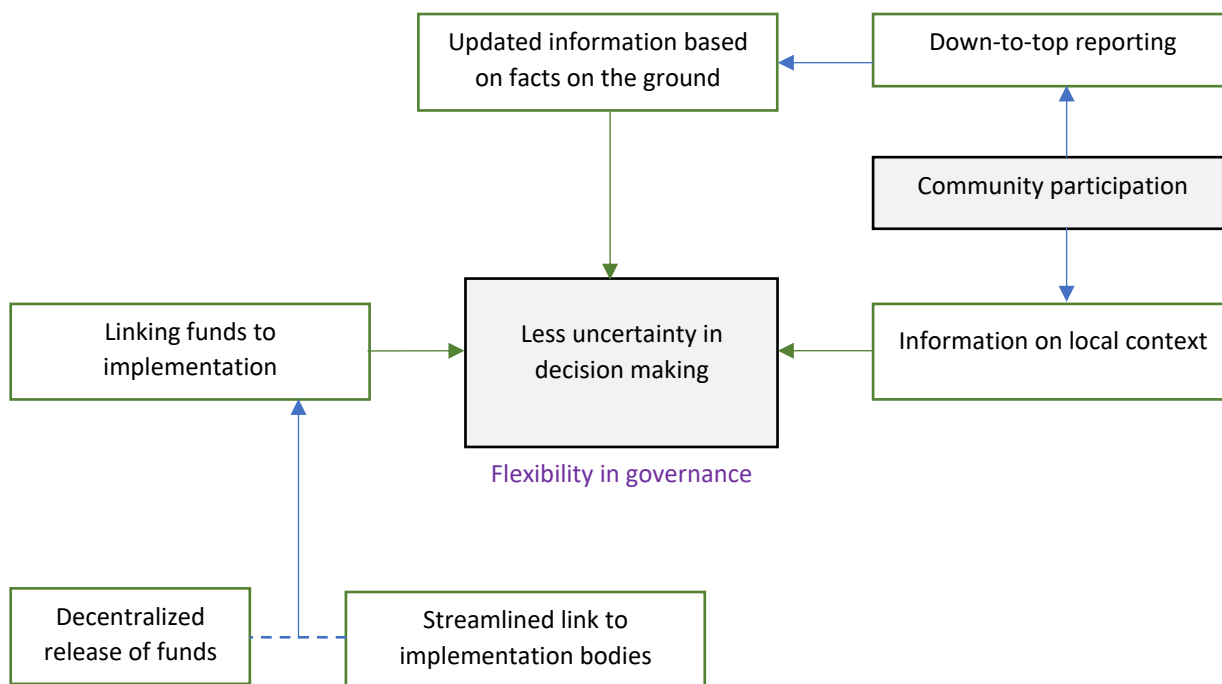
*Figure 3-11 Factors affecting decision-making for housing reconstruction*

Choosing an adequate institutional arrangement depends on the existing capacity of the local government. This capacity depends on the disaster's scale and the area's location, affecting logistics capacity. The local government can have a leading role in making decisions if they have sufficient capacity and efficient management. If not, establishing a decentralized agency with enough capacity and authorization means (or effective coordination with authority institutions) may increase the chances of flexible governance, such as in Pakistan when ERRA acted directly under the prime minister's office.

The decision-making in New Orleans was characterized by a high bureaucracy and inflexibility that significantly impacted the decision-making. Multiple lines of authority were involved without a clear definition of roles, which caused a conflict of roles and delays. Planning for reconstruction in New Orleans was hindered by conflicts between the federal government and its agencies. The local government and the administration officials each had their interests, point of view, and overlapping responsibilities. FEMA Public Assistance program limited funding to restoring existing buildings, hindering the reconstruction of rental housing and public service facilities. The government accountability office found that senior leaders among FEMA "had an incomplete understanding of their roles, responsibilities, and reporting and communication lines" (CHSGA,2009)

While in Indonesia, the legal framework and organizational structure presented had more flexibility and independence in making decisions; by establishing an independent institutional structure. The BRR facilitated the reconstruction by making frequently updated decisions based on "facts on the ground" through reports from Facilitators working in the field and channeled the reports through a few levels to the decision-makers. This flexibility enhanced the planning of services according to the priorities. It also enhanced coordinating multiple stakeholders' efforts, managing funds, planning adequate implementation arrangements, and acting when patterns of

problems according to each local context. Moreover, local government engagement in decision-making supported the effective transition into longer-term development. However, relying on the NGO-based approach had negatives in administrating the recovery by the local governments; the international agencies in Aceh did not follow the national response procedures (Ali,2016). Consequently, the central government had challenges managing reconstruction.



*Figure 3-12 Achieving less uncertainty in housing reconstruction decision-making.*

The model of the decentralized structure in Pakistan was also flexible and helped to overcome bureaucratic procedures imposed by the provincial governmental systems. It provided a streamlined decision-making system linked to the implementation bodies. It is monitored using their own central, regional, and district monitoring bodies to approve the release of funds sufficiently, while in a developed country like the USA, with a well-established organizational structure for disaster management like FEMA and a pre-plan for disaster management. The decision-making had many issues of delays, confusion, and bureaucracy. The local government also had delays in planning which were too broad in goals with limited resources available and no implementation tools defined. Response mechanisms in developed countries before disasters often have a centralized approach derived from the institutional establishment nature of these countries. However, it is necessary to build the capacity of local government in pre-disaster planning, such as in the case of disaster management in Pakistan; even with low capacity, this gave more role to local governments in identifying risks and developing response measures.

The spatial planning approaches in the three cases significantly affected the reconstruction outcomes. The reconstruction planning was centered around developing the master plan, and the

needed reconstruction projects were informed to the decision-makers to integrate them into the master plan. The local government in New Orleans had a planning approach of dividing the city into neighborhood clusters, planning on the district level, then unifying the plan with the city's overall development. This top-down planning approach created an unrealistic plan that piled the needs of every district, requiring a very high budget. Planning was re to identify priorities according to funds available.

The spatial planning in rural Aceh was approached by planning at various levels at a parallel time to speed up the reconstruction, from village to provincial levels. However, no implementation mechanism was put in to integrate the various levels, especially in creating livelihood-related urban projects that would allow villagers to return and stay in their villages. Planning to construct public service buildings was rarely considered in the rural areas, even though there was significant aid offered by humanitarian agencies that could be channeled to construct public service buildings; this led to increased waves of migrations from rural to urban areas when the level of destruction is on the provincial level. There was an unequal distribution of resources before the disaster between rural and urban settlements, which was emphasized in the "Master Plan for Rehabilitation and Reconstruction Aceh-Nias," including short-term actions with no comprehensive rural-urban planning approach for the recovery of the built environment.

The spatial planning approach in Banda-Aceh favored pushing macro-scale planning in the form of plans to expand the city of Banda Aceh to the southeast from the coast and restricting building along 500m from the shore to clear the land for tourism projects, which could emphasize the displacement of the fishery communities. There were also a few macro projects to develop "Islamic tourism" by developing several urban projects, all for economic reasons, which was an added factor for failing to obtain a comprehensive national recovery. A lack of holistic planning that balanced the needs for economic development in the coastal area and the sustainable recovery for the affected community impeded the integration of different perceived priorities into one unified strategy with unified priorities. In short, the spatial planning approach for Banda Aceh was an example of planning fragmentation that focused on diverse projects instead of the wholesome community-based development strategy.

	New Orleans	Rural Aceh	Urban Aceh
Planning Approach	Dividing the affected region into clusters, then uniting them into a master plan	planning village, district, and province in parallel.	Macro planning, focusing on a few projects for urban development
Outcome	Unrealistic goals, no priorities according to funds available	detachment of planning from the surrounding environment  inadequate planning of services  intensifying the issue of rural-to-urban migration	implementing a diverse unrelated project  failing to achieve holistic recovery  disregarding the needs of the affected community

*Table 3-1 Spatial Planning Approaches and their effects on housing reconstruction*

Top decision-makers tend to favor spatial decisions that serve the interests of development, especially in urban reconstruction when there is a high investment in land. The top-down decision-makers, influenced by the local elite, use the scale of destruction and displacement of the locals as an opportunity to raise development projects. The spatial planning for New Orleans after the Katrina hurricane shows similarities with Banda Aceh's spatial planning concerning favoring development projects. The city was an economic hub for many economic sectors. After Katrina, those local elites formed alliances with political leaders to influence their decisions to reshape development in the city; this was translated into favoring the construction of projects that would benefit their investments (Schneider,2018). Also, the infamous BNOB plan had elite members in their committee that could influence the decisions similarly (the committee consisted of two college presidents, the Archbishop of New Orleans, attorneys, religious and civic leaders, and business community representatives.)

In addition, attracting investments caused more focus on developing specific locations in the city. The neighborhoods' location determined the project's priorities; The decision-makers favored projects attracting investments to develop the areas. The criteria for choosing the projects were based on neighborhood proximity to the city center, existing features, infrastructure, and land use.

For example, the government favored placing medical facilities in Lower Mid-City because it is near the downtown, which helped attract investments in the neighborhood.

Another example is in the Lower Ninth Ward. The proximity of this neighborhood to the downtown made it a desirable target for developers who previously were not likely to be able to assemble enough lots to make upscale residential and commercial development possible. (Green et al., 2011), finally, the historic areas of the city were considered important for recovery. Several preservation programs were initiated, such as the Urban Main Streets Program. (Amdal,2013)

Another significant factor that affected the decision-making in the case studies was the implementation approaches. Decisions on how to implement the policies often cause the reconstruction's negative outcomes, not the policy itself. For example, even though the Repopulation policy was highlighted, the decisions made by the government did not reflect that strategy. HUD decided to demolish four sizeable public housing units, which decreased the number of affordable rental housing units. As mentioned before, federal assistance targeted owner-occupied housing, which also decreased the recovery of rental units.

One of the critical decisions affecting the reconstruction course is choosing the right implementation approach. In the case of Pakistan, the owner-driven approach was chosen due to the previous experience of the owner-driven approach in the relief phase, the significant scale of destruction, and recommendations from international agencies. However, although this approach has been acknowledged as successful in rural areas, urban reconstruction had issues that can be partly attributed to the lack of consideration of local capacity for this approach. Community-based approaches, such as owner-driven, are related closely to the local context. For example, using cash grants is related, according to (Fengler, 2011), to local factors, which are the presence of a capacity by the government to carry on this approach, the availability of adequate supplies for purchase, and "functioning markets."

Mitigation measures for future disasters are always present in reconstruction policies. However, they often lack proper implementation due to ignorance of the possible success rate of implementing them according to available resources and socio-economic context. In Pakistan, the large scale of damage caused by earthquakes created by the poor performance of structures of seismic loads has led to the adoption principle of ensuring seismic safety. A few issues were encountered while implementing this policy, such as a lack of monitoring staff, compliance due to delays in issuing the policy guidelines, and material scarcity.

One final factor that hindered effective decision-making was the complex planning, lengthy planning process, and many phases in New Orleans that caused delays in finalizing the recovery plans. With such complex plans, federal funding for rebuilding projects in New Orleans was not used until five years into the disaster due to delays in constructing recovery plans. The complexity of plans also created misinterpretation in implementing policies, resulting in a lack of equality in choosing eligibility. Moreover, even a well-sourced developed country such as the U.S.A lacked an adequate pre-plan, which complicated planning for many victims.

### 3.3. Factors that affected community participation in the case studies

Several factors affected community participation in the case studies, Such as the presence or lack of guidelines for community participation in the decision-making process. In Aceh, for example, the UN established the Shelter Data Pack to provide stakeholders with the needed information on earthquake-resistant construction guidelines and the construction standards of earthquake construction of the Indonesian building codes.

The presence of adequate logistical means for conducting meetings is a critical factor that enables community participation, such as transportation and accommodations. Divining the affected community into several locations can present a challenge in conducting meetings. Affected communities in disaster-hit regions usually get displaced in different locations, such as camps, transitional housing, or staying with relatives. Since community participation usually requires conducting meetings, providing logistical means for meetings or conferencing with the sparsely displaced communities is challenging. In Aceh, for example, when one agency conducted a training program to train fishermen to reconstruct their houses and have an income source, this positive initiative, unfortunately, was not widespread due to the lack of transportation available and poor living conditions on-site. Eventually, labor was imported from other areas.

Even though this example is not especially for community participation in decision-making, the factor is similar in planning and implementation. Moreover, it demonstrates that the availability of acceptable living conditions in temporary accommodations is also important for better community engagement. On the other hand, in the modern-day's world, communication technology such as the Internet and social media provide an opportunity to develop tools or mechanisms to facilitate communication with the affected community. However, the ability to provide logistical means for meetings, whether physical or virtual, is different based on available resources, especially for developing countries. It was shown that in New Orleans, innovative tools

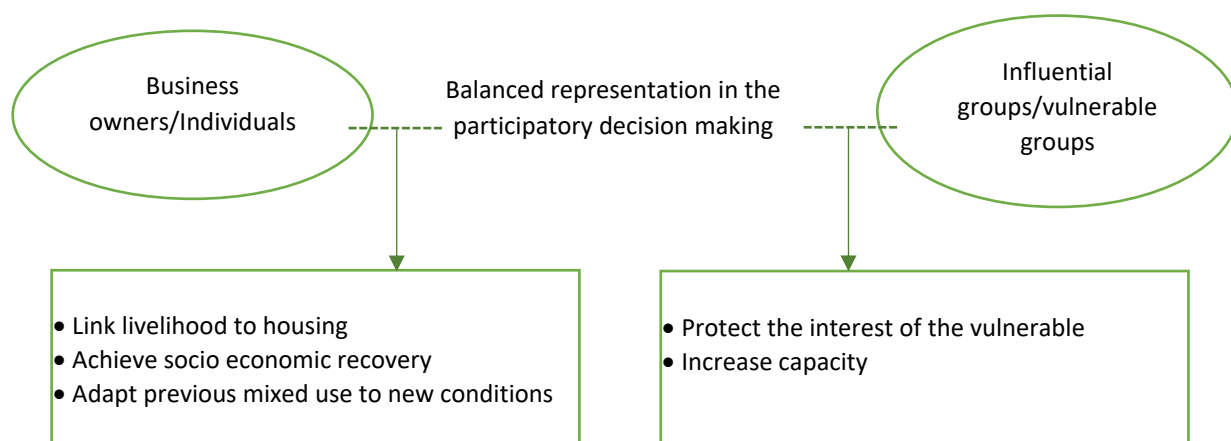


such as voting via buttons or the internet were useful in reaching majority agreements on critical decisions at a relatively faster pace than conventional meeting methods. The technological tools facilitated engaging a more considerable margin of the affected community in decision-making, even in district-level planning. The private company (AmericSpeaks) Provided meeting rooms, computers, keypads for inputting answers, and broadcasting; they also analyzed participation levels to ensure a better representation of demographics from the city.

The degree of independence from national regulations is also important, such as developing national regulations to allow for community decisions to be formulated at the local or district level. The channels for approval of those decisions, and finally, a level of convenience for the community should be available, such as appropriate temporary accommodations and livelihood. Although it is known how important the participation of the locals in the reconstruction process is, the participants have to be in balance with the priorities of the beneficiaries, especially the priority of maintaining their livelihoods like work and caring for their families.

The level of representation from the affected communities also affects community participation. There are often issues of the unrepresentative sample of the population in Participatory initiatives (Thomas, 1995 in Ganapati and Ganapati, 2008 ). One of the representation issues is the unbalanced representation of marginalized groups of the community and the elite. Each community has a different level of influential people that may affect the decision-making at the expense of the most vulnerable. The "elites" of the community may try to make personal gains, such as in the case of New Orleans and Indonesia. Even though elites' involvement can be problematic, their involvement can be used more positively if managed properly because influential people can increase their capacity by using their resources to benefit the recovery.

Similarly, it is important to consider the balanced representation of the interests of individuals and business owners. Unbalanced representation of the classes of the community could lead to inequality. In New Orleans, Brand and Seidman (N.D) noted that the NGOs and private organizations left most of the reconstruction decisions to the individual residents, businesses, and organizations; this approach caused inequality in receiving aid.



*Figure 3-13 The role of a balanced representation of the affected community*

The next factor is the type of decision-making system on micro-level projects. A central decision-making system might hinder the ability of smaller social groups to organize and make decisions and implement them in micro projects. It was shown in Katrina that in some neighborhoods, such as Broadmoor, the community could create a more flexible decision-making system than the governmental institutions, which had a bureaucratic system and overlapping decision-making processes. Smaller societies can especially operate effectively in micro projects with innovative approaches and greater flexibility than larger entities.

Concerning this factor, it is important to arrange adequate coordination mechanisms for linking the community with a central decision-making system for added flexibility in decision-making at the micro-project level without fragmentation of planning. The combination of allowing down-to-top decision-making for micro-projects while ensuring streamlined coordination with a central decision-maker is key for integrating the local capacities and local context considerations with master planning. A model for coordination mechanism in this regard was presented in rural reconstruction in Indonesia; the coordination system consisted of local workgroups from the community representatives and a facilitator from the government, such as facilities in Aceh rural reconstruction, that had the role of reporting reconstruction progress to the BRR.

Carr mentioned that community engagement in decision-making should be facilitated, guided, and supervised to achieve community empowerment, which is similar to the role of facilitators. This coordination mechanism is directly related to the availability of capacities at the local level to facilitate linking community participation to central planning. In Aceh, for example, the role of the facilitator in reporting and coordinating efforts in smaller units means that there is a need to have a significant number of facilitators working for the government that requires the related governmental institution to have a specific capacity in recruitment, training, financing, and

managing facilitators. In Pakistan, the lack of success in implementing mitigation projects in the aftermath of the Kashmir earthquake is attributed by [Ainuddin et al. \(2013\)](#) to the lack of appropriate assessment of capacities that are available at the local level, which broke the link between the formulating general principles in the National Commission level, and the ability to formulate these policies into detailed plans that the provincial and local government can implement.

In addition to the facilitator and workgroups as part of the coordination parties, there is another party involved in the participatory decision-making, which is experts from national or international bodies. Their role in the proposed process of participatory decision-making is an enabler. The facilitator is responsible for creating the environment for decision-making, proving related enabling conditions, organizing, reporting, and facilitating approval of decisions. At the same time, the enabler is the expert that helps make decisions based on policies and principles of reconstruction, adding the inputs into the planning framework and bridging the gap between expertise and actual practice to reach a consensus.

Having a clear identification of roles and responsibilities at the local level is also an essential factor for participatory organizational structure, such as the case in Pakistan. [Ainuddin et al. \(2013\)](#), after analyzing the disaster management institutional arrangement in Pakistan after the 2005 earthquake suggested better defining the roles and responsibilities of this institutional structure at the local level to enhance community participation in the decision-making.

Continuing on the factors that affect community participation, there is the factor of the type of organizational structure for approving decisions. At the same time, the federal government in the USA had an essential role in providing national response lines and mobilizing resources in times of disasters, relying mostly on federalized approach in decision-making in New Orleans resulted in cutting a vital connection with the affected community that was not recognized until later in the reconstruction program. The lack of coordination between governmental bodies was the main reason for the government's failure to respond efficiently after Katrina. The lack of coordination was also evident between the local government and community initiatives; this led to less capacity for the community to act on a larger scale.

The community had to deal with a fragmented government recovery system which made passing their efforts through bureaucratic procedures more difficult; they worked on individual projects like restoring public buildings such as schools and parks instead of organizing their efforts into a more holistic plan. For example, The recovery in the city's different neighborhoods was uneven. Treme neighborhood had a slow return of residents; Lower mid-city experienced more demolition

to build new hospitals, while Broadmoor and Mid-City neighborhoods had faster recovery. Similarly, in urban reconstruction in Pakistan, the participatory decision-making was hindered due to the involvement of many sectors in the decision-making of urban construction, paralyzing the processes of setting land-use maps and planning infrastructure, by contrast in rural Pakistan, the decentralized system with ERRA provided flexibility to overcome the bureaucratic procedures imposed by the provincial governmental systems, especially the approval of the release of funds, but this model of decentralization was not long term in disaster management in Pakistan. [Ainuddin et al. \(2013\)](#) mentioned that the issues of the institutional structure hindered effective disaster management. Their key findings include that the lack of decentralization in the decision-making at the local level had affected their ability to build capacity to carry out the plans formulated at the national level, the absence of a decentralized system has exacerbated the community's vulnerability to a considerable level, the institutional reconstruction arrangements in Indonesia also showed levels of decentralization that facilitated approving decisions with less bureaucratic procedures, that was not necessarily intentional, for it was demonstrated that BRR was established later after the BAPPENAS and some central government parties had discrepancies, and when the BRR was further strengthened later to become the leading authority. “Governments should strive to decentralize shelter policies and their administration to subnational and local levels within the national framework, whenever possible and as appropriate” ([UN-Habitat, 1996](#)).

There is also the linkage of the organizational decision-making structure to the implementation bodies. In post-Katrina reconstruction, the lack of capacity to link community-level decision-making organizational structure to the governmental implementation bodies hindered the civil society from positively impacting the reconstruction. Instead, the community partnered with NGOs, volunteers, and the private sector to build capacity. The community had the role of organizing, coordination, and leadership. The communities had the potential to organize efforts for recovery, as demonstrated in the Broadmoor case by their comprehensive plan and ability to establish partnerships as an implementation tool through building credibility.

While in Pakistan, there was a streamlined decision-making system linked to the implementation bodies and monitored using their own central, regional, and district monitoring bodies to approve the release of funds sufficiently, in Indonesia, the local government was weak due to previous political conflict so the linkage between decision making and implementation bodies needed building capacity, the planners in Indonesia required adequate institutional setting to function

correctly, that took long periods to enhance it through workgroups and regular meetings on local and central levels.

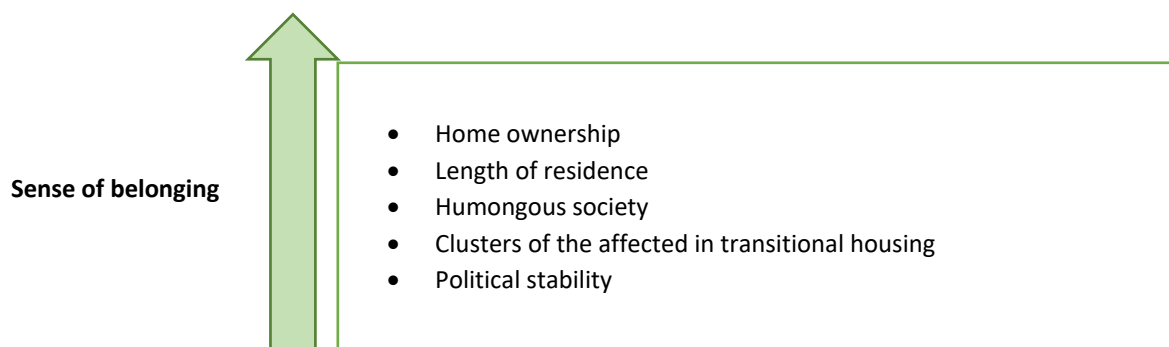
The next factor is the linkage between the community's organizational form and the institutional structure; community participation can either be organized in a formal organizational structure or take a more informal approach. Formal participation by local workgroups needs effort and time. Therefore, integrating the already established form of organization with the community into the institutional reconstruction structure might take less work in enabling recovery programs. In Indonesia, village committees are formed to explain the program activities to the community, support setting plans and designs, prepare construction proposals, and supervise (Ochiai et al., 2009). The village committee included the village head, an already established authority system; their role was to facilitate governmental involvement in the recovery. Similarly in Pakistan, ERRA was able to institutionalize participatory decision-making by forming a village committee that could advance participation momentum into formal decisions rather than being framed as initiatives.

To conclude. The organizational structure is one of the most influential enabling conditions for better engagement and more efficient community participation. It is related to several indicators for efficient community participation, such as facilitating community engagement, equity in representation, formulation of participatory decisions, approval of participatory decisions, and linking participatory decision-making with implementation.

Designers of participatory decision-making have to identify the form of organization that already exist in a community. This identification helps integrate the existing organizational structure with the institutional structure and better identify the roles of stakeholders and the extent of community participation. These factors can also be labeled as community social factors, such as the level of the collective sense of belonging; this factor is important in giving social support to the process of decision-making, as well as increased influence on decision-making, spatial sense of belonging usually increase by home ownership, length of residence, and the presence of humongous society, such as the case in rural regions. Hence urban reconstruction is usually more challenging in applying participatory decision-making. For example, in the Pakistan case, the owner-driven approach was more challenging in the urban context because non-homeowners comprise a large percentage of the affected population.

There is also the issue of shared influence. Densely populated areas mean more people are involved per square meter, making more room for conflicts during decision-making. Higher rates of residents also cause less ability to organize. However, in New Orleans, an unusually large

number of long-term residents was present. They were primarily engaged in the relief phase, with Myriad groups engaged in raising funds and relief items for Katrina victims. Even though New Orleans is an urban settlement, there was a high rate of sense of belonging; people who moved from New Orleans to Houston, being brought together by the fact they migrated after the disaster to the same area, became a cohesive community even though they were of different ethnic backgrounds, they accommodated each other temporarily, attended same activities like churches or therapy, this togetherness helped in a collective mass return of the community to their original state. (Sapat and Esnard, 2016). Even disaster type has its effects on the sense of belonging. For example, like in post-conflict reconstruction, the built environment lacks stability, and therefore, the focus of resettlement efforts should be on the people who want to live in the new settlement. (Mirisaee, et.al,2015)



*Figure 3-14 Factors affecting the sense of belonging for disaster-affected communities*

Another factor is the type of organizational structure within the community, such as a supportive socio-political system or a strong civil society. Civil society affects reconstruction decisions that can be either positive or negative. On the one hand, their role can detour the decisions that may have negative impacts on their livelihood, such as the case mentioned in Sri Lanka, where the local community opposed the relocation plans that were more in the interest of investors that wanted to capitalize on the high investment coastal land. However, civil society's role can have a negative impact on the reconstruction decisions, such as in the case of trailer sites in New Orleans, where it acted as a hindrance to the plans, causing the administration to search for an alternate location for these trailers, which consequently resulted in a depletion of administrative and financial resources and delays.

In Indonesia, the presence of strong social capital highly influences decision-making; the ability of the community to form efficient decisions increased in the villages with strong civic society

structure in the form of a strong religious Figure or village leader. In comparison, some villages that lacked the presence of representatives avoided group decision-making. Political support for community structure form is also important; the restricted social gatherings in Aceh limited the community's ability to engage in decision-making because they could not organize themselves independently from governmental influence. In New Orleans, an influential organization (the BIA) helped secure the necessary funding and mobilize volunteers; the organization had the public and political support necessary to form plans that could be implemented.

According to [Jha et al.](#), rural communities are usually more willing to engage in planning; the affected community in rural areas is more likely to participate because they have higher levels of trust for each other it is also easier to communicate through smaller groups of people. On the other hand, the social fabric of urban settlements is usually complicated, so encouraging urbanites to participate is challenging. Similarly, [Peng et al.](#) explained that "people in rural communities are usually capable of self-settlement and work hard to expedite the reconstruction process, while urban people are more dependent on governments and other responsible organizations doing it for them." [Peng et al. in Pamidimukkala et al. 2020](#)

The following community characteristics-related factor is the different interests of the community with different backgrounds; Participatory decision-making involves members defining their goals, needs, and priorities ([Kenny, 1999](#)). However, those things differ among the group of people. Decision-making involving non-homogenous people can be challenging because of the different interests involved, the need to solve conflicting opinions, and the difficulty of approving the priorities of a project. In the case of New Orleans, the Unified New Orleans Plan was participatory. However, it failed to identify priority projects according to resources. It added all the different needs of communities. Similarly, in Indonesia, the NGO's aid was not equitable, which was in part because the NGOs had little knowledge of the different backgrounds of the Acehnese communities,

Adapting to the locals' communication methods is our next observed factor; even in a relatively small spatial built environment, there could be differences in methods of communication. Communication methods proposed a challenge for NGOs in Indonesia. In Aceh, the NGOs did not adapt to the locals' communication methods, which led to misunderstandings that affected the participatory actions; the needs assessments were also inaccurate, leading to false expectations and disappointments. ([Daly and Bassard, 2011](#)).

Similarly, in post-Katrina reconstruction, a community of Native Americans in Grand Bayou, Louisiana, opposed the interventions of foreigners to rebuild their houses after Hurricane Katrina.



After three years of negotiations, a group of specialists convinced the community to remove the debris. It took them two more years to rebuild ten houses, even though half of the population had to locate their residency after the hurricane.

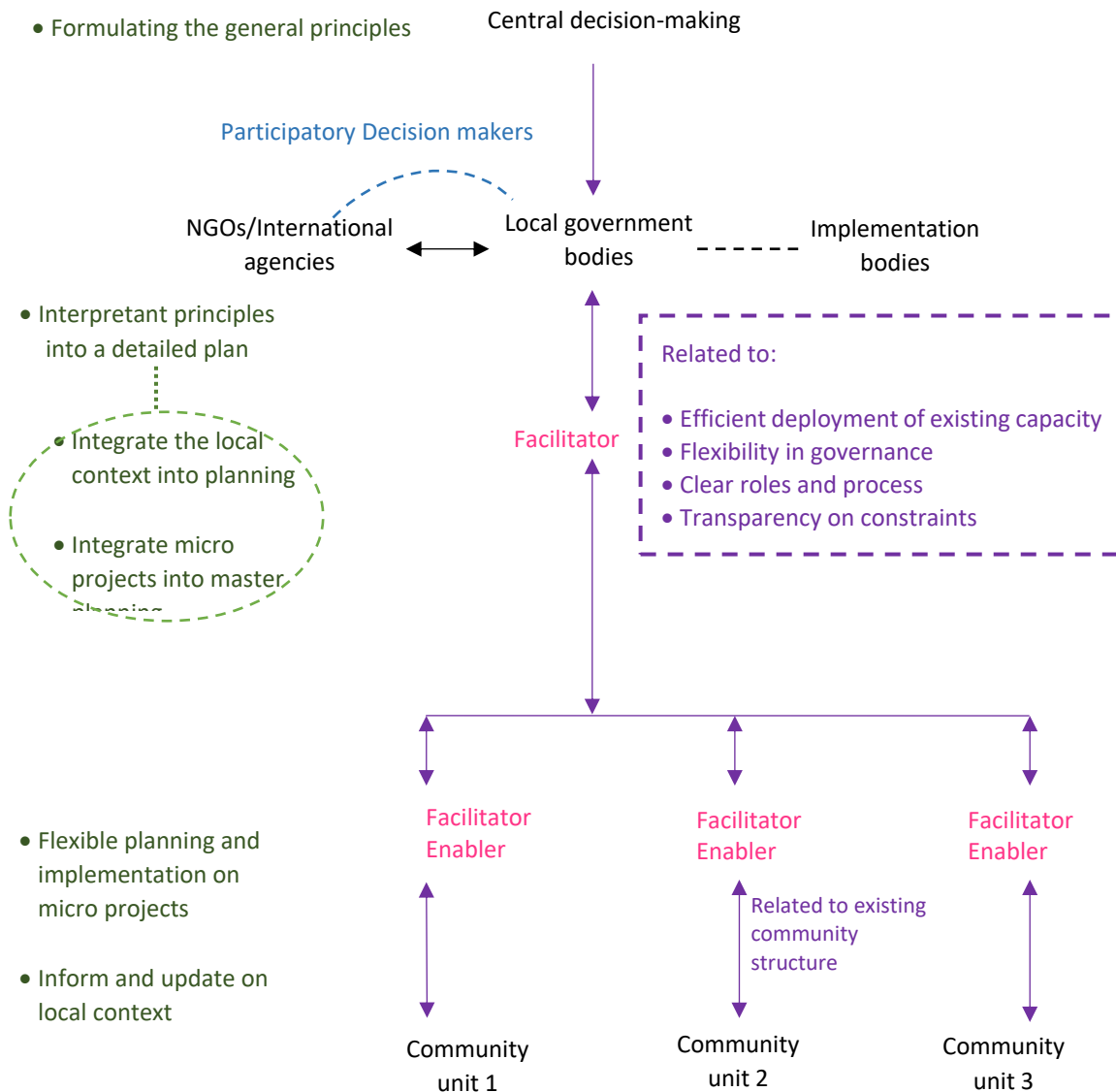


Figure 3-15 Participatory decision-making scheme

The proper planning and execution of the participatory decision-making process affect community participation. We observe a few factors that lead to enhanced community engagement in decision-making. The first one is underlining the importance of defining the extent and criteria for community participation, the extent of community participation is related to the presence of strong or weak civic society, in communities with weak civil society engagement in decision making, in this case, it is recommended to build the capacity of NGOs or local government with community representatives, the extent is also derived from community competence in making decisions, this competence is shaped by the factors of the presence of strong civic society

structure, socio-political support, and the presence of different interests and/different backgrounds, this is backed by [Goodman .et.al \(1998\)](#) that claimed that community capacity is defined as the "characteristics of communities that affect their ability to identify mobilize and address social and public health problems" they also identified community competence by their ability to engage in group process, collect and analyses data, and resolve conflicts, while Competence of a community was described by Cottrell by:

- The ability of the community to collaborate effectively in identifying the problems and needs of the community.
- The ability of the community to achieve a working consensus on goals and priorities.
- - the ability of the community to agree on ways and means to implement the agreed-upon goals
- The ability of the community to collaborate effectively in the required actions.

, Carr described the stages of empowerment of the community as first,

- Position: The community can identify its misery as an original position to move forward.
- Conscientization: The community can identify the causes of the misery and uncover the political roots of people's individual experiences of the misery.
- Interpretation: the community can identify common conditions and interpret their effect, making them critically aware of their relation to the environment and political realities.
- Identify: the community enables creating and recreating of provisional identities through political interpretation.
- Mobilization: the community enable to reflect a new range of options for action and a new investment in collaborative action
- Political action and change: in the case of the community's failed action, the community can collectively reflect on the newly generated understandings of themselves and their circumstances as a result of societal and personal change.

[Amaratunga and Haigh \(2011\)](#) listed the criteria for choosing community-based approaches as the availability of experience and knowledge capacity to organize and coordinate efforts and implementation, and the urgency of reconstruction is not a priority. By identifying the current community stage or competence level in making decisions, the designers of the participatory decision-making process can define the extent of community participation and clearly define their role, whether their role is limited to occasional consultations, extensive meetings, or voting on the final plan.

Community competence can also be related to the ability of the community to provide specifications for priority projects to avoid false expectations and disappointments. Community participation planning can succeed more if it is specific about priorities projects, phasing, recommendation of governmental policies, and inclusion of implementation strategies, such as the case in the Broadmoor neighborhood plan.

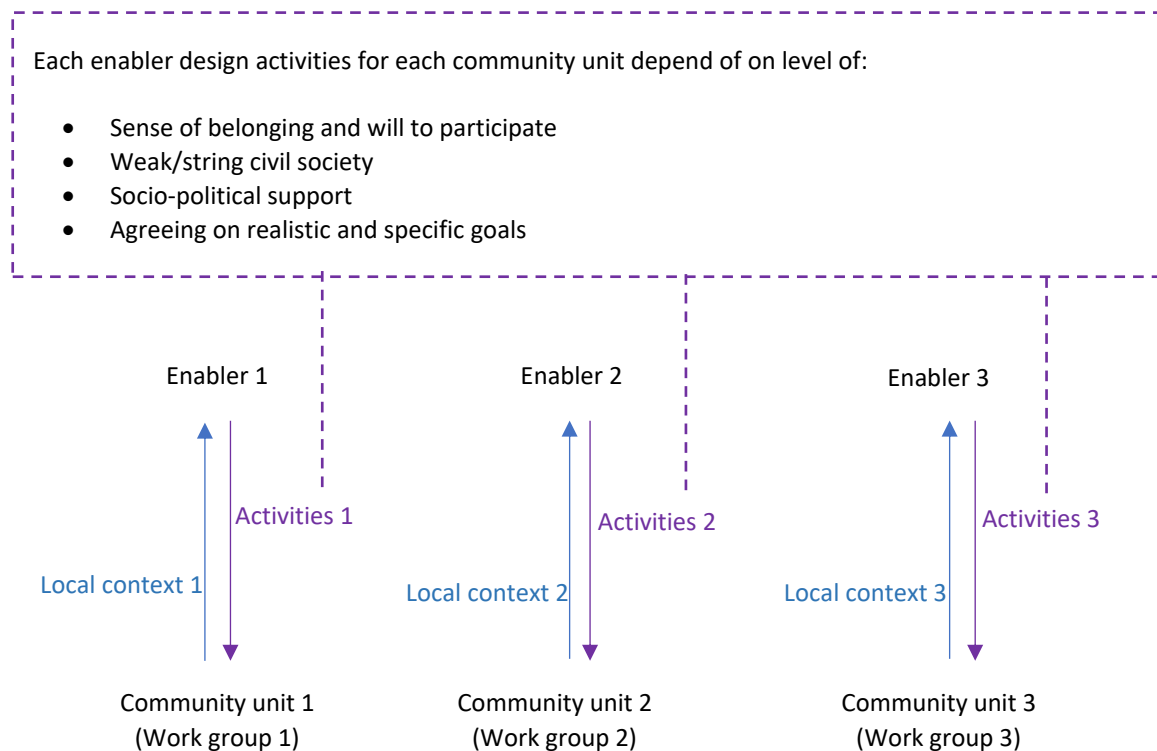
The next suggested guideline for participatory decision-making is Integrating land use master planning with community-level decision-making by Dividing the community into smaller societies and giving enough flexibility in decision-making for micro-projects with the integration of the micro-projects into the master plan. In doing so, the decision-making can be linked in each phase to the local context in terms of (local priorities and capacities) to achieve a plan that can be implemented. It was demonstrated in New Orleans that communities concentrated their efforts on neighborhood-level micro-projects. The local government officials had a planning approach of dividing the city into neighborhood clusters and developing the plans for the districts, then unifying the plan with the city's overall development on a top-down approach. However, the interaction between the neighborhood and city-wide planning in the case of New Orleans was poor, a missing opportunity that, if considered, better results could be achieved. Hence it is important to consider using a bottom-up decision approach in combination with a top-down decision approach or integration of plans on the two levels, especially in the presence of an existing strong civil society that can organize and play an active role in implementation or when the society has specific characteristics that can heavily impact central decision making, even though the community had an active role in planning, backed by agreeing on shared goals, the local government had the final decision on where to locate the community facilities according to land use,

There is also the issue of deciding the timeline of community participation in the planning process. The urgency of planning reconstruction leads decision-makers to avoid community participation because it requires time. Extensive consultation with the communities in each phase of the reconstruction process can delay reconstruction and is resource-consuming. For instance, [Mantel \(2013\)](#) described a case where INGO in Aceh conducted long meetings to discuss their needs, but little was implemented later. The perceived urgency of planning in Aceh caused avoiding participatory approaches by some NGOs. [Bilau et al. \(a\)2015](#) contributed to "insufficient time allowed for community mobilization." The decreased participation in New Orleans contributed to prolonged planning; therefore, optimizing the participation timeline to avoid decreased participation over a lengthy planning process is beneficial.

On another note, it is not feasible to make the affected community participate in making critical decisions in the early recovery phases because they might still be in shock. For example, the affected community did not oppose the relocation to Maharashtra despite the negative effects that the decision made in the long term. The policy was made too early, and the victims were still traumatized.

Designing flexible, participatory activities for each community according to its socio-political context is also essential in designing a participatory process. In participatory community decision-making, [Barenstein and Leemann \(2012\)](#) point out the importance of understanding the socio-economic context of the communities when engaging the communities. Without doing so, the "participatory approaches" may not lead to equitable outcomes. The role of the experts in this participatory decision-making process is to be enablers, managing by knowing the reconstruction process, building capacities, consulting the community in considering the local context, and giving the decisions to the affected communities.

The presence of an efficient organizational structure and efficient reconstruction process ensures the success of community participation in the housing recovery programs; this was shown through the efficient structure of BRR through the presence of facilitators that supported and managed community participation in the technical and coordination aspects. One of the main reasons for the presence of such an efficient mechanism for community participation was previous experience in Indonesia in implementing community-based projects. While on another aspect, The sole duality of participatory and donor-driven approach has its limitations; this includes the tendency for the NGOs to be influenced by small community groups or be left with fragmented recovery; this was evident in Aceh when the NGOs carried out their reconstruction plans with the affected community before the establishment of the BRR, which led to inequality where some individuals had double the aid, while other areas did not revive. Therefore, Flexibility in creating a mechanism for a participatory decision-making process is key because Participatory decision-making needs a high level of organizational effort. It also requires time and commitment. Decision-makers should design the participatory activities for each community according to its socio-political context. In addition, participatory decision-making requires independence from national regulations and institutional arrangements.



*Figure 3-16 Participatory decision-making at the community level*

It is also substantial to avoid imposing preconceptions of what is best based on established principles by the experts. There is a misconception that development decision makers, called the "professionals," know how to make decisions to solve the issues of the people; however, they usually do not consider the socio-economic context, consequently creating inequity and serve the interests of a smaller margin of people that it should; this is especially important in post-disaster reconstruction, where a more considerable margin of people are affected at the same time, and equal aid becomes critical, this was prevalent in Indonesia, even though the planners had the intention of engaging beneficiaries in their plans, "the planners expect people to participate only, as long as they agreed on the preconceptions of the plan" (Decron 2007), the planners had little understanding of the victims themselves. For these reasons, the planners' assumption does not coincide with the victims' behaviors.

One of the negatives of the Indonesian model for community participation is the lack of accountability to beneficiaries and donors. Daly and Bassard (2011) discussed that accountability depends not on participation but on a few criteria, such as direct involvement in decision-making, designs, implementation, transparency in sharing information, and the relationship between agents and beneficiaries. Moreover, it is advised to provide transparency in sharing information on legal and financial constraints to the community to increase credibility and engagement.

Reconstruction projects that the community participates in should have a certain degree of relevance to the community's interests or their direct local build environment. It was observed in Indonesia that community participation effectiveness is increased in housing reconstruction more than in other recovery-related projects like the reconstruction of public buildings because housing is valued more by the beneficiaries. After all, it is a private investment, so the efforts in engaging the community should be more focused on the housing reconstruction sector; this was shown by some NGOs complaining that in some self-built projects they implemented in Aceh, some community participants did not understand why they have to participate in the construction of someone else's house, this is similar to a case in El Salvador earthquake planning did not coincide with the practices implemented because planners did not understand the peoples' motives to participate which were more about owning property than participating in community development. (Colin et al.,2006)

Finally, defining a straightforward process for managing community participation can be done by Identifying the goals for each participatory decision-making activity. Ill-defined or conflicting goals for activities might primarily affect the expectation and confusion in the process. Some indicators for participation are increasing credibility, engagement level, facilitating the process, approval of decisions, and increasing competence in making decisions.

1. Providing guidelines for community participation in the decision-making process
2. Independence from national regulations
3. availability of logistical means to conduct meetings, such as transportation, accommodations, and/or technological tools of communication
4. Adequate living conditions and livelihood for the community in temporary accommodation
5. Balanced representation of marginalized groups of community and the elite
6. Balanced representation of the interests of individuals and business owners
7. Ensuring a flexible decision-making system for smaller societies to operate in micro projects
8. Establishing an efficient coordination system of local workgroups from the community representatives, a facilitator from the government, and enablers from reconstruction experts.
9. Institutionalization of participatory decision-making through forming committees and engaging community-based organizations,

10. Building capacities of local government in linking community participation to central planning.
11. Clear definition of roles at the local level
12. Establishing a decentralized organizational structure to facilitate approval of participatory decisions with less bureaucratic procedures on the district and regional levels.
13. Linking organizational decision-making structure to the implementation bodies.
14. presence of a collective sense of belonging
15. presence of an organizational structure within the community with public and political support
16. Presence of criteria for choosing priorities among different interests of the community.
17. Adapting to the methods of communication of the locals to avoid misunderstandings in participatory actions
18. Defining the extent and criteria for community participation
19. Integrating land use master planning with community-level decision making
20. Optimizing participation timeline to avoid decreased participation over a lengthy planning process
21. The ability of a community to provide specifications for priority projects
22. Designing flexible, participatory activities for each community according to its socio-political context.
23. Avoiding imposing preconceptions of what is best based on established principles by the experts.
24. Providing transparency in sharing information on legal and financial constraints to the community to increase credibility and engagement.
25. Evaluating the degree of relevance of the reconstruction projects to community interests or their direct local built environment
26. Defining a clear process for managing community participation



In chapter three, we inspected the factors that affected the case studies. Chapter Three also explored the factors that affected community participation in the case studies. We observed that the inflexibility in the organizational structure had a significant role in increasing the uncertainty in decision-making after disasters. Moreover, the chosen spatial planning approaches had a role in the fragmentation of decisions. Other factors that affected decision-making were the interest in economic development projects, the implementation approaches, and the complexity of plans.

The case studies analysis served to identify the factors related to housing reconstruction. However, the relation and severity between community participation and those factors are still to be determined, so we conducted an empirical study that features a series of questionnaires to collect information from respondents with experience in recovery projects. We explain all the statistical methods used in the empirical study in Table (3.2) to Table (3.5). The purposes of the questionnaires are as follows:

- To add credibility to the theoretical factors observed in the case study, using both qualitative data (case studies) and quantitated data (questionnaires) strengthens the validity of the conclusions.
- To explore the role of the community in decisions related to each of these factors and to measure the impact each factor has on community participation.
- To develop a statistical model that helps decision-makers assess the optimum use of community participation in housing reconstruction when the probability of outcomes is uncertain.

Data collection tool	Section	Aim	Data collection scale/inputs
Questionnaire one	4.1	measuring the tendency of the importance of community participation according to respondents with expertise in recovery projects	a 5 points Likert scale questionnaire
Questionnaire two	5.1	measuring the tendency of impacts different constraints have on community participation	a 5 points Likert scale questionnaire
AHP Questionnaire	4.2	Determining the priority of activities for community participation in the reconstruction process according to respondents	Pairwise comparison questionnaire with 9 points scale
	6.3	Assessing when to use community participation in a reconstruction process.	

Open Questions	5.7	identifying other variables not included in the questionnaire or further exploring existing ones.	Qualitative thematic analysis of the role of community participation and the challenges of engaging communities in decision-making.
Testing the Models for Assessing Participatory decision making	6.1	Assessing the effectiveness of community participation in a reconstruction project.	5 point likert scale + Simple Multi-Attribute Rating Technique + the weights of factors from questionnaire two
	6.2	Assessing the optimum use of community participation in a reconstruction project.	5 point likert scale + Simple Multi-Attribute Rating Technique + the weights of factors from questionnaire one

*Table 3-2 Data collection tools used in the empirical study*

Questionnaire one	Section	Statistical tool	Aim of the tool
	4.1.3	Factor analysis	Identifying components of decisions in Reconstruction projects
	4.1.4	Cronbach's alpha coefficient, the Split-half test, and Spearman's Brown coefficient	Measuring the validity and reliability of the test
		Spearman's Rho coefficient	measuring the relationship between each component and community participation according to respondents
	4.1.5	the One-way T-test and its non-parametric alternative, the Mann-Whitney test, to study the difference between the two groups in the study variables.	testing whether there is a difference between the responses of researchers in reconstruction projects and the responses of staff with practical experience in reconstruction
	4.1.6	weighted means, Severity index, and Standard deviation	Ranking the importance of community participation in each component. Ranking the importance of community participation in each factor according to respondents.
			Determining the weights of factors to develop the statistical model for assessing the optimum use of community participation in reconstruction

*Table 3-3 Statistical tools used in Questionnaire One*

Questionnaire Two	Section	Statistical tool	Aim of the tool
	5.3	Factor analysis	Identifying the type of challenges in reconstruction projects
	5.4	Cronbach's alpha coefficient, the Split-half test, and Spearman's Brown coefficient	Measuring the validity and reliability of the test
		Spearman's Rho coefficient	measuring the relationship between each challenge component and community participation according to respondents,  measuring Structure validity and internal validity test
	5.5	the One way T-test and its non-parametric alternative, the Mann-Whitney test in order to study the difference between the two groups in the study variables.	Examining the difference between the participants in the reconstruction projects within the rural and the urban settlements
	5.6	weighted means, Severity index, and Standard deviation	Ranking the severity of challenges of community participation.
			Determining the weights of factors to develop the statistical model for assessing the effectiveness of using community participation in reconstruction

*Table 3-3 Statistical tools used in Questionnaire Two*

AHP Questionnaire	Section	Statistical tool	Aim of the tool
	4.2.1	Inconsistency test	ensuring the validation of responses for analysis
	4.2.2	compute normalized weights	find the priorities with respect to each cluster
		compute Limits	synthesize the final values according to the final goal, which is determining the priority of activities for community participation in the reconstruction process according to the respondents
	6.3	Performance sensitivity	To assess when to use community participation in the reconstruction process according to respondents

*Table 3-4 Statistical tools used in the AHP Questionnaire*

## Chapter 4

# The Empirical Study of the Role of community Participation in Reconstruction

This chapter reports the empirical research concerning the role of community participation in reconstruction decision-making; that is by using two scientific methods; the first one is a questionnaire with the use of the Likert scale, we will refer to it as (Questionnaire One), the second method is Analytical Hierarchy Process (AHP), will be referred to as (AHP Questionnaire).

### 4.1. Questionnaire One: Evaluating the relative importance of community participation in housing reconstruction decision-making.

The first part of chapter four reports the data collection and analysis of Questionnaire One. The purpose of this questionnaire is to assess the importance of community participation as input in housing reconstruction decision-making, more specifically, to answer the research question: (What decisions that benefit from engaging community participation in participatory decision-making?); this will contribute to a better understanding of the decisions that require a higher level of participation.

Questionnaire One asked the sample to **rate the importance of engaging the affected community in reconstruction decision-making in each factor that affects reconstruction outcomes.** Respondents rated variables that indicate the effective reconstruction, which are the factors that affected the reconstruction outcome identified in chapter three. The rating scale respondents used is the five points Likert scale (1-Low importance, 2-Moderaly low importance, 3-Not sure, 4-Moderatly high importance, 5- High importance). **Annex (3)** shows the questionnaire form and the collected data before analysis. In **Table (4-1)**, we outlined all forty-five phrases affecting reconstruction outcomes.

The questionnaire targeted people who previously worked or researched post-disaster recovery projects. The method of collecting data was via email invitations that provided a link to an online questionnaire. The researchers' emails were collected through the contact information in their research papers. In contrast, the contact information of people with experience working in recovery projects was collected from the Humanitarian contact information displayed on their organizations' websites. All the contact information collected is publicly displayed under their owners' consent.

The invitation included an ethical approval statement to ensure participants consent to use the data they provided, the ethical statement stating: (Your responses are voluntary and will be confidential. Responses will not be identified by individuals. All responses will be compiled and analyzed as a group; this questionnaire will only be used as part of the Ph.D. thesis). Attachment files included a pdf document of the questionnaire form, the author's C.V., and the research abstract. We sent over 450 emails, and 145 responses were collected; this corresponds to approximately a 40% response rate. The next sections detail the analysis of the data collected.

#Q	Factor
Q1	Defining mechanisms for providing construction materials.
Q2	Providing reliable information for planning
Q3	Increasing capacity of skilled labor.
Q4	Increasing capacity of working staff in reconstruction management.
Q5	Providing tools to increase funds.
Q6	Providing tools for overcoming bureaucratic procedures.
Q7	Linking expertise with the local context.
Q8	Linking expertise with priority of needs.
Q9	Creating political support for reconstruction plans.
Q10	Planning adequate implementation arrangements.
Q11	Providing strong local workgroups.
Q12	Increasing monitoring capacity to manage funds.
Q13	Creating mechanisms for monitoring.
Q14	Linking private and public efforts.
Q15	Developing a timeline for finishing reconstruction projects.
Q16	Developing coordination mechanisms between government, NGOs, and community.
Q17	Linking master plan to current architectural identity.
Q18	Considering a relevance to the historical architectural identity.
Q19	Considering cultural diversity characteristics during planning.
Q20	Adaptation of previous mixed-use environment to new conditions.
Q21	Enhancing the sense of place.

Q22	Considering spatial belonging effects during planning.
Q23	Ensuring equity in distributing houses.
Q24	Avoiding disparities among society layers.
Q25	Supporting strategy for the vulnerable when relocation is unavoidable.
Q26	Protecting the interests of vulnerable groups from the impact of gentrification.
Q27	Ensuring public transparency during the decision-making process.
Q28	Linking livelihood to housing.
Q29	Planning services according to the priority of needs.
Q30	Considering family structure during housing design.
Q31	Considering the lifestyle of the community during housing design.
Q32	Providing spaces and facilities to increase social interaction.
Q33	Adapting to future changes and requirements.
Q34	Rationalizing the use of resources.
Q35	Supporting political sustainability.
Q36	Consolidating the Urban economy while considering its effects on the community.
Q37	providing response methods to reduce the impact of possible disasters.
Q38	Increasing the community's ability to respond to possible disasters.
Q39	Providing linkage with the surrounding environment.
Q40	Increasing dynamic interconnections with different parts of the settlement.
Q41	Linking urban and rural development during planning.
Q42	Considering decentralization in services and traffic.
Q43	Balancing between mass and space during planning land use.
Q44	Compatibility between characteristics of old settlement with the new one.
Q45	Considering the effects of land nature on reconstruction.

*Table 4-1 Factors affecting reconstruction outcome that the respondents rated in importance for community participation*

#### 4.1.1. Statistical Methods in Questionnaire One

We used software for computing the statistical data; the software used was the Package for the Social Sciences Statistical (SPSS) version 25. Using the following statistical methods to analyze the collected data:

- *Descriptive statistics:* to describe the sample and how much they relate to the aim of the study.
- *Measuring the validity and reliability of the study and the consistency of its factors:* by using Cronbach's alpha coefficient to know the stability of the study tool (making sure that its value is above 60%) and its root to know the validity of the study tool. We also used Split-half test that measures the internal stability coefficient with the Spearman-Brown Coefficient.
- *Factor analysis:* is a set of statistical methods to reduce the number of variables or data related to a particular phenomenon. It is a multivariate statistical method used in analyzing data or correlation matrices and results in several new or assumed variables called factors.
- *Normal distribution test:* We subjected the factors to the Shapiro-Wilk test when the sample size was less than 50. And we used the Kolmogorov-Smirnov test when the sample was more than 50. Parametric tests were used when accepting the hypothesis of normal distribution. In contrast, when most of the samples were not normally distributed (the probability value less than 0.05), non-parametric tests were used.
- *Correlation:* Studying the correlation, strength, and type using Spearman's test when rejecting the hypothesis of normal distribution of variables and Pearson's correlation coefficient when accepting the hypothesis.
- *Difference :*The One-Way ANOVA and its non-parametric alternative, the Kruskal-Wallis Test, to study the difference between more than two groups in the study variables. And the One-way T-test and its non-parametric alternative, the Mann-Whitney test, study the difference between the two groups in the study variables.



#### 4.1.2. Descriptive statistics in Questionnaire One

The sample contained three categories of participants, researchers in recovery projects and staff members in recovery projects. We discarded the participants who did not consider themselves as participants in any reconstruction projects from the analysis. Table (4-2) shows the percentage and frequencies of the sample. The results show that 68.27% of the study sample were researchers on reconstruction, while 22.13% of the respondents participated in the reconstruction project as project staff and 9.6% Undisclosed. We notice a higher percentage of researchers, but this does not affect the research's aim because this questionnaire does not necessarily require direct or practical experience in recovery projects. However, it is more on the collective knowledge of groups of individuals who know about reconstruction decision-making. A statistical test is used later in this chapter (section 4.1.5) to validate that there is no statistical difference between the responses of researchers or staff of reconstruction projects.

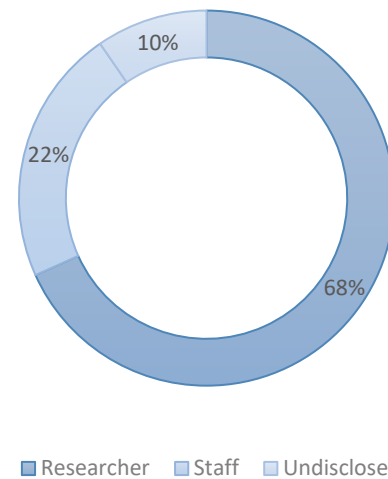


Figure 4-1 Percentages of sample distribution in questionnaire one

The respondents had an optional question about which country they participated in their reconstruction projects. We notice a variety of responses. Among (31) respondents, (26) countries were submitted as regions they participated in their reconstruction projects. The countries varied between developed countries and developing countries. This variety of countries indicates that the results of this questionnaire tend to represent the opinions of the international expert community.

		Frequency	Percent
Did you participate in a housing reconstruction project or research housing reconstruction in the past 30 years?	Yes, I researched housing reconstruction	99	68.27
	Yes, I participated in a reconstruction project	32	22.13
	Undisclosed	14	9.6
	<b>Total</b>	<b>145</b>	<b>100.0</b>

In which country was the reconstruction project undertaken?		
Afghanistan	1	3.2
Australia	1	3.2
Bangladesh	1	3.2
Chile	1	3.2
Fiji, Australia, New Zealand, Sri Lanka, India, Pakistan	1	3.2
Georgia	1	3.2
Greece	1	3.2
Haiti, Philippines, India, Mexico, Peru	1	3.2
India	1	3.2
Indonesia	5	16.1
Iran	4	12.9
Iran, El Salvador, Guatemala, Nicaragua, China, Armenia	1	3.2
Japan	1	3.2
Malaysia	1	3.2
Multiple/Global	1	3.2
New Zealand	1	3.2
Palestine	1	3.2
Peru	1	3.2
Philippines	1	3.2
Post Tsunami Construction Project for India, Indonesia, and Sri Lanka + Post Earthquake projects in India, Pakistan, and Afghanistan	1	3.2
Practical work on post-disaster reconstruction in Iran + International research on post-disaster reconstruction, such as Pakistan, Iran, Italy, and the Philippines	1	3.2
Rep. of Turkey	1	3.2
Sri Lanka, Indonesia, Turkey	1	3.2
United States	1	3.2
<b>Total</b>	<b>31</b>	<b>100</b>

*Table 4-2 distribution of respondents in Questionnaire One*

#### 4.1.3. Identifying clusters of decisions in reconstruction projects using Factor Analysis

Factor analysis is a method used to extract the suitable representation of data in an unsupervised way by rearranging the data into groups of variables so that most of the variation existing in the original is kept by the starting few of the factors. It is based on the rotation of the axes of the original coordinate system to a new set of orthogonal axes that are ordered based on the amount of variation of the original data. That is, by projecting the original high-dimensional data onto a lower-dimensional feature space that retains most of the information in the original data, The reduced dimensionality data is spanned by the most significant set of orthonormal eigenvectors, called principal components. (Barcelo and Petrovic, 2007 in Khan et, al, 2020). Factor analysis is often used for pattern recognition, to understand how factors are interrelated, or to Identify redundant questions in a questionnaire. This statistical test serves the questionnaire's aim by recognizing patterns among the uncategorized factors that affected outcomes into related groups, finding the decision clusters related to Participatory decision-making.

The first step of factor analysis is to test the possibility of performing factor analysis using the KMO and Bartlett's test; Table (4-3) shows the test result using SPSS software. The results of the previous table show that the KMO measurement value = 0.911, which is greater than 0.50, and this indicates the strength of the reliability of the factors that we will obtain from the factor analysis: also, the sample size is sufficient. As for the level of significance of the Bartlett test, P-value =  $0.000 < 0.05$ , it confirms the existence of a statistically significant relationship, and thus a factorial analysis can be performed.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.911
Bartlett's Test of Sphericity	Approx. Chi-Square	5104.895
	df	990
	Sig.	0.000

*Table 4-3 KMO and Bartlett's Test for Questionnaire One*

The following step is computing the eigenvalue for the factors to find the number of components; we used the Principal Component Analysis extraction method. Table (4-4) shows the factors extracted from the study factors; it shows eight extracted factors because their eigenvalue is greater

than 1. The first prominent factor has the largest eigenvalue of 6.107, which explains 13.571% of the variances, while the eighth factors explain 67.866 %. **Figure (4-2)** confirms the existence of eight axes with an eigenvalue more significant than one, and we note an apparent decline from the dimension after the eighths factor.

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %
1	19.252	42.783	42.783	19.252	42.783	42.783	6.107	13.571	13.571
2	3.400	7.557	50.339	3.400	7.557	50.339	4.625	10.278	23.849
3	2.002	4.449	54.789	2.002	4.449	54.789	4.442	9.870	33.719
4	1.668	3.706	58.495	1.668	3.706	58.495	4.147	9.215	42.934
5	1.390	3.088	61.583	1.390	3.088	61.583	4.003	8.895	51.829
6	1.263	2.806	64.389	1.263	2.806	64.389	2.611	5.803	57.632
7	1.100	2.446	66.835	1.100	2.446	66.835	2.304	5.119	62.752
8	1.002	2.226	69.061	1.002	2.226	69.061	2.302	5.115	67.866
Extraction Method: Principal Component Analysis.									

*Table 4-4 Eigenvalues for Questionnaire One*

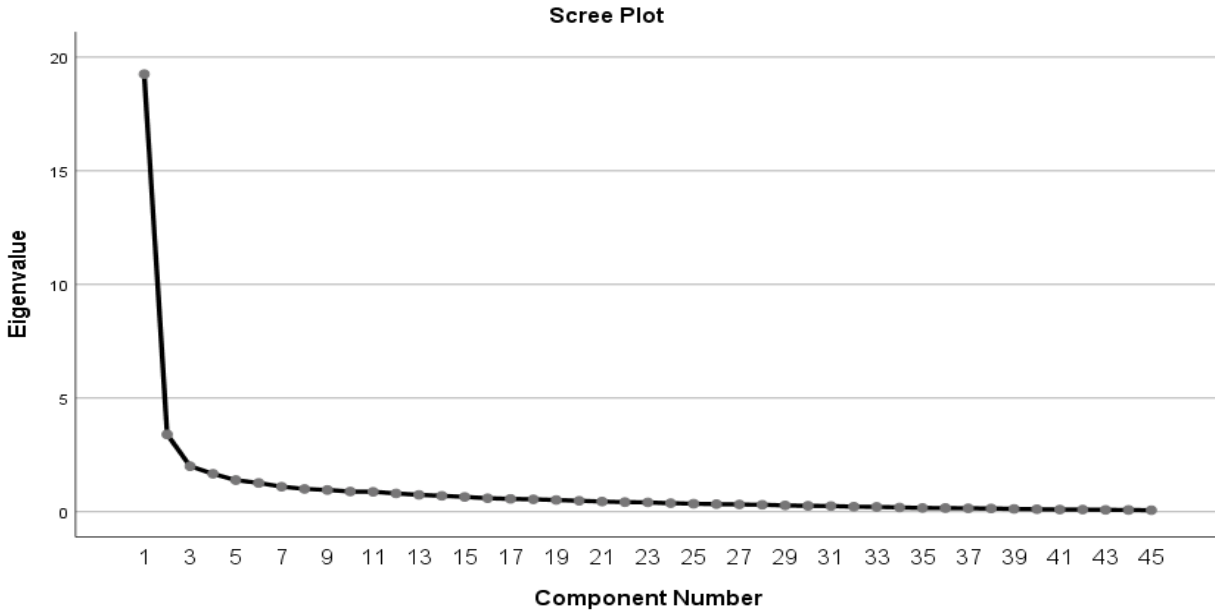


Figure 4-2 Scree plot for the factors of reconstruction in Questionnaire One

The final step is to rotate the component matrix using Varimax with Kaiser Normalization rotation method. The rotated component matrix is the targeted output of factor analysis. It includes estimates of the correlations between each variable and the estimated components. **Table (4-5)** shows the factor matrix after rotation. The Rotated Component Matrix table includes the explained variance of the components. In factor analysis, the greater the explained variance is, the better the factor analysis results. Researchers [Moretti et al.](#) recommend that the component solution explains at least 50% of the variance. Therefore, the extracted components are accepted when the percentage of the explained variance from the extracted factors is more than 50%. We noticed that the explained variance of the variables after rotation is more significant than 0.50, so we accepted the factor analysis results.

Rotated Component Matrix								
	Component							
	1	2	3	4	5	6	7	8
Q13	<b>0.791</b>			0.229	0.177	0.162		
Q12	<b>0.676</b>			0.174	0.159	0.313		
Q14	<b>0.651</b>	0.169	0.109	0.138	0.242			0.24
Q15	<b>0.641</b>	0.162	0.191	0.19	0.185	0.111	-0.109	0.183
Q10	<b>0.632</b>	0.197	0.263	0.145		0.11	0.308	
Q37	<b>0.621</b>	0.211	0.265	0.232	0.266	-0.113		0.213

Q6	<b>0.592</b>		-0.131	0.146	0.191	0.295		0.422
Q16	<b>0.571</b>	0.286	0.212	0.332	0.14			0.389
Q34	<b>0.549</b>		0.383	0.376	0.319	0.18		0.23
Q5	<b>0.536</b>		-0.31		0.422	0.342		0.257
Q38	<b>0.525</b>	0.374	0.223	0.384	0.257	0.169	0.18	
Q1	<b>0.505</b>	0.285	0.148	0.305	0.101	0.18	0.435	
Q21	0.135	<b>0.76</b>	0.24		0.117	0.194	0.194	
Q19	0.143	<b>0.713</b>	0.203	0.18	0.173		0.241	0.123
Q18		<b>0.693</b>	0.3	0.229		0.198		0.113
Q22	0.218	<b>0.612</b>	0.371	0.123	0.192	0.138	0.244	
Q20	0.362	<b>0.571</b>	0.355	0.167	0.267		0.171	0.111
Q17	0.217	<b>0.502</b>	0.559	0.114	0.231	0.117		0.144
Q30	0.103	0.246	<b>0.763</b>	0.13	0.151	0.178	0.12	0.153
Q31		0.313	<b>0.722</b>	0.173	0.121	0.187	0.277	
Q32	0.158	0.307	<b>0.619</b>	0.24	0.177		0.12	
Q28	0.117	0.29	<b>0.549</b>	0.244	0.2	-0.133	0.161	0.103
Q33	0.346	0.108	<b>0.548</b>	0.202	0.264	0.13	0.103	
Q44		0.439	<b>0.529</b>	0.318	0.37	0.161		
Q29	0.232	0.244	<b>0.507</b>	0.292	0.166	-0.11	0.357	0.221
Q23	0.297		0.195	<b>0.763</b>	0.178	0.127		
Q24	0.173	0.259		<b>0.739</b>	0.23		0.213	0.169
Q27	0.212	0.241	0.206	<b>0.661</b>			0.191	0.212
Q26	0.348	0.2	0.252	<b>0.623</b>	0.135	0.191	0.136	0.151
Q25	0.356	0.207	0.334	<b>0.616</b>	0.135		0.169	0.263
Q43	0.446	0.129	0.238	0.101	<b>0.697</b>			
Q41	0.257	0.253	0.308	0.13	<b>0.643</b>	0.203		0.213
Q40	0.121	0.23	0.289	0.262	<b>0.619</b>	0.175	0.31	0.211
Q42	0.463			0.238	<b>0.609</b>			
Q39	0.103	0.509	0.153	0.105	<b>0.6</b>	0.246	0.183	0.124
Q36	0.38	0.125	0.21	0.355	<b>0.552</b>			0.166
Q45	0.368	0.206	0.384	0.127	<b>0.51</b>	0.21		0.153
Q4	0.167	0.142	0.112		0.139	<b>0.765</b>		0.359
Q3	0.134	0.183	0.112	0.169	0.206	<b>0.764</b>		
Q11	0.157	0.403	0.124	0.207		<b>0.5</b>	0.249	
Q8		0.239	0.281	0.154	0.122	0.168	<b>0.719</b>	
Q7		0.224	0.194	0.291			<b>0.684</b>	0.247
Q2	0.509	0.314		0.143	0.106	0.121	<b>0.526</b>	-0.106
Q9	0.27	0.15	0.152	0.155	0.108		0.192	<b>0.719</b>
Q35	0.274		0.145	0.244	0.33		0.108	<b>0.68</b>
Extraction Method: Principal Component Analysis.								
Rotation Method: Varimax with Kaiser Normalization. <sup>a</sup>								
a. Rotation converged in 10 iterations.								

*Table 4-5 Matrix of components after rotation of the Questionnaire One's factors*

The Rotated Component Matrix shows that there are correlations between factors related to the process of dealing with or controlling the reconstruction project, such as administrating the use of resources, organizing and coordinating efforts, and producing implementation plans with time and monitoring objectives, all of these activities fall under the general definition of management. Therefore, component one, the most prominent decision cluster, is named (Management decisions cluster).

The second set of data in the Table shows that there are moderate correlations between six factors that reflect the different cultural, social, and economic factors that shape the architectural features of the built environment, such as sense of place, spatial belonging, mixed-use environment, cultural characteristics of the city, historical and present architectural identity. Thus, we specify component two as (Architectural identity decisions cluster).

Component three contains seven factors. Upon inspection, they seem to be related to providing immediate shelter necessities after disasters, such as providing income resources, services, housing requirements, and social environment requirements. The component seems concerned with (Providing a needs decisions cluster).

After inspecting the elements of component four, we recognize a pattern between the five factors; they seem concerned with equity decisions, such as equity in distributing houses, protecting the interests of vulnerable groups, avoiding decisions that lead to disparities among society, and public transparency. Therefore, component four is (Ensuring equity decision cluster).

In a similar analysis, component five is named (Urban planning decision cluster), component six is (Human resource decision cluster), component seven is (Linking local context decision cluster), and component eight is (Providing political support decision cluster). No factors were found redundant; therefore, we did not exclude any factor from the statistical analysis. **Table (4-6)** details each decision cluster and all its factors.

#	Component name	Factor
1	Management decisions	Defining mechanisms for providing construction materials.
		Providing tools to increase funds.
		Providing tools for overcoming bureaucratic procedures.
		Planning adequate implementation arrangements.
		Increasing monitoring capacity to manage funds.
		Creating mechanisms for monitoring.



		Linking private and public efforts.
		Developing a timeline for finishing reconstruction projects.
		Developing coordination mechanisms between government, NGOs, and community.
		Rationalizing the use of resources.
		Providing response methods to reduce the impact of possible disasters.
		Increasing the community's ability to respond to possible disasters.
2	<b>Architectural identity</b>	Linking master plan to current architectural identity.
		Considering a relevance to the historical architectural identity.
		Considering cultural diversity characteristics during planning.
		Adaptation of previous mixed-use environment to new conditions.
		Enhancing the sense of place.
3	<b>Providing needs</b>	Considering spatial belonging effects during planning.
		Linking livelihood to housing.
		Planning services according to the priority of needs.
		Considering family structure during housing design.
		Considering the lifestyle of the community during housing design.
		Providing spaces and facilities to increase social interaction.
4	<b>Ensuring equity</b>	Adapting to future changes and requirements.
		Compatibility between characteristics of old settlement with the new one.
		Ensuring equity in distributing houses.
		Avoiding disparities among society layers.
		Supporting strategy for the vulnerable when relocation is unavoidable.
5	<b>Urban planning considerations</b>	Protecting the interests of vulnerable groups from the impact of gentrification.
		Ensuring public transparency during the decision-making process.
		Consolidating the Urban economy while considering its effects on the community.
		Providing linkage with the surrounding environment.
		Increasing dynamic interconnections with different parts of the settlement.
		Linking urban and rural development during planning.
6	<b>Human resource</b>	Considering decentralization in services and traffic.
		Balancing between mass and space during planning land use.
		Considering the effects of land nature on reconstruction.
7	<b>Linking local context with planning</b>	Increasing capacity of skilled labor.
		Increasing capacity of working staff in reconstruction management.
		Providing strong local workgroups.
8	<b>Providing political support</b>	Providing reliable information for planning
		Linking expertise with the local context.
		Linking expertise with priority of needs.

*Table 4-6 final results of the factor analysis, showing decisions clusters that are related to participatory decision making (Questionnaire One component)*

#### 4.1.4. Measuring reliability and validity of Questionnaire One

##### *Reliability tests for Questionnaire One*

Reliability of the scale refers to the ability of the scale to produce identical or somewhat similar results if the measurement is repeated for the phenomenon under study. One of the most used methods for assessing the scale's reliability is Cronbach's Alpha coefficient, whose value should not exceed 0.60. **Table (4-7)** shows the reliability of each study component.

Component	Number of factors	Cronbach's Alpha	validity coefficient
First	12	0.908	0.953
Second	6	0.898	0.948
Third	7	0.888	0.942
Fourth	5	0.904	0.951
Fifth	7	0.909	0.953
Sixth	3	0.755	0.869
Seventh	3	0.708	0.841
Eighth	2	0.812	0.901

*Table 4-7 The reliability and validity coefficient for the eight components of Questionnaire One*

the values of Cronbach's alpha ranged between (0.708) and (0.909), all higher than (0.6); this indicates the existence of internal consistency between the factors. We note that the values are also high, meaning that the questionnaire represents the community from the sample. **Table of consistency in Annex 3** indicates the consistency of each component factor with the total component factors.

The value of The Corrected Item-Total Correlation refers to the correlation or consistency between each factor and the total of factors in each component. Suppose the value corresponding to any factor is 0.20 or more. In that case, this factor can be kept without deleting because approximately 10% of the variance of the combined measure is due to it. The Corrected Item-Total Correlation values for the first component ranged between 0.483 and 0.782; for the second component, they ranged between 0.661 and 0.796. The third component ranged between 0.606 and 0.784. For the fourth component, it ranged between 0.704 and 0.809, and for the fifth component, it ranged between 0.651 and 0.784 And for the sixth component, it ranged between 0.479 and 0.674, and for

the seventh component (0.421 and 0.615). The eighth component was 0.687. All axes are higher than the standard 0.20, so no factor was deleted from the questionnaire. **Table (4-8)** shows the reliability of the entire questionnaire:

	Number of factors	Cronbach's Alpha	Validity coefficient
	45	0.968	0.984

*Table 4-8 The reliability and validity coefficient of Questionnaire One*

The results of consistency of each questionnaire factor with the total factors in **annex 3** show that the values of Cronbach's Alpha coefficient for the entire questionnaire are 0.968, higher than 0.60, indicating internal consistency between the factors that make up the questionnaire. As for the values of the validity coefficient, we note that the value is also high at 0.984. The Table shows the Corrected Item-Total Correlation values for the questionnaire factors. The values ranged between 0.386 and 0.752, which is higher than the standard 0.20, meaning that all factors can be kept without deleting any of them.

The split-half test is a measurement preformed to also measure reliability; it is based on dividing the measurement questions into two parts; each section becomes a sub-measurement, then we find the relationship between them. If all the factors measure relatively close, it is natural that we get a high degree of internal stability of the scale. Therefore, the value reached is a measurement of internal stability because the obtained value results from a relationship between questions of one measurement. **Table (4-9)** shows the test results:

N	Correlation Between Forms	Spearman-Brown Coefficient
145	0.959	0.979

*Table 4-9 Results of the split-half test of Questionnaire One*

The results of the previous Table show that the correlation coefficient between the two parts of the questionnaire before the correction was 0.959, while the correction coefficient, according to Spearman-Brown, was 0.979, meaning that significance values are less than 0.05. Thus, the studied fields were reliable according to the Split-Half method.

### *Structure validity and internal validity tests for Questionnaire One*

Structure validity measures the validity and correlation coefficients between the group and the whole questionnaire. In this case, we measured the relationship between each component and its factors in Questionnaire One. We studied the internal consistency of components and the factors using Spearman's correlation coefficient.

The results of the significance of the relationship between each component and its factors in Annex 3 shows that is smaller than the level of significance 0.05, meaning that with 95% confidence, there is a real relationship between each component (decision cluster) and its factors, meaning that each factor is representative for the cluster of the decision they append.

In more detail, we notice that the most negligible internal consistency value is in (Management decisions), with 0.547 for the first factor (identifying mechanisms for providing building materials). However, it still indicates that there is a relationship between this factor and its components, same wise in (Human resource decisions), factor 11 has the mean of 0.592 (providing strong local workgroups); a direct (but not strong) relationship between the factor and human resource decisions. A stronger relationship is present in all other components and their factors, for example, direct solid relationships that ranged between 0.712 with factor 22 (Considering spatial belonging effects during planning) and 0.818 with (considering the relevance to historical architectural identity). The relationship between the third component (providing needs) and its factors is also strong, ranging between 0.674 and 0.763, with factor 30 (considering family structure during housing design)

There is a high value for two factors in (Ensuring equity), (avoiding disparities between classes of society) had a high value of 0.828; the value is the same for (protecting the interests of vulnerable groups from the impact of gentrification). The sixth component indicates that (Providing reliable information for planning) is strongly related to Linking local context with planning because this factor scored 0.839 with its component.

We also analyzed the internal validity of the questionnaire by computing the relationship between the eight components of the study and community participation using the Spearman correlation coefficient; the results are shown in table (4-13). The results show that the significance of the relationship between the components of the study and community participation is smaller than the

level of significance 0.05, meaning that with 95% confidence, there are real, statistically significant relationships between the component of the study and community participation, which are direct relationships whose intensity ranged between the average 0.551 (relationship with the seventh component linkage with the local context) and strong 0.884 (relationship with the first and fifth component (reconstruction decisions and urban planning considerations)), and the relationship was strong with the rest of the components, reaching, in order: sixth (providing human resources) 0.602, eighth (providing policy support) 0.655, and second (Architectural identity) 0.709, the fourth (ensuring equity) 0.755, and the third (providing needs) 0.765.

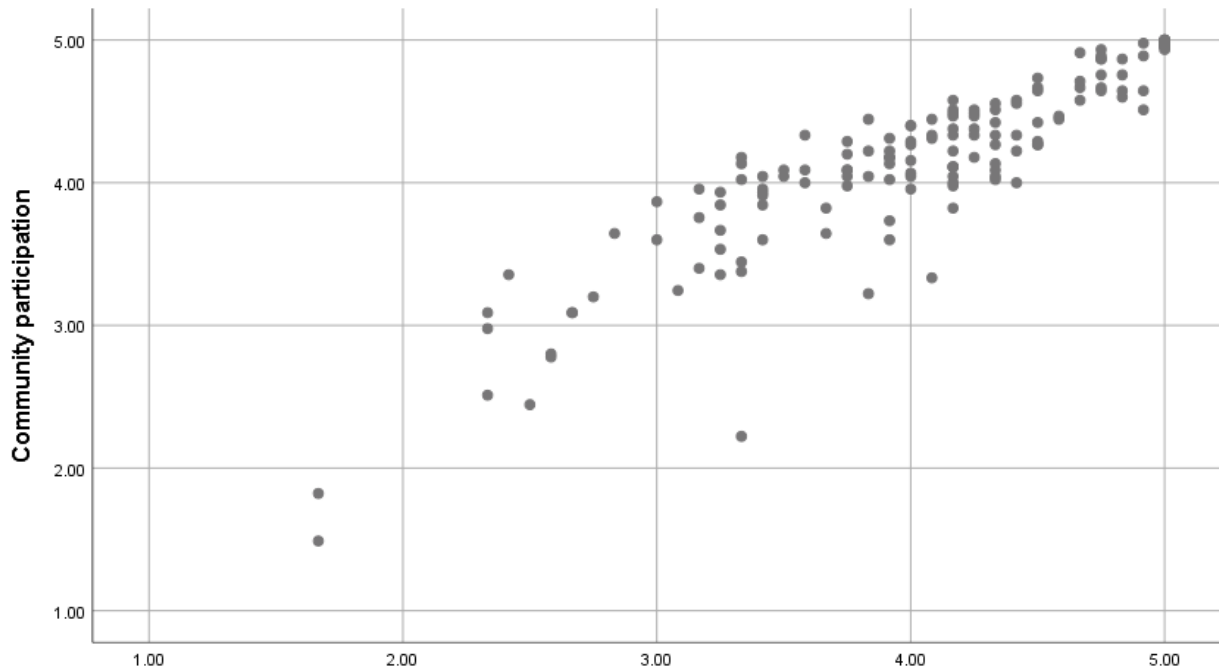
We also noticed real, statistically significant relationships between the study components, as their intensity ranged between medium and strong. The highest intensity of the relationship was between the first component (management decisions) and the fifth (urban planning considerations), which amounted to 0.771, while the least intense relationship was between the sixth component (providing human resources) and the eighth (providing political support) 0.322. Overall, the decision clusters are valid to be measured to assess the importance of community participation in each component.

		1	2	3	4	5	6	7	8	9
<b>1. Management decisions</b>	r	1	0.513**	0.535**	0.594**	0.771**	0.529**	0.481**	0.583**	0.884**
	P	.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	145	145	145	145	145	145	145	145	145
<b>2. Architectural identity</b>	r		1	0.649**	0.517**	0.577**	0.479**	0.455**	0.382**	0.709**
	P		.	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N		145	145	145	145	145	145	145	145
<b>3. Providing needs</b>	r			1	0.626**	0.698**	0.388**	0.381**	0.481**	0.765**
	P			.	0.000	0.000	0.000	0.000	0.000	0.000
	N			145	145	145	145	145	145	145
<b>4. Ensuring equity</b>	r				1	0.555**	0.423**	0.491**	0.541**	0.755**
	P				.	0.000	0.000	0.000	0.000	0.000
	N				145	145	145	145	145	145
<b>5. Urban planning considerations</b>	r					1	0.483**	0.429**	0.545**	0.884**
	P					.	0.000	0.000	0.000	0.000
	N					145	145	145	145	145
<b>6. Providing human resource</b>	r						1	0.464**	0.322**	0.602**
	P						.	0.000	0.000	0.000
	N						145	145	145	145
<b>7. Linking local context with planning</b>	r							1	0.353**	0.551**
	P							.	0.000	0.000
	N							145	145	145
<b>8. Providing policy support</b>	r								1	0.655**
	P								.	0.000
	N								145	145
<b>9. Community participation</b>	r									1
	P									.
	N									145

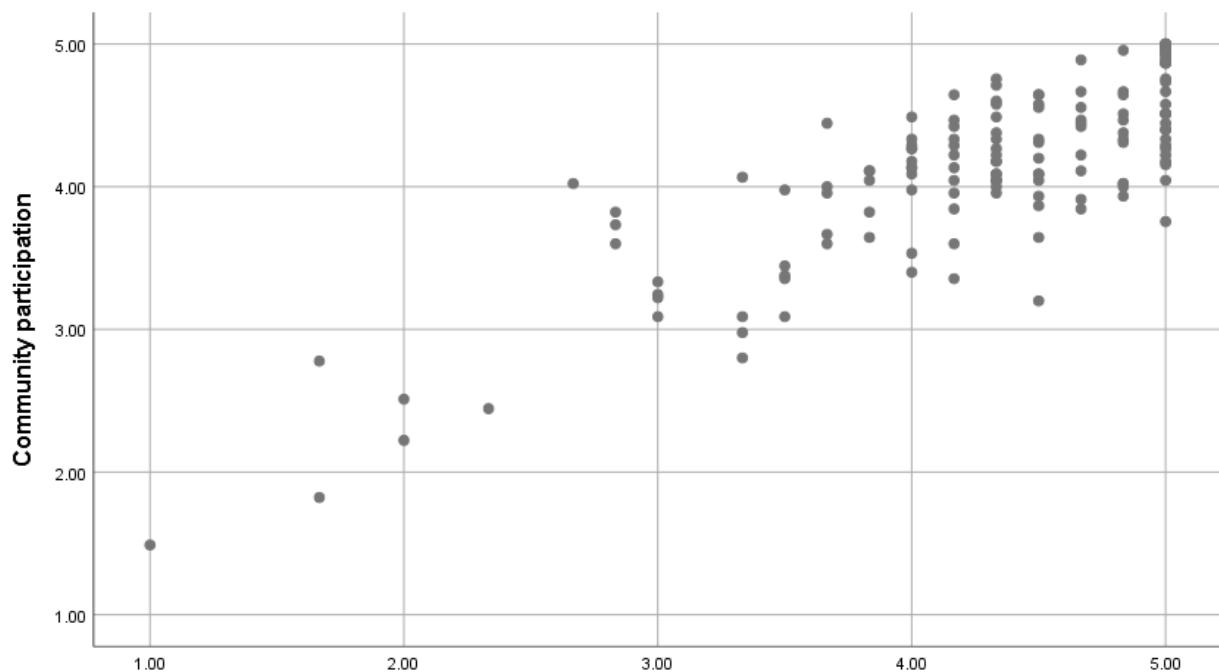
\*\* . Correlation is significant at the 0.01 level (2-tailed).

*Table 4-10 Correlation matrix of the relationship between the eight components and community participation in Questionnaire One*

The following charts show the forms of relationships between the study component and community participation:

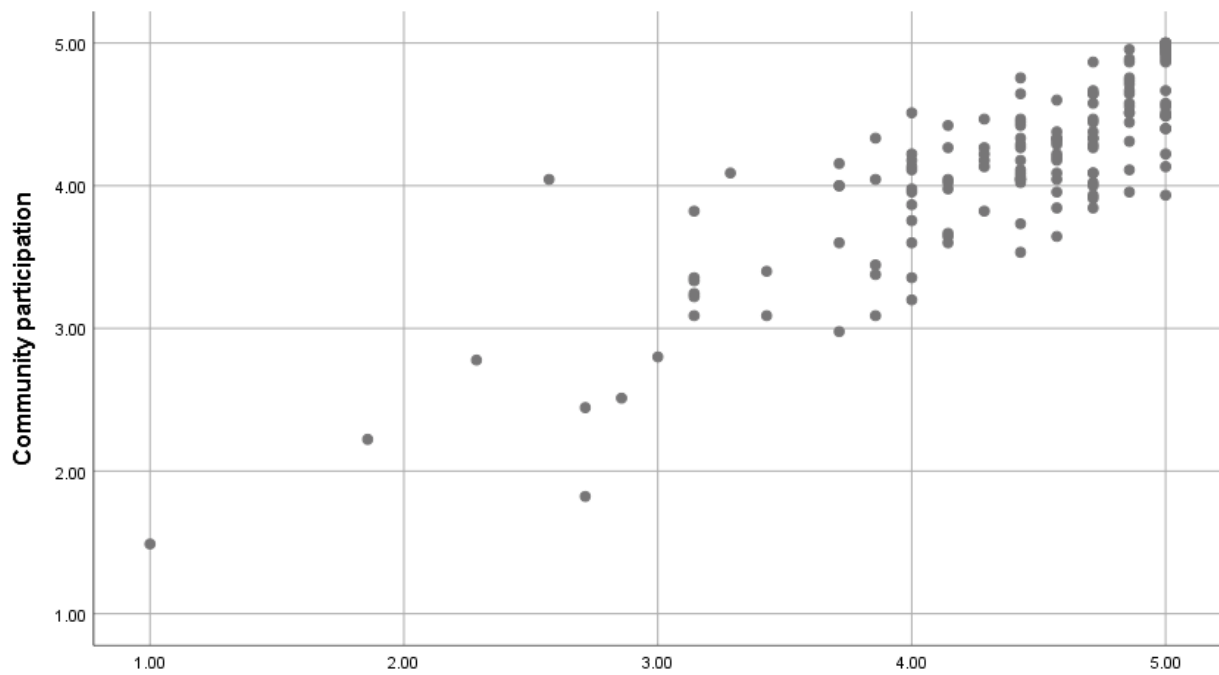


*Figure 4-3 Scatter plot of the relationship between the first component (Management decisions) and community participation*

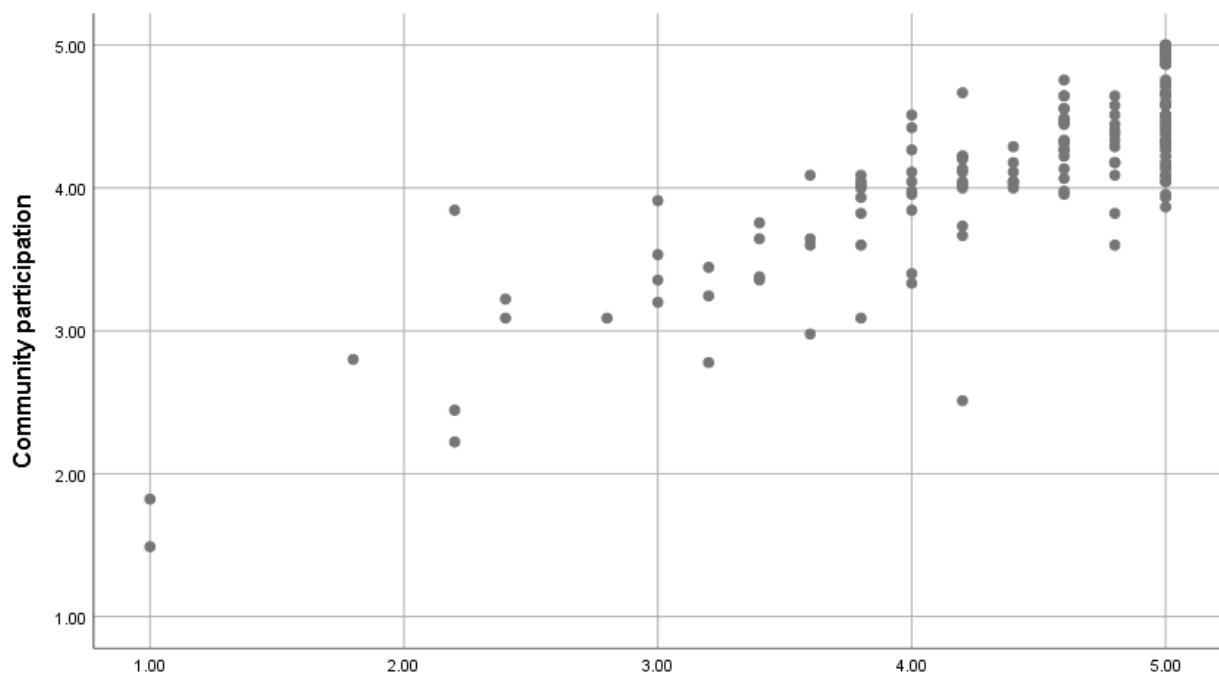


*Figure 4-4 Scatter plot of the relationship between the second component (Architectural identity) and community participation*

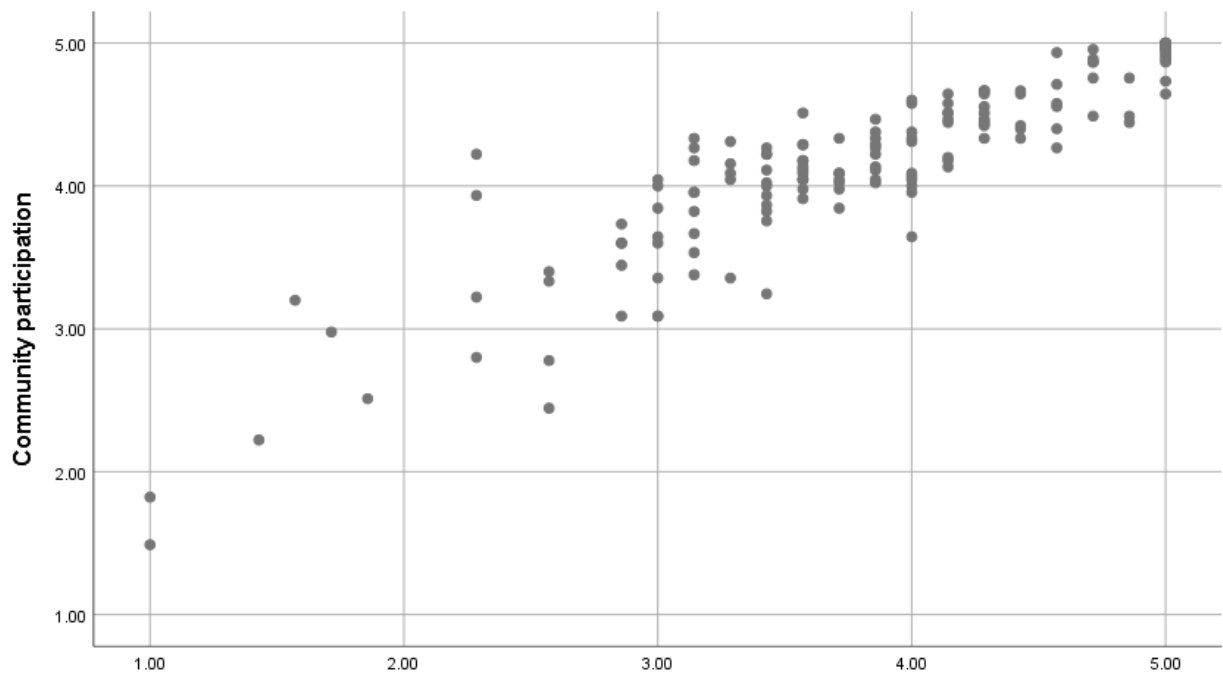




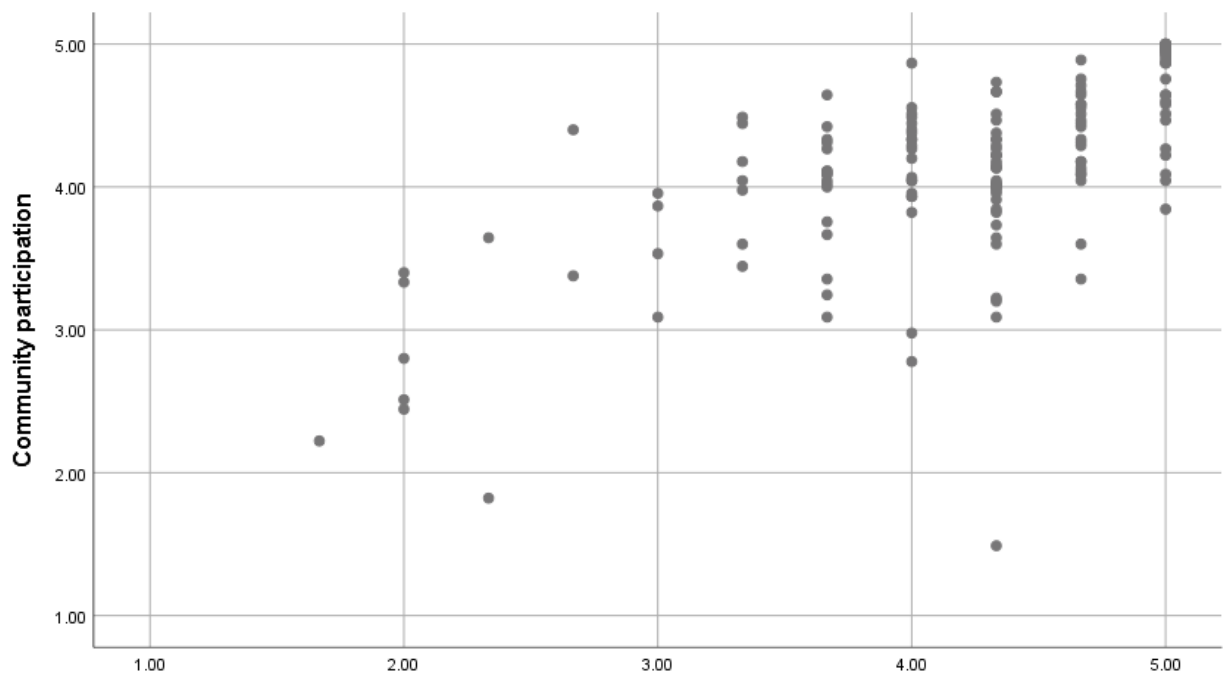
*Figure 4-5 Scatter plot of the relationship between the third component (providing needs) and community participation*



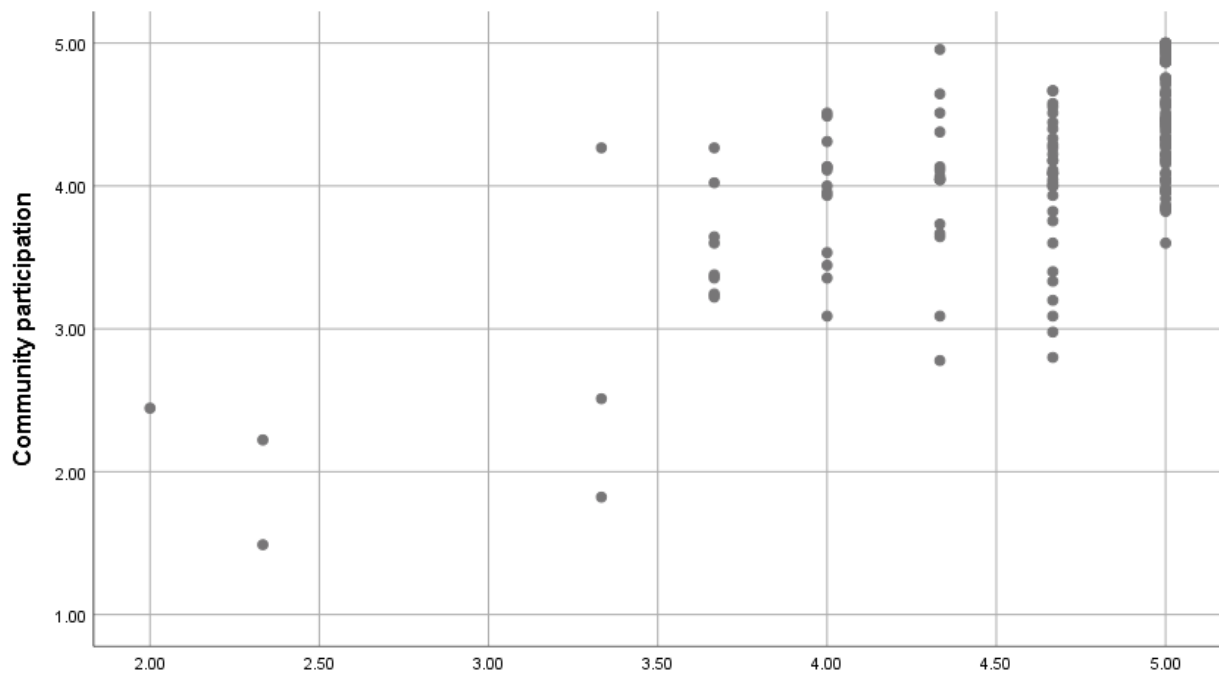
*Figure 4-6 Scatter plot of the relationship between the fourth component (ensuring equity) and community participation*



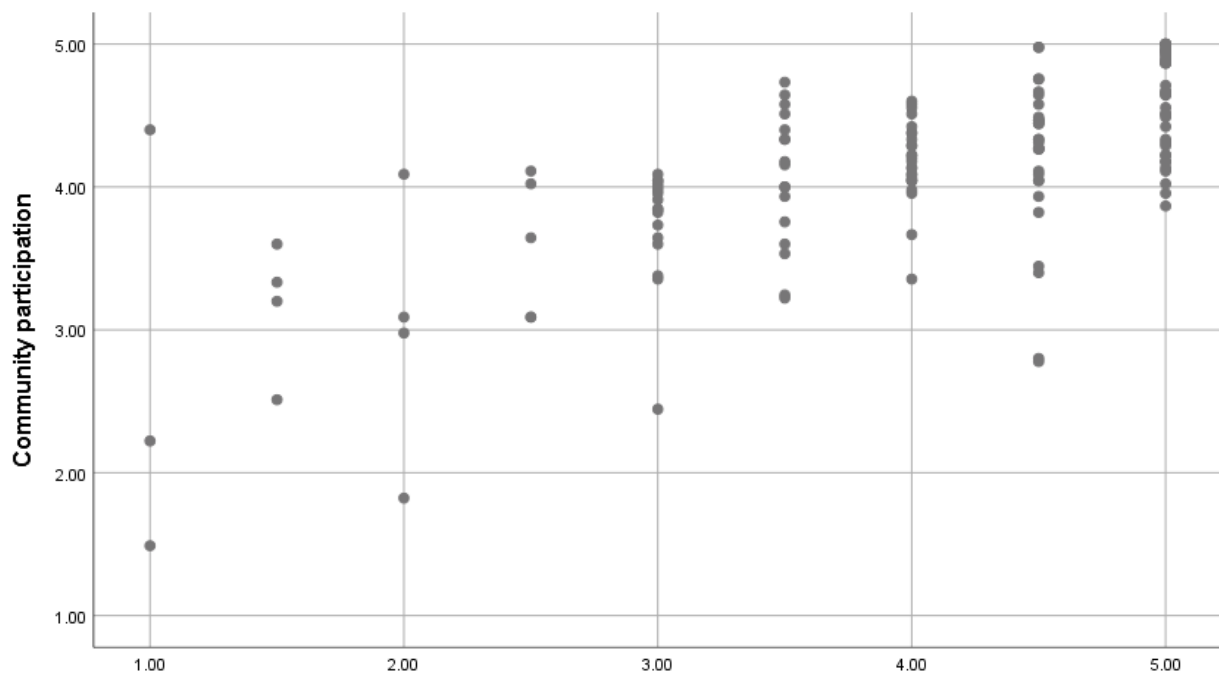
*Figure 4-7 Scatter plot of the relationship between the fifth component (urban planning consideration) and community participation*



*Figure 4-8 Scatter plot of the relationship between the sixth component (providing human resources) and community participation*



*Figure 4-9 Scatter plot of the relationship between the seventh component (linking local context with planning) and community participation*



*Figure 4-10 Scatter plot of the relationship between the eighth component (providing political support) and community participation*

The figures above show the scatter plot of the relationship between each component and community participation. The patterns in the first four components resemble a straight line, which indicates a strong relationship between each (management decisions, Architectural identity decisions, providing needs decisions, Ensuring equity decisions) and participatory decision-

making. The line is less clear in component eight than in the other components (Providing political support). It is also less clear in component six (Human resource decisions), which suggests a reasonable uncertainty about whether there is a relation between providing political support and participatory decision-making according to respondents.

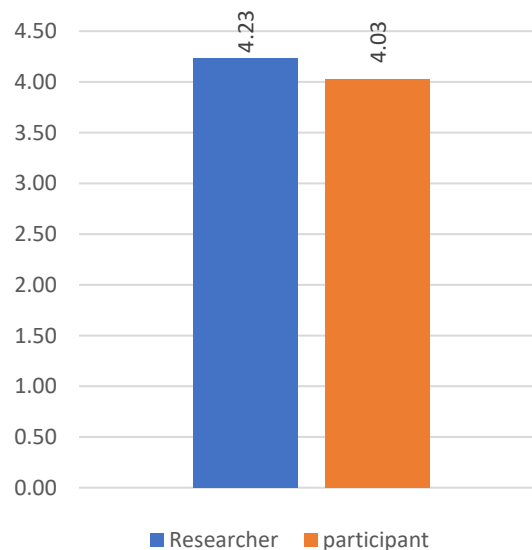
#### 4.1.5. Examining the difference between the responses of researchers and staff members in reconstruction projects

Using the non-parametric Mann-Whitney test for two independent samples, we explored the difference between the staff members and the researchers in the reconstruction projects.

		N	Mean	SD	Mean Rank	P-value
<b>Community participation</b>	Researcher	99	4.23	0.54	69.49	0.064
	participant	32	4.03	0.55	55.20	

*Table 4-11 The difference between participants and researchers in reconstruction projects in the overall component and its factors in Questionnaire One*

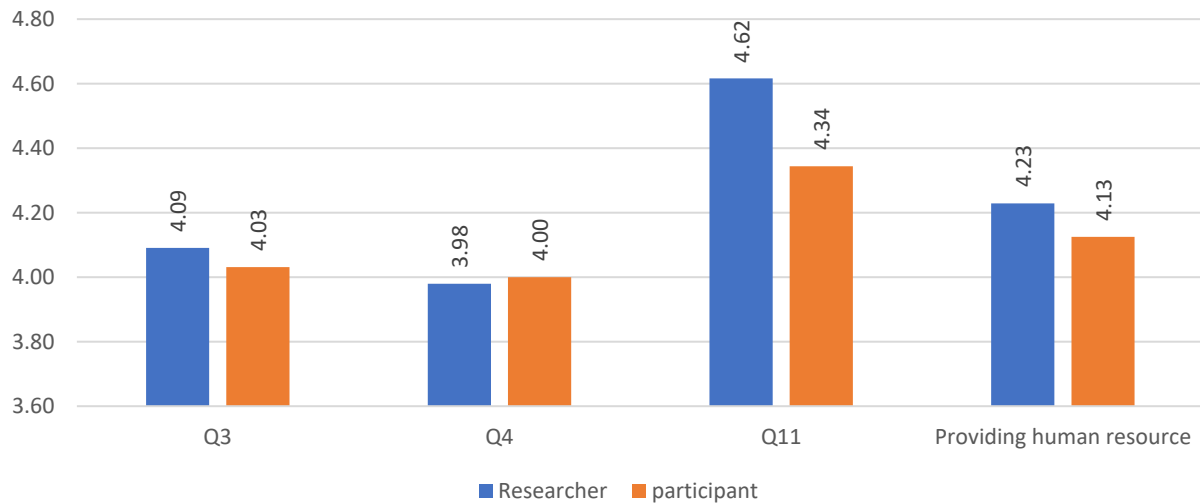
**Table (4-11)** shows the overall P value. The significance level was (0.064), which is greater than 0.05. Thus, with a confidence of 95%, there are no real differences between the individuals who participated as staff members and those who conducted research. **Figure (4-11)** shows the arithmetic averages of community participation according to participant and researcher in reconstruction projects.



*Figure 4-11 Arithmetic averages of community participation according to participation and research in reconstruction projects in questionnaire one*

the result of the test significance for the difference between participants and researchers in reconstruction projects in each component. **in Annex 3** show no statistically significant differences between staff members and researchers in five components and their factors: urban planning considerations, architectural identity, providing human resources, providing policy support, and linking local context with planning. We also observe no real, statistically significant difference in management decisions and its factors, except for the factor "rationalizing the use of resources,"; where the difference was in favor of the researchers in the reconstruction projects. The sampled researchers favored using

community participation in rationalizing resources for reconstruction compared to participants in reconstruction projects. Researchers also tended to include community participation in considering the community's lifestyle during housing design compared with those who participated in reconstruction projects **Figure (4-14)**.



*Figure 4-12 Arithmetic averages for the sixth component and its factors according to participation and research in reconstruction projects in questionnaire one*

The only component with real, statistically significant differences between the participants and researchers in the reconstruction projects is the ensuring equity component and its factors, where the difference was in favor of the researchers in the reconstruction projects.

In summary, no statistically significant differences exist between the samples of staff members and researchers except for component three (Ensuring equity), **Figure (4-15)**. This lack of difference confirms the validity of the sample that contained both types of expertise in reconstruction projects.

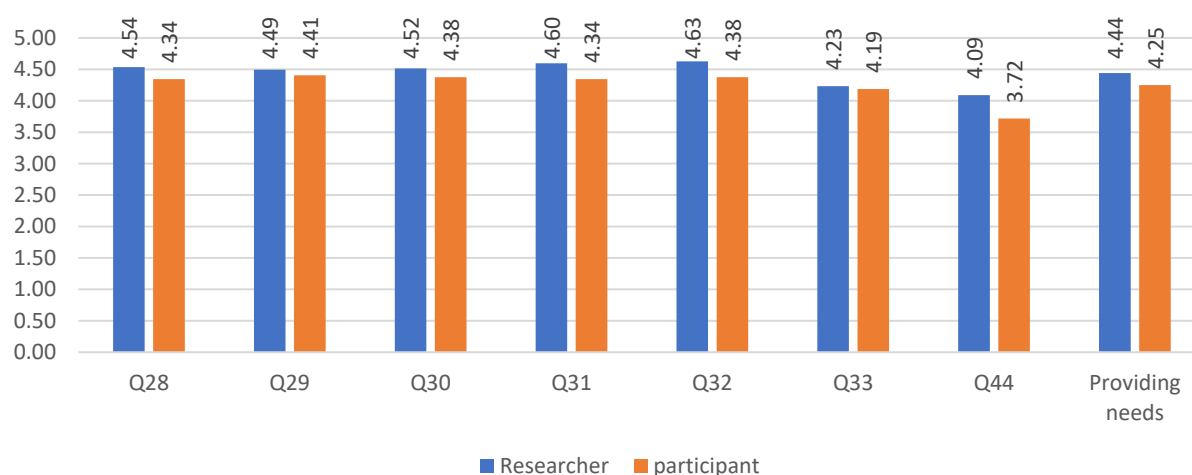


Figure 4-13 Arithmetic averages for the third component and its factors according to participation and research in reconstruction projects in questionnaire one

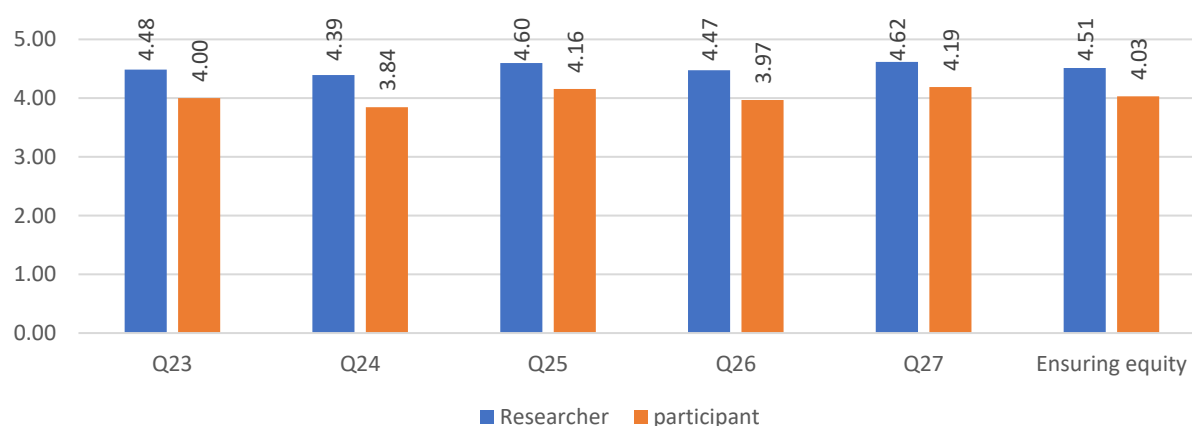


Figure 4-14 Arithmetic averages for the fourth component and its factors according to participation and research in reconstruction projects in questionnaire one

The results show that researchers gave importance to more factors than participants in recovery projects; this may indicate that the sample researchers highlighted the importance of a broader spectrum of issues related to community participation, while participants emphasized the importance of fewer factors compared to individuals with more theoretical experience. Participants in recovery projects provided higher importance to the following factors than researchers:

- Providing tools to increase funds.
- Increasing monitoring capacity to manage funds.
- Creating mechanisms for monitoring.
- Linking private and public efforts.
- Providing response methods to reduce the impact of possible disasters.
- Avoiding disparities among society layers.
- Increasing capacity of working staff in reconstruction management.
- Providing reliable information for planning

#### 4.1.6. Ranking of factors in each component in Questionnaire One

The five-point Likert scale is an ordinal scale used to calculate quantitative weights. The questionnaire used a verbal scale corresponding to numbers: (1= Low, 2= moderately low, 3= not sure, 4= moderately high, and 5= high). We interpreted the results obtained into weighted means according to [Table \(4-12\)](#).

level	Low	moderately low	not sure	moderately high	high
Weighted mean	1 - 1.79	1.80 - 2.59	2.60 - 3.39	3.40 - 4.19	4.20 - 5

*Table 4-12 Weights corresponding to the five-point Likert scale used in the questionnaires*

To investigate the priorities of engaging community participation in each decision component, we analyzed the ranking of variables in each component, using the T-test and the P value of the test at a significant level of 95%. The P value comparison between the average of factors with the average of the scale shows that significance was always smaller than 0.05, which indicates a tendency of the respondents to give the stated scores. Therefore, factors included in Questionnaire One are related to participatory decision-making.

##### *Ranking of factors in component 1 (Management decisions)*

The following are the factors of the first component (Management decisions):

- Q1 Defining mechanisms for providing construction materials.
- Q5 Providing tools to increase funds.
- Q6 Providing tools for overcoming bureaucratic procedures.
- Q10 Planning adequate implementation arrangements.
- Q12 Increasing monitoring capacity to manage funds.
- Q13 Creating mechanisms for monitoring.
- Q14 Linking private and public efforts.
- Q15 Developing a timeline for finishing reconstruction projects.
- Q16 Developing coordination mechanisms between government, NGOs, and community.
- Q34 Rationalizing the use of resources.
- Q37 providing response methods to reduce the impact of possible disasters.
- Q38 Increasing the community's ability to respond to possible disasters.



	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q38	4.49	89.79	0.76	23.45	0.00	high	1	5
Q16	4.23	84.55	0.98	15.02	0.00	high	2	18
Q10	4.19	83.86	0.89	16.11	0.00	moderately high	3	21
Q37	4.13	82.62	1.05	12.98	0.00	moderately high	4	24
Q14	3.98	79.59	1.02	11.52	0.00	moderately high	5	29
Q15	3.96	79.17	1.12	10.28	0.00	moderately high	6	31
Q13	3.89	77.79	1.01	10.63	0.00	moderately high	7	34
Q34	3.88	77.52	1.04	10.14	0.00	moderately high	8	35
Q1	3.83	76.69	1.07	9.42	0.00	moderately high	9	36
Q12	3.81	76.28	1.06	9.24	0.00	moderately high	10	38
Q5	3.63	72.69	1.08	7.08	0.00	moderately high	11	42
Q6	3.62	72.41	1.17	6.40	0.00	moderately high	12	43
<b>Component 1: Management decisions</b>	3.97	79.41	0.72	16.14	0.00	moderately high	-	<b>6</b>

*Table 4-13 The first component in Questionnaire One results (Management decisions)*

Respondents gave moderately high scores to the majority of factors in component one. The average of their answers was (3.97), corresponding to a percentage of the moderately high score (79.41%). Concerning the ranking of the factors within the component, the statistical analysis indicates that responses have a high score of (63.4%) (Q38 - increase the community's ability to respond in cases of potential disasters); this corresponds to an intensity of (89.79%). Another factor with a high score is (Q16 - the development of coordination mechanisms between the government, non-governmental organizations, and society), with an average response of (4.23) and a severity index of (84.55%). All other ten factors in the management decisions component had a moderately high score. The group ranking for component one is illustrated in **table (4-13)**.

#### *Ranking of factors in component 2 (Architectural identity)*

Factors in component (Architectural identity) according to the exploratory factor analysis are

- Q17 Linking master plan to current architectural identity.
- Q18 Considering a relevance to the historical architectural identity.
- Q19 Considering cultural diversity characteristics during planning.
- Q20 Adaptation of previous mixed-use environment to new conditions.
- Q21 Enhancing the sense of place.
- Q22 Considering spatial belonging effects during planning.

Analysis of component 2 shows that the respondents delivered high scores for all factors except (Linking the master plan to the current architectural identity.), which had moderately high scores. In general, this analysis expresses the importance of engaging the community in decisions related to architectural identity. This importance of architectural identity is evident by this component's high intensity, which amounted to 88.28%. Architectural identity ranked fourth in importance relative to all eight components analyzed.

	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q21	4.41	88.28	0.89	19.20	0.00	high	1	13
Q19	4.38	87.59	0.91	18.18	0.00	high	2	14
Q22	4.32	86.48	0.87	18.43	0.00	high	3	15
Q18	4.20	84.00	1.02	14.20	0.00	high	4	19
Q20	4.20	84.00	0.94	15.38	0.00	high	5	20
Q17	3.97	79.31	1.11	10.43	0.00	moderately high	6	30
<b>Component 2: Architectural identity</b>	4.25	84.94	0.78	19.21	0.00	high	-	<b>4</b>

*Table 4-14 The second component in Questionnaire One results (Architectural identity)*

Upon inspection of the data for each factor, we observed that the factor that had the highest importance among Architectural identity decisions to engage the community is "Enhancing the sense of place." There is little difference margin among all architectural identity factors. "Considering cultural diversity characteristics during planning" had (a 4.38) mean, close to the mean (4.32) of "Considering spatial belonging effects during planning." Two factors have an identical mean of (4.20). "Considering a relevance to the historical architectural identity." and "Adaptation of previous mixed-use environment to new conditions."

#### *Ranking of factors in component 3 (Providing needs)*

The following factors are related to providing needs decisions:

- Q28 Linking livelihood to housing.
- Q29 Planning services according to the priority of needs.
- Q30 Considering family structure during housing design.
- Q31 Considering the lifestyle of the community during housing design.
- Q32 Providing spaces and facilities to increase social interaction.
- Q33 Adapting to future changes and requirements.
- Q44 Compatibility between characteristics of the old settlement with the new one.

	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q32	4.52	90.48	0.74	24.91	0.00	high	1	3
Q31	4.48	89.52	0.88	20.14	0.00	high	2	6
Q28	4.44	88.83	0.80	21.74	0.00	high	3	8
Q29	4.43	88.69	0.90	19.28	0.00	high	4	10
Q30	4.43	88.69	0.92	18.80	0.00	high	5	11
Q33	4.13	82.62	0.93	14.65	0.00	moderately high	6	25
Q44	3.91	78.21	1.06	10.34	0.00	moderately high	7	33
<b>Component 3: Providing needs</b>	4.34	86.72	0.69	23.26	0.00	high	-	<b>3</b>

*Table 4-15 The third component in Questionnaire One results (Providing needs)*

The severity index for the third component (86.72%) shows that engaging the community in providing community needs decisions has high priority. Meanwhile, the component ranked third in importance compared with the other studied components. "Q32 - Providing spaces and facilities to increase social interaction" had the highest mean value (4.52), even more than "Q28 – linking livelihood to housing" and "Q29 Planning services according to needs"

#### *Ranking of factors in component 4 (Ensuring equity)*

The following are the factors of the fourth component (Ensuring equity):

- Q23 Ensuring equity in distributing houses.
- Q24 Avoiding disparities among society layers.
- Q25 Supporting strategy for the vulnerable when relocation is unavoidable.
- Q26 Protecting the interests of vulnerable groups from the impact of gentrification.
- Q27 Ensuring public transparency during the decision-making process.

	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q27	4.46	89.10	0.91	19.20	0.00	high	1	7
Q25	4.44	88.83	0.90	19.36	0.00	high	2	9
Q26	4.30	86.07	1.05	14.95	0.00	high	3	16
Q23	4.30	85.93	0.96	16.29	0.00	high	4	17
Q24	4.19	83.86	1.06	13.52	0.00	moderately high	5	22
<b>Component 4: Ensuring equity</b>	4.34	86.76	0.83	19.37	0.00	high	-	<b>2</b>

*Table 4-16 The fourth component in Questionnaire One results (Ensuring equity)*

The results of the previous table show that the second most important component in community participation decision-making is engaging the community in ensuring equity decisions, with a severity index of (86.76%). When comparing the average of the component with the average of the scale, we found that the test's significance is smaller than the level of significance 0.05, which indicates the real tendency of the respondents to give a high score to the component factors. Regarding the factors of the component, we notice that "Q27 Ensuring public transparency during the decision-making process" Had the highest score in the group (89.1%). Additionally, relocation decisions also have a high effect on achieving equity because the related factor (Q25) Had also a high score of (88.83%).

#### *Ranking of factors in component 5 (Urban planning considerations)*

The following are the factors of the fifth component, Urban planning considerations:

- Q36 Consolidating the Urban economy while considering its effects on the community.
- Q39 Providing linkage with the surrounding environment.
- Q40 Increasing dynamic interconnections with different parts of the settlement.
- Q41 Linking urban and rural development during planning.
- Q42 Considering decentralization in services and traffic.
- Q43 Balancing between mass and space during planning land use.
- Q45 Considering the effects of land nature on reconstruction.

	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q39	4.08	81.52	0.92	14.07	0.00	moderately high	1	26
Q40	4.06	81.10	0.95	13.40	0.00	moderately high	2	27
Q36	3.82	76.41	1.07	9.22	0.00	moderately high	3	37
Q45	3.81	76.28	1.07	9.13	0.00	moderately high	4	39
Q41	3.68	73.52	1.16	7.02	0.00	moderately high	5	41
Q43	3.42	68.41	1.13	4.47	0.00	moderately high	6	44
Q42	3.37	67.45	1.12	4.01	0.00	not sure	7	45
<b>Component 5: Urban planning considerations</b>	3.75	74.96	0.86	10.53	0.00	moderately high	-	<b>8</b>

*Table 4-17 The fifth component in Questionnaire One results (Urban planning considerations)*

The respondents gave moderately high scores to the fifth component factor in general; this component had the least important among all other components, with a (74.96%) severity index.

#### *Ranking of factors in component 6 (Human resource)*

The following are the factors of the sixth component, Providing human resources:

Q3 Increasing capacity of skilled labor.

Q4 Increasing capacity of working staff in reconstruction management.

Q11 Providing strong local workgroups.

	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q11	4.52	90.34	0.78	23.34	0.00	high	1	4
Q3	4.02	80.41	1.00	12.34	0.00	moderately high	2	28
Q4	3.93	78.62	0.98	11.48	0.00	moderately high	3	32
<b>Component 6: Providing human resource</b>	4.16	83.13	0.76	18.40	0.00	moderately high	-	<b>5</b>

*Table 4-18 The sixth component in Questionnaire One results (Providing human resources)*

There are moderately high scores on the sixth component factors in general, where the average of their answers reached 4.16, corresponding to a moderately high score according to the scale. Meanwhile, the percentage of a moderately high score was 83.13%. Concerning the factors of the component, most of the respondents gave a high score for "Q11 providing strong local workgroups". This factor ranks fourth in terms of overall importance, with the intensity of this factor amounting to 90.34%. The high score for local workgroups means that not only do local groups respond to effective reconstruction outcomes but also that it is strongly related to community participation decisions.

#### *Ranking of factors in component 7 (Linking local context with planning)*

The following are the factors of the seventh component:

Q2 Providing reliable information for planning

Q7 Linking expertise with the local context.

Q8 Linking expertise with priority of needs.

	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q7	4.69	93.79	0.68	29.82	0.00	high	1	1
Q8	4.69	93.79	0.61	33.53	0.00	high	2	2
Q2	4.60	92.09	0.57	34.11	0.00	high	3	12
<b>Component 7: Linking local context with planning</b>	4.43	88.69	0.83	20.77	0.00	high	-	<b>1</b>

*Table 4-19 The seventh component in Questionnaire One results (Linking local context with planning)*

linking local context with planning is the most important component of engaging the community in reconstruction decisions, with an overall severity index of (88.69%), which corresponds to a high score according to the scale. Two factors Had the highest ranking among all (45) factors: "Q7 Linking expertise with the local context." And "Q8 Linking expertise with priority of needs." Both had a mean of 4.69, which corresponds to a high score.

#### *Ranking of factors in component 8 (Providing political support)*

The following are the factors of the eighth component, providing political support:

Q9 Creating political support for reconstruction plans.

Q35 Supporting political sustainability.

	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q9	4.17	83.45	1.04	13.53	0.00	moderately high	1	23
Q35	3.74	74.76	1.15	7.74	0.00	moderately high	2	40
<b>Component 8: Providing policy support</b>	3.96	79.10	1.01	11.42	0.00	moderately high	-	7

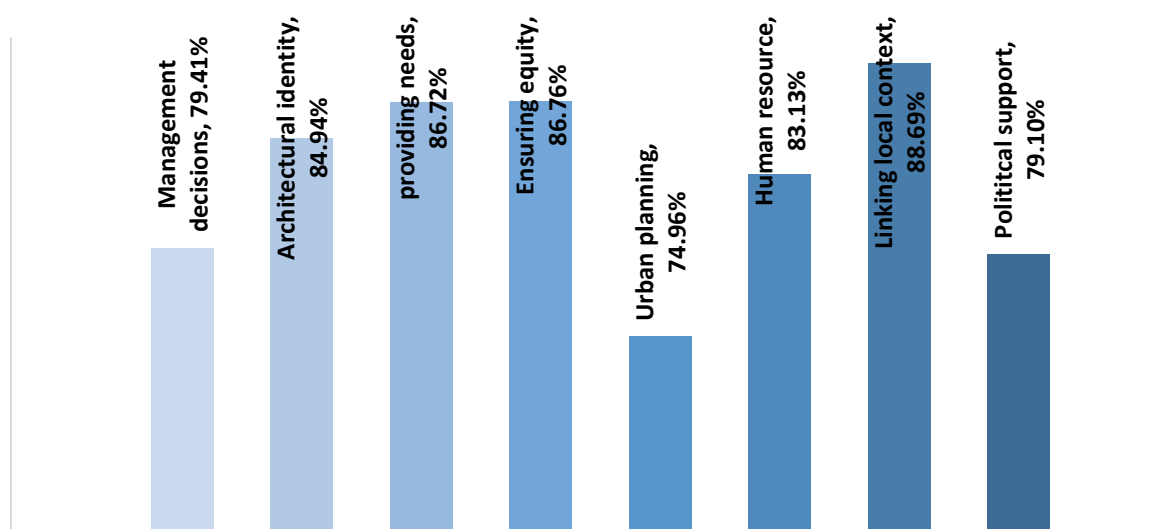
*Table 4-20 The eighths component in Questionnaire One results (Providing policy support)*

The scores of the eighth component are generally moderately high, where the average of their answers was 3.96, corresponding to a moderately high score according to the scale., while the percentage of the moderately high score was 79.1%. Meanwhile, the component ranked seventh in importance compared with the other studied components.

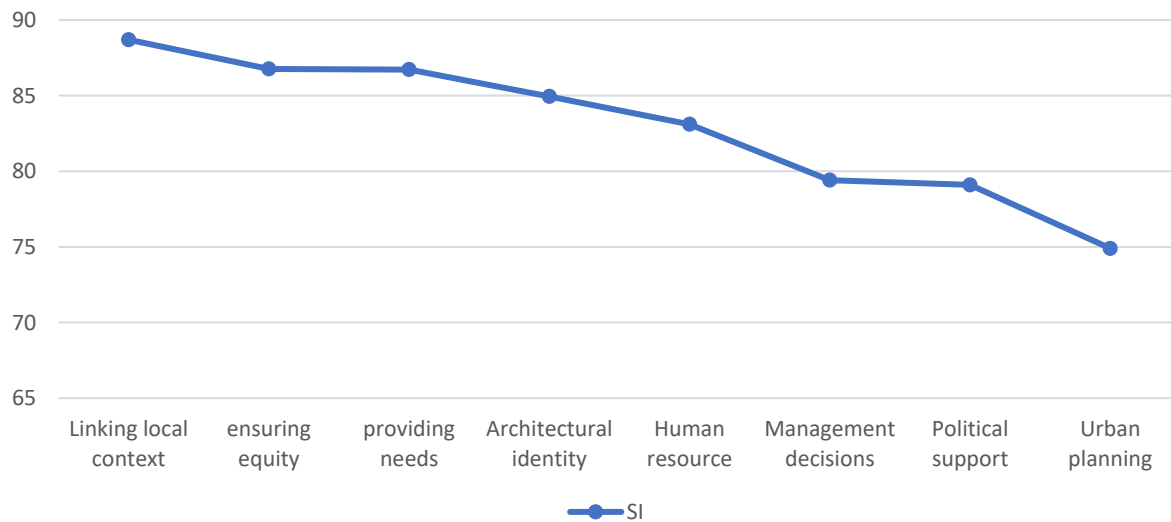
#Q	Factor	Overall ranking
Q7	Linking expertise with the local context.	1
Q8	Linking expertise with priority of needs.	2
Q32	Providing spaces and facilities to increase social interaction.	3
Q11	Providing strong local workgroups.	4
Q38	Increasing the community's ability to respond to possible disasters.	5
Q31	Considering the lifestyle of the community during housing design.	6
Q27	Ensuring public transparency during the decision-making process.	7
Q28	Linking livelihood to housing.	8
Q25	Supporting strategy for the vulnerable when relocation is unavoidable.	9
Q29	Planning services according to the priority of needs.	10
Q30	Considering family structure during housing design.	11
Q2	Providing reliable information for planning	12
Q21	Enhancing the sense of place.	13
Q19	Considering cultural diversity characteristics during planning.	14
Q22	Considering spatial belonging effects during planning.	15
Q26	Protecting the interests of vulnerable groups from the impact of gentrification.	16
Q23	Ensuring equity in distributing houses.	17

Q16	Developing coordination mechanisms between government, NGOs, and community.	18
Q18	Considering a relevance to the historical architectural identity.	19
Q20	Adaptation of previous mixed-use environment to new conditions.	20
Q10	Planning adequate implementation arrangements.	21
Q24	Avoiding disparities among society layers.	22
Q9	Creating political support for reconstruction plans.	23
Q37	providing response methods to reduce the impact of possible disasters.	24
Q33	Adapting to future changes and requirements.	25
Q39	Providing linkage with the surrounding environment.	26
Q40	Increasing dynamic interconnections with different parts of the settlement.	27
Q3	Increasing capacity of skilled labor.	28
Q14	Linking private and public efforts.	29
Q17	Linking master plan to current architectural identity.	30
Q15	Developing a timeline for finishing reconstruction projects.	31
Q4	Increasing capacity of working staff in reconstruction management.	32
Q44	Compatibility between characteristics of old settlement with the new one.	33
Q13	Creating mechanisms for monitoring.	34
Q34	Rationalizing the use of resources.	35
Q1	Defining mechanisms for providing construction materials.	36
Q36	Consolidating the Urban economy while considering its effects on the community.	37
Q12	Increasing monitoring capacity to manage funds.	38
Q45	Considering the effects of land nature on reconstruction.	39
Q35	Supporting political sustainability.	40
Q41	Linking urban and rural development during planning.	41
Q5	Providing tools to increase funds.	42
Q6	Providing tools for overcoming bureaucratic procedures.	43
Q43	Balancing between mass and space during planning land use.	44
Q42	Considering decentralization in services and traffic.	45

*Table 4-21 Overall ranking for each factor of participatory decision-making in Questionnaire One*







*Figure 4-15 Severity index for each component of participatory decision-making in Questionnaire One*

To sum up, the severity index for the overall factors of reconstruction shows that according to the respondents, linking expertise with the local context and priority of needs are the most important areas for participatory decision-making; this statistical analysis aligns with the results of the qualitative study that explored the case studies presented in chapter two. The sample also prioritizes engaging the community in decisions related to Providing spaces and facilities to increase social interaction, Increasing the community's ability to respond to possible disasters, and providing strong local workgroups. The less important factors to consider in participatory decision-making are related to master planning. This low level of importance for master planning factors is similar to the result when comparing the severity index for master planning as a decision cluster; [Table \(4-22\)](#). The most important decision cluster for participatory decision-making according to respondents is Linking local context with planning, and the least important is engaging the community in urban planning considerations. In [figure \(4-15\)](#), we observe proximity in importance for four decision clusters (Linking local context with planning, ensuring equity, providing needs, and Architectural identity); then, the importance has a noticeable decline after the human resource decision cluster. Coming from the results of decision cluster rankings, the first four ranking decision clusters will have more study in the next [section \(4.2\)](#); the study will aim to determine the optimized time for community participation in each decision cluster.

<i>Co#</i>	<i>Decision cluster (components of questionnaire 1)</i>	<i>Ranking</i>
7	Linking local context with planning	1
4	Ensuring equity	2
3	Providing needs	3
2	Architectural identity	4
6	Human resource decisions	5
1	Management decisions	6
8	Providing political support	7
5	Urban planning considerations	8

*Table 4-22 summarized component ranking of participatory decision-making in Questionnaire One*

#### 4.2. The AHP Questionnaire: Determining the optimized time for community participation in the reconstruction process using the AHP method.

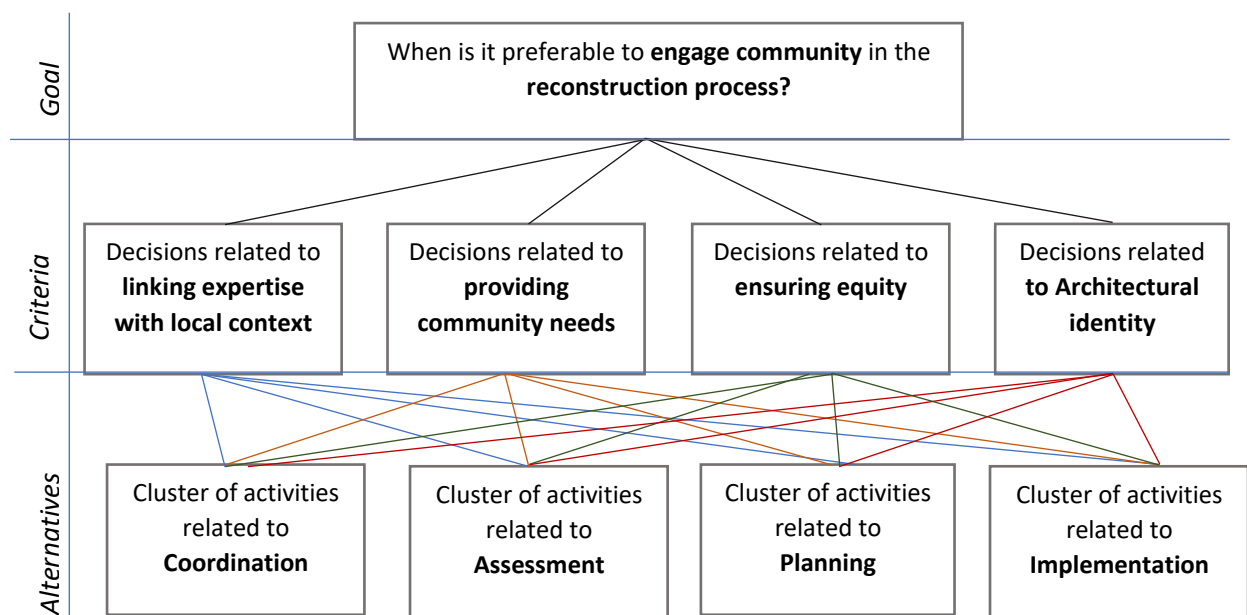
The analytical Hierarchy Process (AHP) is a multi-criteria decision-making process (MCDM) developed by Thomas Saaty (Saaty, 1977). It is widely used to establish certain features' priorities, importance, or weights. We used the AHP method to determine when it is preferable to engage the community in the reconstruction process for optimized use of community participation in the decision-making. First, we divided the problem into several smaller sub-problems by establishing a hierarchical structure; then, we collected data from experts by pairwise comparisons. Pairwise comparisons act as a more reliable tool of calculating weights than collecting them directly because it is easier to evaluate the relative weights of each attribute with respect to the others. We tested the collected judgments in each category to ensure consistency; finally, we calculated the weights at each level using the eigenvalue method.

##### 4.2.1. Constructing the AHP questionnaire and collecting data

We based a hierarchy of three levels as depicted in [figure \(4-16\)](#). The highest level, with only one component, is the stated goal (determining when it is preferable to engage the community in the reconstruction process). Components at the second level are the decision clusters that require community engagement, which we explored based on the factor analysis in [section \(4.1.3\)](#). We limited the number to only the four highest-ranking decision clusters (components); this was necessary to avoid having an excessive number of judgments that hinders the consistency of experts' judgments and to ensure experts will engage in the AHP questionnaire. Therefore, the second level consists of decision clusters that are ranked the

highest in importance for engaging the community, as analyzed through exploring case studies and the factor analysis, which are: linking expertise with the local context, providing community needs, ensuring equity, and appropriate architectural identity. The lowest level is dedicated to clusters of activities related to the reconstruction process classified in section (1.8.4).

Once we establish the hierarchy, the following step within the AHP method is collecting data by pairwise comparisons. A questionnaire was constructed based on the hierarchy structure.



*Figure 4-16 Analytical hierarchy process model for community participation in the reconstruction process*

The first section of the questionnaire compares decision clusters in terms of their importance within reconstruction projects (criteria level). The second section pairwise compares reconstruction activities with respect to each criterion (alternatives level). The comparison scale for AHP is a numerical rating of 1 to 9 that correspond to a verbal judgment of preferences, as shown in figure (4-17).

A total of (92) experts in post-disaster recovery projects participated in the questionnaire. The experts made judgments through an online questionnaire. Since we communicated with participating experts through email invitations. We used the Qualtrics website developed by Microsoft to construct the online AHP questionnaire. The participants also had the option of completing the AHP questionnaire in PDF format. We provided an attached PDF file in the email invitation that explains Each term used (Annex 7) ; this was necessary to ensure coherent understanding and interpretations of terminologies among respondents.

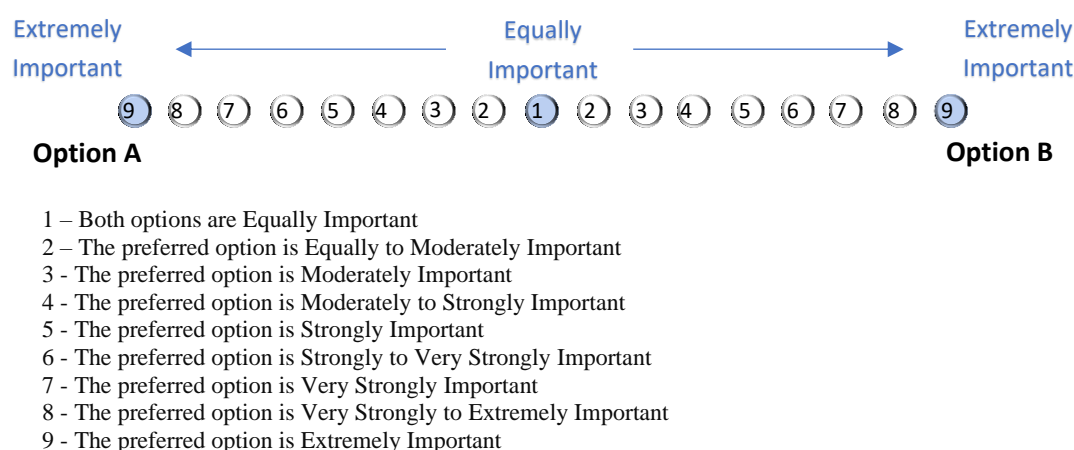


Figure 4-17 Pairwise comparison scale and corresponding verbal scale for AHP preferences

we calculated the consistency of the judgments after collecting all data was completed since it was difficult to assess the consistency of judgments in real-time through an online questionnaire. We excluded the responses that had unacceptable inconsistency rates from the database matrix. The acceptable inconsistency rate depends on the matrix size following the recommendations (Wedley, 1993). In addition, it depends on the sample characteristics and the analysis (group and/or individual). For individual experts, the inconsistency rate is restricted to no more than 0.15. Not only does the consistency rate assess the consistency of the decision-makers, but also the consistency of the entire hierarchy or whether the judgments were randomly made. (Yang and Huang, 2000). We used the Superdecisions software for computing the inconsistency rate for each entry, the number of responses was reduced from (92) to (46) responses ready for analysis. Most published papers that applied AHP had a sample size of less than 50; this is justified since the respondents are experts on recovery projects. Table (4-23) details the procedure for ensuring the validation of responses for analysis.

Inconsistency						
Participant	Criteria	Linking expertise	Providing needs	Ensuring equity	Architectural identity	Validation
P1	0.03	0.04	0.09	0.13	0.11	Valid
P2	0.01	0.02	0.15	0.11	0.20	Valid
P3	0	0	0	0	0	invalid
P4	0.19	0.96	0.13	0.23	0.32	invalid
P5	0.14	0.15	0.10	0.15	0.00	Valid
P6	0.08	0.08	0.13	0.04	0.15	Valid
P7	0.32	0.35	0.32	0.22	0.29	invalid
P8	0.13	0.38	0.74	0.33	0.38	invalid
P9	0.02	0.02	0.02	0.02	0.04	Valid
P10	0.02	0.06	0.00	0.00	0.02	Valid
P11	0.32	0.19	0.19	0.16	0.12	invalid
P12	0.02	0.13	0.12	0.08	0.00	Valid

P13	0.06	0.04	0.00	0.05	0.09	Valid
P14	0.02	0.28	0.33	0.11	0.28	invalid
P15	0.26	0.08	0.21	0.04	0.24	invalid
P16	0.12	0.00	0.02	0.00	0.02	Valid
P17	0.06	0.08	0.11	0.11	0.11	Valid
P18	0.04	0.11	0.09	0.09	0.08	Valid
P19	0.21	0.00	0.06	0.07	0.00	Valid
P20	0.08	0.04	0.04	0.02	0.06	Valid
P21	0.07	0.02	0.03	0.05	0.08	Valid
P22	0	0	0	0	0	invalid
P23	0.07	0.01	0.04	0.02	0.10	Valid
P24	0.96	0.07	0.19	0.4	0.2	invalid
P25	0.15	0.13	0.13	0.13	0.08	Valid
P26	0.05	0.09	0.04	0.15	0.11	Valid
P27	0.00	0.00	0.02	0.00	0.00	Valid
P28	0.06	0.11	0.02	0.01	0.08	Valid
P29	0.11	0.10	0.13	0.14	0.13	Valid
P30	0.02	0.13	0.16	0.08	0.15	invalid
P31	0	0	0	0	0	invalid
P32	0	0	0	0	0	invalid
P33	0.14	0.14	0.12	0.10	0.12	Valid
P34	0.28	0	0.06	0.07	0	invalid
P36	0.12	0.01	0.08	0.11	0.01	Valid
P37	0.28	0	0.06	0.07	0	invalid
P38	0.01	0.00	0.01	0.00	0.00	Valid
P39	0.29	0.19	0.19	0.21	0.08	invalid
P40	0.05	0.00	0.00	0.00	0.00	Valid
P41	0.11	0.1	0.16	0.29	0.2	invalid
P42	0.24	0	0.24	0	0.97	invalid
P43	0.08	0.09	0.15	0.11	0.06	Valid
P44	0.68	0.34	0.12	0	0.18	invalid
P45	0.21	0.14	0.18	0.27	0.19	invalid
P46	0.11	0.39	0.54	0.19	0.42	invalid
P47	0.27	0.01	0.08	0.18	0.01	invalid
P48	0.03	0.12	0.13	0.05	0.05	Valid
P49	0	0	0	0	0	invalid
P50	0.12	0.14	0.13	0.15	0.30	Valid
P51	0.34	0.08	0.21	0.32	0.32	invalid
P52	0.25	0.73	0.11	0.19	1.02	invalid
P53	0.04	0.14	0.05	0.17	0.02	invalid
P54	0.08	0.15	0.22	0.22	0.06	invalid
P55	0.03	0.01	0.14	0.72	0.09	Valid
P56	0.03	0.18	0.13	0.05	0.05	invalid
P57	0.29	0.21	0.3	0.15	0.3	invalid
P58	0.12	0.02	0.14	0.12	0.00	Valid
P59	0.20	0.01	0.08	0.00	0.01	Valid
P60	0.15	0.11	0.03	0.01	0.15	Valid
P61	0.38	0.02	0.14	0.12	0	invalid
P62	0.06	0.05	0.04	0.01	0.05	Valid
P63	0.37	0.6	0.32	0.44	0.25	invalid
P64	0.08	0.02	0.00	0.05	0.07	Valid
P65	0.13	0.19	0.64	0.2	0.22	invalid
P66	0.59	0.18	0.2	0.38	0.11	invalid
P67	0	0	0	0	0	invalid
P68	0.18	0.07	0.08	0.18	0.11	invalid

P69	0.00	0.12	0.12	0.00	0.00	Valid
P70	0.10	0.07	0.08	0.12	0.11	Valid
P71	0.09	0.22	0.16	0.15	0.25	invalid
P72	0.08	0.00	0.00	0.01	0.09	Valid
P73	0.12	0.05	0.00	0.06	0.02	Valid
P74	0	0	0	0	0	invalid
P75	0.09	0.15	0.01	0.15	0.06	Valid
P76	0.11	0.06	0.02	0.08	0.04	Valid
P77	0.11	0.12	0.12	0.01	0.08	Valid
P78	0.31	0.06	0.02	0.08	0.04	invalid
P79	0.09	0.03	0.15	0.02	0.11	Valid
P80	0.39	0.47	0.24	0.32	0.21	invalid
P81	0.26	0.35	0.32	1.12	0.35	invalid
P82	0.11	0.00	0.00	0.09	0.00	Valid
P83	0.24	0.45	0.22	0.03	0.12	invalid
P84	0.26	0.2	0.22	0.01	0.15	invalid
P85	0.18	0.18	0.04	0.08	0.59	invalid
P86	0.53	0.19	0.17	0.18	1.89	invalid
P87	0.16	0.19	0.11	0.29	0.16	invalid
P88	0.13	0.08	0.11	0.10	0.12	Valid
P89	0.03	0.07	0.01	0.10	0.05	Valid
P90	0.54	0	0.24	0	0	invalid
P91	0.04	0.14	0.05	0.07	0.02	Valid
P92	0.08	0.05	0.07	0.09	0.04	Valid

Table 4-23 Inconsistencies for each comparison cluster and valid participants' entries

#### 4.2.2. Analysis of the elements' weights

We used Superdecisions software to compute the weights. Superdecisions is an AHP-based multi-criteria decision support tool. It is developed to synthesize, validate, and compute weights to form decisions. Since the software only computes individual judgments, it was necessary to synthesize the group's judgments into a single judgment by calculating the geometric means to keep the matrix reciprocal (Aczél and Saaty,1983). We used Excel software to synthesize a single judgment; then, we inserted the synthesized judgment into Superdecision.

The final judgment tables are illustrated in Tables (4-24) to Table (4-28). For example, in Table (4-24), the respondents favored that it is more important to engage communities in linking expertise over providing needs decision-making.

	Providing needs	Ensuring equity	Architectural identity
Linking expertise	← 1.96	← 1.79	↑ 1.3
Providing needs		↑ 1.19	↑ 1.92
Ensuring equity			↑ 1.54

Table 4-24 The pairwise criteria comparisons with relation to the goal "Which is more important to include community participation in reconstruction projects"

	Assessment	Planning	Implementation
Coordination	← 1.41	← 1.53	← 1.92
Assessment		← 1.31	← 1.43
Planning			← 1.20

Table 4-25 Pairwise comparisons with respect to the "Linking expertise with local context"

	Assessment	Planning	Implementation
Coordination	← 1.38	← 1.46	← 1.81
Assessment		← 1.10	← 1.47
Planning			← 1.31

Table 4-26 Pairwise comparisons with respect to the "providing community needs"

	Assessment	Planning	Implementation
Coordination	← 1.35	← 1.74	← 2.05
Assessment		← 1.46	← 1.87
Planning			← 1.33

Table 4-27 Pairwise comparisons with respect to the "Ensuring equity"

	Assessment	Planning	Implementation
Coordination	← 1.40	← 1.94	← 1.79
Assessment		← 1.20	← 1.55
Planning			← 1.13

Table 4-28 Pairwise comparisons with respect to the "Architectural identity"

After forming the final network matrix, we computed the weights (i.e., found out the best alternatives). In this hierarchical model, the unweighted matrix is the same as the weighted matrix because the clusters were not weighted. Table (4-33) shows the weights for the criteria, and Table (4-34) shows the weights for the alternatives. The limit matrix in Table (4-35) shows the overall priorities according to the final goal because the network is a bottom-level decision network. Therefore, the values for each alternative are drawn directly from the Limit Matrix. Finally, table (4-29) shows the synthesized values with normalized weights. Normalized weights are calculated by adding the elements in it and dividing each element by the sum to yield the normalized vector. The elements in the normalized vector sum to 1. (Adams and Saaty,2003).

	Linking	Providing needs	Ensuring equity	Architectural
Goal	0.32	0.16	0.19	0.31

Table 4-29 Weights of criteria

	Linking	Providing needs	Ensuring equity	Architectural
Coordination	0.34	0.33	0.35	0.35
Assessment	0.26	0.25	0.28	0.25
Planning	0.21	0.23	0.20	0.20
Implementation	0.17	0.17	0.15	0.18

*Table 4-30 Weights of alternatives*

	Linking	Providing	Ensuring equity	Architectural	Goal
Coordination	0.34	0.33	0.35	0.35	<b>0.17</b>
Assessment	0.26	0.25	0.28	0.25	<b>0.13</b>
Planning	0.21	0.23	0.2	0.2	<b>0.1</b>
Implementation	0.17	0.17	0.15	0.18	<b>0.08</b>

*Table 4-31 Limits for alternatives*

Alternatives	Normalized weights	Total	Ranking
Coordination	0.34	0.17	<b>1</b>
Assessment	0.26	0.13	<b>2</b>
Planning	0.21	0.10	<b>3</b>
Implementation	0.17	0.08	<b>4</b>

*Table 4-32 Synthesized values*

#### 4.2.3. Findings for the AHP questionnaire

The respondents were 46 people who worked previously or researched post-disaster recovery projects. We based the selection criterion on respondents having recognized knowledge of the recovery project, they do not have a conflict of interest, and they are from a wide range of geographic distribution. The composition of the respondents is shown in [Table \(4-33\)](#), [Table \(4-34\)](#), and [Table \(4-35\)](#).

Experience field	count	Percentage
Staff in recovery projects	21	45.6%
Researcher in recovery projects	15	32.6%
Staff and researcher	10	21.8%

*Table 4-33 Experience field for participants who had valid responses in the AHP questionnaire*

Years of experience	count	Percentage
1-5	14	30.4%
6-10	8	17.4%
11-15	14	30.4%
16-20	5	10.9%
Over 20	5	10.9%

*Table 4-34 Years of experience for participants who had valid responses in the AHP questionnaire*



Level of education	count	Percentage
Bachelor's degree	3	6.5%
Diploma degree	1	2.1%
Master's degree	18	39.2%
Ph.D. degree	24	52.2%

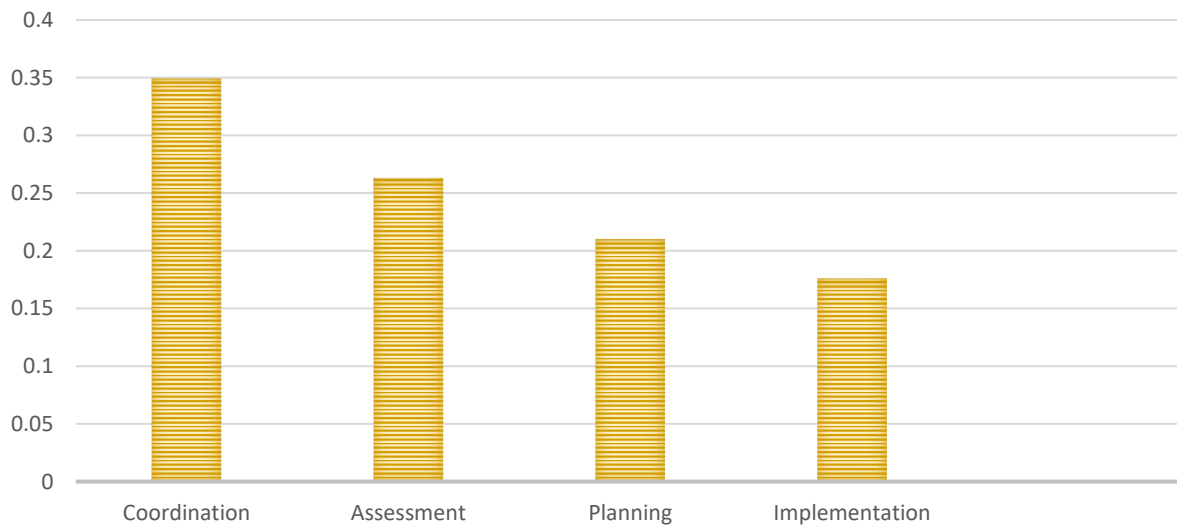
*Table 4-35 Level of education for participants who had valid responses in the AHP questionnaire*

Most respondents were staff in recovery projects (78.2%); Over (21%) worked and researched recovery projects. The composition shows that most respondents had a high level of education (91.4%); they either have a Master's degree or a Ph.D. degree. Almost half of the respondents have over ten years of experience. This high experience rate conveys the impression that respondents have credibility in the researched field, increasing the reliability of responses.

The results from the four pairwise comparison matrices show that there is a slight preference for each alternative over the other. Most judgments were in the range of (1 to 2); this means that all judged elements are equally to Moderately Important according to the verbal scale. The highest preference was for coordination over implementation in ensuring equity (2.05) and linking expertise with local context decisions (1.92). At the criteria level, the highest preference rate was linking expertise with the local context; experts favored this decision cluster over providing needs decision (1.96).

**Table (4-30)** shows the weights of alternatives; there is little difference in weights in comparison to each criterion; for example, coordination weights ranged from 0.33 in providing needs to 0.35 in architectural identity; assessment ranges (from 0.25 to 0.28); planning ranges (0.20 to 0.23); while implementation ranges (0.15 to 0.18). This slight range of difference implies that most experts' opinions lean towards the idea that engaging the community in reconstruction activities is almost equally important in all four fields of decisions. However, weights of criteria with respect to the goal in **Table (4-29)** show there is a difference in the preference of decision clusters to include community participation; for example, the preferable decision cluster according to respondents to engage the community in is linking expertise with local context (0.32), close to the next favored which is architectural identity (0.31), while providing needs has the lowest weight of importance for community participation (0.16).

The total weights in **Table (4-32)** present the final ranking of alternatives; coordination activities are ranked first as a priority to include community participation, assessment is ranked second, planning is third, and implementation is the lowest priority. **Figures (4-18)** show an illustrated representation of the findings.



*Figure 4-18 Priorities for including community participation in reconstruction activities clusters*

In this chapter, we reported the results of two questionnaires conducted on the role of the community in reconstruction decisions. The participants of the first questionnaire were individuals with previous experience in reconstruction projects globally. The results show no statistical difference between the responses of researchers of reconstruction or staff members in reconstruction projects; this suggests that when it comes to the relative importance of participatory decisions, there is no difference in experts' opinions on reconstruction between theory and practice. The results also show a strong relationship between each (management decisions, architectural identity, providing needs, ensuring equity) and participatory decision-making. The sample gave moderately high or high importance to the previous decision clusters. The most important decision cluster according to the sample was (linking context with planning). Other important clusters of decisions include (ensuring equity, providing needs, and architectural identity). In the second part of chapter four, we report on another questionnaire (the AHP questionnaire); the questionnaire used pairwise comparisons to measure the priorities for community participation in reconstruction activities. The results show that participatory decision-making is the highest in coordination activities according to respondents, next is assessment activities, then planning, and the least priority according to respondents is implementation activities. This chapter outlined the part of the framework of participatory decision-making related to (What and When to use participatory decision-making), and the next chapter will draft the part related to (how to engage community participation in reconstruction projects).

# Chapter 5

## The Empirical Study of the Challenges of Participatory Decision-making

Chapter Five reports on another quantitated study in participatory decision-making, the evaluation of the challenges of community participation, and their corresponding measures. We analyzed the questionnaire with similar methods used in analyzing questionnaire one in Chapter Four. The analysis included identifying the types of challenges using factor analysis, measuring the reliability and validity of the test, examining differences between two types of experiences, and ranking challenges to evaluate the impact of challenges. The second part of Chapter Five includes the qualitative analysis of two open-ended questions concerning the role of community participation and the challenges of engaging communities in decision-making.

### 5.1. Questionnaire Two: Evaluating the different challenges have on participatory decision-making

The purpose of Questionnaire Two was to evaluate the level of influence different challenges have on participatory decision-making; this will help to identify when it is not feasible to use participatory decision-making. It also contributes to a better understanding of the priority of measures that will lead to effective participatory decision-making.

Questionnaire Two mainly targeted people who previously worked on post-disaster recovery projects. The questionnaire asked the sample, **based on their experience, to rate how much influence different constraints have on community participation in decision-making.** Respondents rated variables that indicate the factors that affect participatory decision-making identified in Chapter Three. We reconstructed each factor that affects community participation into a corresponding challenge in **Table (5-1)**. The logic was that asking respondents about challenges they might have encountered based on their experience is more straightforward to evaluate than asking them to evaluate theoretical measures or factors of community participation. By ranking the top challenges, we can identify the top measures for effective participatory decision-making by transforming the challenges back into their corresponding measures, ultimately outlining the input for the question of (how to engage community participation in reconstruction projects).

<b>Factors of participatory decision-making from the exploratory research in chapters 2 and 3</b>	<b>The corresponding challenge for the empirical study</b>
defining the extent and criteria for community participation	Lack of understanding of community participation in the decision-making process.
Adequate living conditions and livelihood for the community in temporary accommodation	Poor living conditions or livelihood for the community in temporary accommodation
Independence from national regulations	Lack of national regulations that support community participation
availability of logistical means to conduct meetings, such as transportation, accommodations, and/or technological tools of communication	Lack of logistical means for conducting meetings, such as transportation, accommodations, and/or technological tools of communication.
Balanced representation of marginalized groups of community and the elite	Disproportionate representation of marginalized groups of the community and the elite
Ensuring a flexible decision-making system for smaller societies to operate in micro projects	The Central decision-making system for micro-level projects.
Designing flexible, participatory activities for each community according to its socio-political context.	Inadequate coordination mechanism for linking the community with the central decision-making system
Establishing a decentralized organizational structure to facilitate approval of participatory decisions with less bureaucratic procedures on the district and regional levels.	A fragmentary structural organization that complicates the approval of community efforts.
Linking organizational decision-making structure to the implementation bodies.	Inability to link decision-making at the local level to the implementation bodies
Building capacities of local government in linking community participation to central planning.	Detachment of community organizational system from the institutional structure
presence of a collective sense of belonging	Lack of collective sense of belonging
Adapting to the methods of communication of the locals to avoid misunderstandings in participatory actions	Inability to adapt to the methods of communication of the locals
The ability of the community to provide specifications for priority projects	Lack of confidence in the ability of the community to make decisions.
Balanced representation of minority groups in the community	Discrimination of decision-makers against minority groups. (Ethnic, religious, racial)
presence of an organizational structure within the community with public and political support	Lack of organizational structure within the community with public and political support
Optimizing participation timeline to avoid decreased participation over a lengthy planning process	Decreased participation due to a Prolonged planning process.
the optimum use of community participation in decision making	The perceived urgency of reconstruction by decision-makers.
Defining a clear process for managing community participation	Absence of a clear process for managing community participation.
Providing transparency in sharing information on legal and financial constraints to the community to increase credibility and engagement.	Lack of financial transparency or public information on the reconstruction process.
Evaluating the degree of relevance of the reconstruction projects to community interests or their direct local built environment	Imposing preconceptions of what is best based on established principles by the experts.

Presence of criteria for choosing priorities among different interests of the community.	Conflicting priorities between the affected community and decision-makers that aim for development.
Clear definition of roles at the local level	No clear definition of decision types that the community will be involved with.
Integrating land use master planning with community-level decision making	Isolating master land use planning from community-level decision-making.

*Table 5-1 Factors of participatory decision-making from the exploratory research in chapters 2 and 3 and the Corresponding challenge for the empirical study*

The rating scale respondents used was the five points Likert scale (1-Low, 2-Moderately low, 3-Not sure, 4-Moderately high, 5- High). **Annex (4)** shows the questionnaire form and the collected data before analysis. We outlined all challenges affecting reconstruction outcomes in twenty-three phrases shown in **Table (5-2)**. In addition, Questionnaire Two had two open questions where respondents could add any other challenges based on their experience. We analyzed their answers in a qualitative method in **section (5.7)**.

The method of collecting data was via email invitations that provided a link to an online questionnaire; collecting contact information is similar to Questionnaire One. The email invitation also included the same ethical approval statement and attachment files similar to Questionnaire One. We sent over 500 emails, and 176 responses were collected; it was difficult to know the response rate because some email addresses were invalid. The following sections detail the analysis of the data collected.

#Q	Variable
Q1	Lack of understanding of community participation in the decision-making process.
Q2	Poor living conditions or livelihood for the community in temporary accommodation
Q3	Lack of national regulations that support community participation
Q4	Lack of logistical means for conducting meetings, such as transportation, accommodations,
Q5	Disproportionate representation of marginalized groups of the community and the elite
Q6	Central decision-making system for micro-level projects.
Q7	Inadequate coordination mechanism for linking the community with the central decision-making system
Q8	A fragmentary structural organization that complicates the approval of community efforts.
Q9	Inability to link decision-making at the local level to the implementation bodies
Q10	Detachment of community organizational system from the institutional structure
Q11	Lack of collective sense of belonging
Q12	Inability to adapt to the methods of communication of the locals
Q13	Lack of confidence in the ability of the community to make decisions.
Q14	Discrimination of decision-makers against minority groups. (Ethnic, religious, racial)
Q15	Lack of organizational structure within the community with public and political support

Q16	Decreased participation due to a Prolonged planning process.
Q17	The perceived urgency of reconstruction by decision-makers.
Q18	Absence of a clear process for managing community participation.
Q19	Lack of financial transparency or public information on the reconstruction process.
Q20	Imposing preconceptions of what is best based on established principles by the experts.
Q21	Conflicting priorities between the affected community and decision-makers that aim for development.
Q22	No clear definition of decision types that the community will be involved with.
Q23	Isolating master land use planning from community-level decision-making.

*Table 5-2 challenges of participatory decision making in Questionnaire Two*

Similarly, to the data analysis of Questionnaire One described in chapter four, we used the following statistical methods to analyze the collected data with the aid of SPSS software (Descriptive Statistics, validity, reliability, Factor analysis, Test of normality, Correlation, and difference tests), more details of the tests are in [section \(4.1.1\)](#).

## 5.2. Descriptive statistics for Questionnaire Two

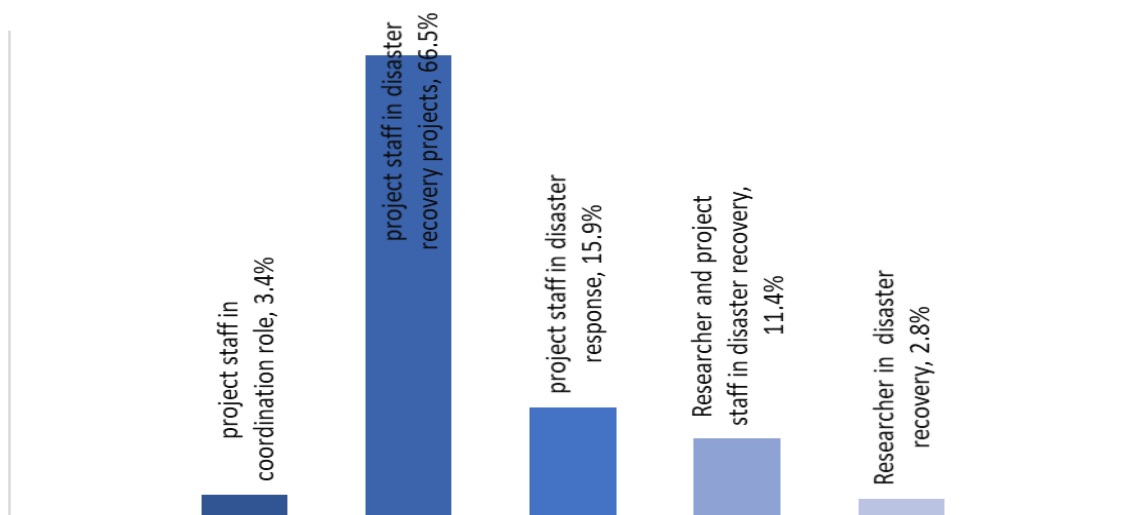
The study sample consisted of 176 participants in the reconstruction projects, using an online Questionnaire, in which the survey period ranged from August 29, 2022, to October 3, 2022.

**Table (5-3)** shows that only 18.7% of participants did not have practical experience in recovery projects; 15.9% had experience as staff in disaster response, while 2.8% conducted research on recovery projects without practical experience. Thus, 81.3% of respondents have experience in recovery projects as staff members. **Figure (5-1)** illustrates the percentage of experience distribution. Moreover, 94% of respondents had experience in community participation in reconstruction; **Figure (5-3)**. The high percentage of respondents with practical experience in recovery projects and community participation increases the reliability of their responses since the experience is critical for assessing the challenges of community participation in recovery projects.

A small percentage of 6% of respondents had worked only in the reconstruction of urban settlements, while 24% had only worked as a project staff in rural settlements. Most respondents had experience working in recovery projects in both urban and rural settlements; **Figure (5-2)**.

		Frequency	Percent
Did you participate in Disaster recovery projects?	project staff in a coordination role	6	3.4
	project staff in disaster recovery projects	117	66.5
	project staff in disaster response	28	15.9
	Researcher and project staff in disaster recovery	20	11.4
	Researcher in disaster recovery	5	2.8
	<b>Total</b>	<b>176</b>	<b>100.0</b>
What type of locality was the organization involved in?	Both	93	69.4
	Rural	33	24.6
	Urban	8	6.0
	<b>Total</b>	<b>134</b>	<b>100.0</b>
Did one of the reconstruction projects you were involved with include community participation in planning?	no	8	6.0
	yes	126	94.0
	<b>Total</b>	<b>134</b>	<b>100.0</b>

*Table 5-3 Description of the type of respondents' participation in reconstruction projects and the presence of other challenges to community participation*



*Figure 5-1 Percentage of “did you participate in disaster recovery projects”*

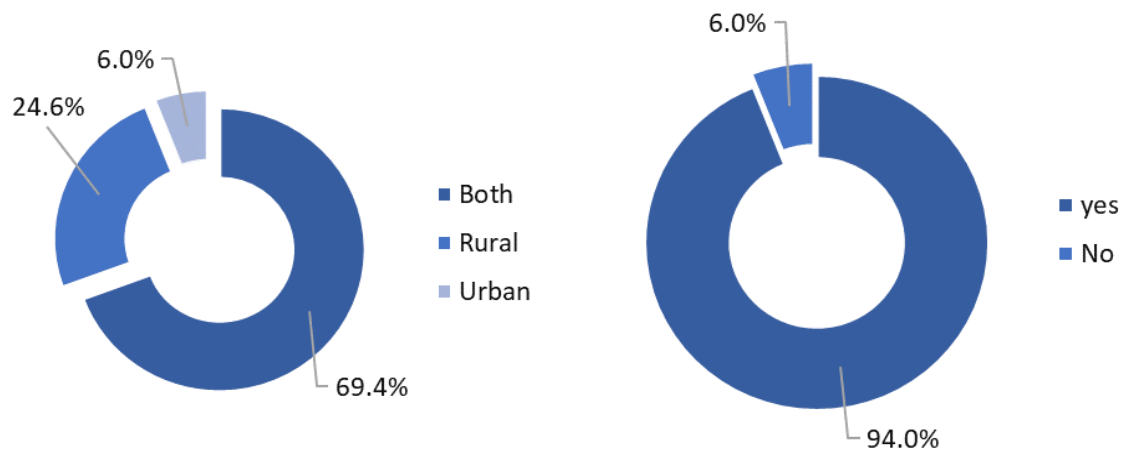


Figure 5-3 percentage of "What type of locality the organization was involved in?"

Figure 5-3 Percentage of "Did one of the reconstruction projects you were involved with included community participation in planning?"

### 5.3. Identifying the type of challenges in reconstruction projects using factor analysis

We used Factor analysis in Questionnaire Two to see the patterns among the challenges to identify the tendency of challenges, distinguishing their features and how much those features affect community participation.

First, we used the KMO and Bartlett's test to the possibility of performing factor analysis, [Table \(5-4\)](#). The KMO measurement value of 0.892 indicates the reliability of the factors from the factor analysis because it is more significant than 0.50. Moreover, a statistically significant relationship exists because the level of significance of the Bartlett test ( $P\text{-value} = 0.000 < 0.05$ ) confirms it. Thus, a factorial analysis can be performed.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.892
Bartlett's Test of Sphericity	Approx. Chi-Square	1589.136
	df	253
	Sig.	0.000

Table 5-4 Measurement adequacy test for Questionnaire Two phrases

used the Principal Component Analysis extraction method, we computed the eigenvalue for the variables to find the number of components; [Table \(5-5\)](#). Four components have higher eigenvalue than 1; the first component has the highest eigenvalue, 4.446, which explains 19.331% of the variances, while the last factors explain 57.295%.



Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %
1	7.995	34.763	34.763	7.995	34.763	34.763	4.446	19.331	19.331
2	1.604	6.975	41.738	1.604	6.975	41.738	2.874	12.497	31.827
3	1.321	5.744	47.482	1.321	5.744	47.482	2.603	11.317	43.144
4	1.223	5.318	57.295	1.223	5.318	57.295	1.973	8.576	57.295
Extraction Method: Principal Component Analysis.									

*Table 5-5 Total variances explained for Questionnaire Two variables*

We generated the rotated component matrix after rotating the component matrix using Varimax with Kaiser Normalization rotation method. In Table (5-6), we observe that the explained variance of the variables after rotation is at 50% or higher, so we accepted the factor analysis results.

Rotated Component Matrix <sup>a</sup>				
	Component			
	1	2	3	4
Q17	<b>0.777</b>	0.146		
Q15	<b>0.717</b>			0.291
Q13	<b>0.676</b>	0.249	0.158	
Q12	<b>0.671</b>	0.31	0.14	
Q18	<b>0.618</b>	0.314	0.322	0.139
Q21	<b>0.612</b>	0.179	0.212	
Q14	<b>0.601</b>	0.385	0.111	
Q20	<b>0.555</b>		0.393	
Q10	<b>0.529</b>	0.333		0.455
Q11	<b>0.517</b>	0.391	0.321	-0.166
Q1	0.176	<b>0.703</b>		0.106
Q6		<b>0.654</b>	0.408	
Q9	0.429	<b>0.561</b>		0.27
Q5	0.331	<b>0.53</b>	0.151	0.146

Q7	0.299	<b>0.517</b>	0.203	0.224
Q8	0.386	<b>0.509</b>	0.246	0.134
Q16		0.295	<b>0.662</b>	0.154
Q19	0.425	0.133	<b>0.632</b>	0.155
Q23	0.316		<b>0.616</b>	
Q22	0.453		<b>0.572</b>	0.271
Q3	0.187			<b>0.819</b>
Q4		0.262	0.211	<b>0.627</b>
Q2	-0.139		0.494	<b>0.514</b>
Extraction Method: Principal Component Analysis.				
Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 12 iterations.				

*Table 5-6 Matrix of components after rotation of Questionnaire Two's variables*

We inspected the commonalities between each component's variables to understand the challenges' features. In component one, the variables include the social characteristics of the community and their relations to the decision-makers. Therefore, we grouped the previous challenges in component one as (Social challenges). For example, Q11-Sense of belonging, attributes of the community organizational system in Q10 and Q15, and the communication methods in Q12. All are related to the social characteristics of the community. In comparison, we noticed the relationship between decision-makers and the community in five phrases. Q14- Discrimination of decision-makers against minority groups, Q17- The perceived urgency of reconstruction by decision-makers, Q18- Absence of a clear process for managing community participation, Q20- Imposing preconceptions of what is best based on established principles by the experts, and finally, Q21- Conflicting priorities between the affected community and decision makers that aim for development.

We notice that tasks in component two contain activities related to task allocation and coordination, such as (Q7- Inadequate coordination mechanism for linking the community with central decision-making system, Q6- Central decision-making system for micro-level projects, Q5- Disproportionate representation of marginalized groups of community and the elite.). Component two also includes the organizational activities that provide the basis of planning and implementation procedures, such as Q9- Inability to link decision-making at the local level to the implementation bodies. It also includes the method by which the reconstruction process flows through an organization in two variables, Q1- Lack of understanding of community participation

in the decision-making process, and Q8- A fragmentary structural organization that complicates approval of community efforts. Thus, we name component 2 (Organizational challenges).

Component three has four variables with the planning theme. Therefore, we name it (Planning challenges). While component four groups the variables related to capacity conditions, such as the conditions of temporary accommodations, the logistical capacity, and regulations that facilitate participatory decision-making. Therefore, component 4 name is (Enabling conditions).

#	Component name	#	Variable
1	Social challenges	Q10	Detachment of community organizational system from the institutional structure
		Q11	Lack of collective sense of belonging
		Q12	Inability to adapt to the methods of communication of the locals
		Q13	Lack of confidence in the ability of the community to make decisions.
		Q14	Discrimination of decision-makers against minority groups. (Ethnic, religious, racial)
		Q15	Lack of organizational structure within the community with public and political support
		Q17	The perceived urgency of reconstruction by decision-makers.
		Q18	Absence of a clear process for managing community participation.
		Q20	Imposing preconceptions of what is best based on established principles by the experts.
		Q21	Conflicting priorities between the affected community and decision-makers that aim for development.
2	Organizational Challenges	Q1	Lack of understanding of community participation in the decision-making process.
		Q5	Disproportionate representation of marginalized groups of the community and the elite
		Q6	Central decision-making system for micro-level projects
		Q7	Inadequate coordination mechanism for linking the community with the central decision-making system
		Q8	A fragmentary structural organization that complicates the approval of community efforts.
		Q9	Inability to link decision-making at the local level to the implementation bodies
3	Planning challenges	Q16	Decreased participation due to a Prolonged planning process.
		Q19	Lack of financial transparency or public information on the reconstruction process.
		Q22	No clear definition of decision types that the community will be involved with.
		Q23	Isolating master land use planning from community-level decision-making.
4	Enabling Conditions	Q2	Poor living conditions or livelihood for the community in temporary
		Q3	Lack of national regulations that support community participation
		Q4	Lack of logistical means for conducting meetings, such as transportation, accommodations, and/or technological tools for communication

*Table 5-7 Final result of the factor analysis, showing challenges clusters that are related to participatory decision making (Questionnaire Two component)*

## 5.4. Measuring reliability and validity of Questionnaire Two

We tested whether the questionnaire phrases were reliable and valid for what they intended to measure using four statistical tests, the first and second tests related to the reliability of the questionnaire, using Alpha Cronbach coefficient and split-half tests, and the second split-half test. The validity tests for Questionnaire Two are similar to those in chapter four. We applied two statistical tests. The first one is to test the validity of each statement to the whole questionnaire using the correlation coefficient between the questionnaire components; and internal validity to test the logical structure that aligns with the explanatory study

### 5.4.1. Reliability tests of Questionnaire Two

The following **Table (5-8)** shows each variable's reliability according to the factor analysis results, which consisted of 4 components.

Variable	Number of phrases	Cronbach's Alpha	validity coefficient
Social challenges	10	0.854	0.924
Organizational challenges	6	0.789	0.888
Planning	4	0.752	0.867
Enabling Conditions	3	0.611	0.782

*Table 5-8 The reliability of the four components of Questionnaire Two*

The results show that Cronbach's Alpha coefficient value for the first variable is 0.854. the values were 0.789, 0.752, and 0.611 for the second, third, and fourth components, respectively. All the coefficient values are higher than 0.60; this indicates an internal consistency between the phrases that comprise each component. We noted that the validity coefficient values were also high, indicating that the questionnaire represents the community from which the sample was taken. Furthermore, we tested the consistency between each phrase and the total of the other phrases in each variable. If the value corresponding to any phrase is 0.20 or more, it can be kept without deleting. the values of The Corrected Item-Total Correlation in **Annex 4** shows that for the first component ranged between 0.221 and 0.698. it ranged for the second component between 0.472 and 0.585. for the third variable, it ranged between 0.432 and 0.617. the fourth variable ranged between 0.330 and 0.482. all of the previous ranges are higher than 0.20. Therefore, all phrases can be kept without deleting any of them.

We also tested the consistency of each phrase with the total of phrases. The value of The Corrected Item-Total Correlation ranged between 0.214 and 0.718, higher than 0.20, meaning that all the phrases can be kept without deleting any of them.

Upon testing the reliability of the complete questionnaire as a whole, we found that the value is 0.908, as shown in **Table (5-9)**. This high value indicates internal consistency between the phrases that make up the questionnaire and reliable sample distribution.

	Number of phrases	Cronbach's Alpha	validity coefficient
	23	0.908	0.953

*Table 5-9 The reliability and validity coefficient of Questionnaire Two*

Another reliability test we performed was the split-half test to measure the reliability of the questionnaire. This measurement is based on dividing the measurement questions into two parts. This measurement is known as the Coefficient of Internal Consistency, meaning that this measurement is reached by using a single model through which that measurement is divided into two parts, and each section becomes a sub-measurement. The researcher knows the intensity of the relationship between the two measurements, and the value reached is a measure of internal stability since the obtained value is the result of a relationship of questions for one measurement. If all the questions measure the same thing, it is natural that we obtain a high degree of internal stability of the scale. This measurement is applied by dividing the scale questions into two parts, and the researcher applies the two sub-measurements to the same individuals and then finds the relationship between them. The following **Table (5-10)** shows the test results.

N	Correlation Between Forms	Spearman-Brown Coefficient
176	0.849	0.919

*Table 5-10 The results of the split-half test of Questionnaire Two*

The results show that the correlation coefficient between the two sections of the questionnaire before the correction was 0.849, while the correction coefficient, according to Spearman-Brown, was 0.919. Thus, the questionnaire stability coefficient is strong.

#### 5.4.2. Structure validity and internal validity tests for Questionnaire Two

For structure validity, we studied the relationship between each component and its variables to measure the structure validity of the questionnaire with 95% confidence and a significance level of 0.05. All test results are in the in **Annex 4**. For the relationship between the social challenges and its variables, we notice a relationship ranging from medium 0.320 with Q17-the urgent need

for reconstruction by decision-makers, and strong 0.751 with Q18- lack of a clear process for managing community participation.

In component two (Organizational challenges), the values ranged between 0.646 and 0.721. This range indicates that there is a strong relationship between organizational challenges in participatory decision-making and each of them (the understanding of community participation, the representation of marginalized groups, the decision-making system for micro-level projects, the structural systems for approval of community efforts, and the link between participatory decision making and implementation bodies).

The highest range value is in component three (Planning challenges), the range is between 0.661 and 0.806, which indicates a strong relationship between planning challenges in participatory decision-making, and each of the public transparency, the clear process for community participation, and the clear definition of decision types for community participation.

Concerning the relationship between the enabling Conditions and their variables, the range is between 0.631 and 0.799. This range also indicates a strong direct relationship between the capacity for participatory decision-making and each of the conditions of the community in temporary housing, regulations of community participation, and the logistical capacity for participatory decision-making.

The internal validity test for the questionnaire evaluated the relationship between the components and the challenges of participatory decision-making in general. We used the t-test and the Pearson correlation coefficient when the normal distribution is present between the two variables tested and the Spearman correlation coefficient when the hypothesis is rejected. **Table (5-11)** shows the correlation matrix.

		Challenges	1	2	3	4
<b>Challenges</b>	r	1.000	0.922**	0.812**	0.784**	0.507**
	P	.	0.000 <sup>a</sup>	0.000 <sup>b</sup>	0.000 <sup>b</sup>	0.000 <sup>b</sup>
	N	176	176	176	176	176
<b>1. Social challenges</b>	r		1.000	0.645**	0.629**	0.303**
	P		.	0.000 <sup>b</sup>	0.000 <sup>b</sup>	0.000 <sup>b</sup>
	N		176	176	176	176
<b>2. Organizational challenges</b>	r			1.000	0.532**	0.328**
	P			.	0.000 <sup>b</sup>	0.000 <sup>b</sup>
	N			176	176	176
<b>3. Planning challenges</b>	r				1.000	0.407**
	P				.	0.000 <sup>b</sup>
	N				176	176
<b>4. Enabling Conditions</b>	r					1.000
	P					.
	N					176
**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed). a. Pearson Correlation, b. Spearman's rho						

*Table 5-11 Correlation matrix of the relationship between the four components and challenges of community participation in Questionnaire Two*

The results of the previous Table show that the test's significance was always smaller than the significance level of 0.05 with 95% confidence. Therefore, there are real, statistically significant relationships between the challenges of participatory decision-making and the four components of the study.

We also note that there are real statistically significant relationships between the components of the study, where the highest intensity of the relationship between the social and organizational challenges was 0.645, and a significant relationship is also present between social challenges and planning challenges (0.629). The following charts from **Figure (5-4) to Figure (5-7)** show the scatter plots of relationships between the components of the study and the challenges of participatory decision-making.

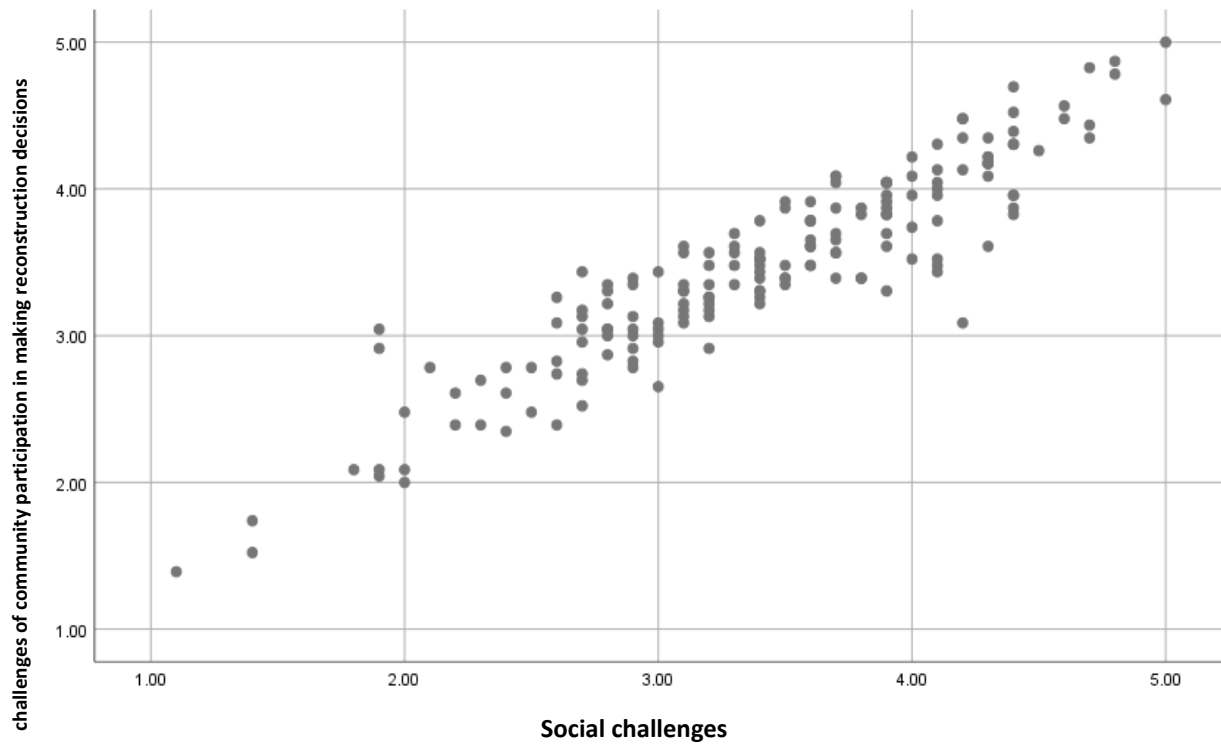


Figure 5-4 scatter plot of the relationship between the first component and the challenges of community participation

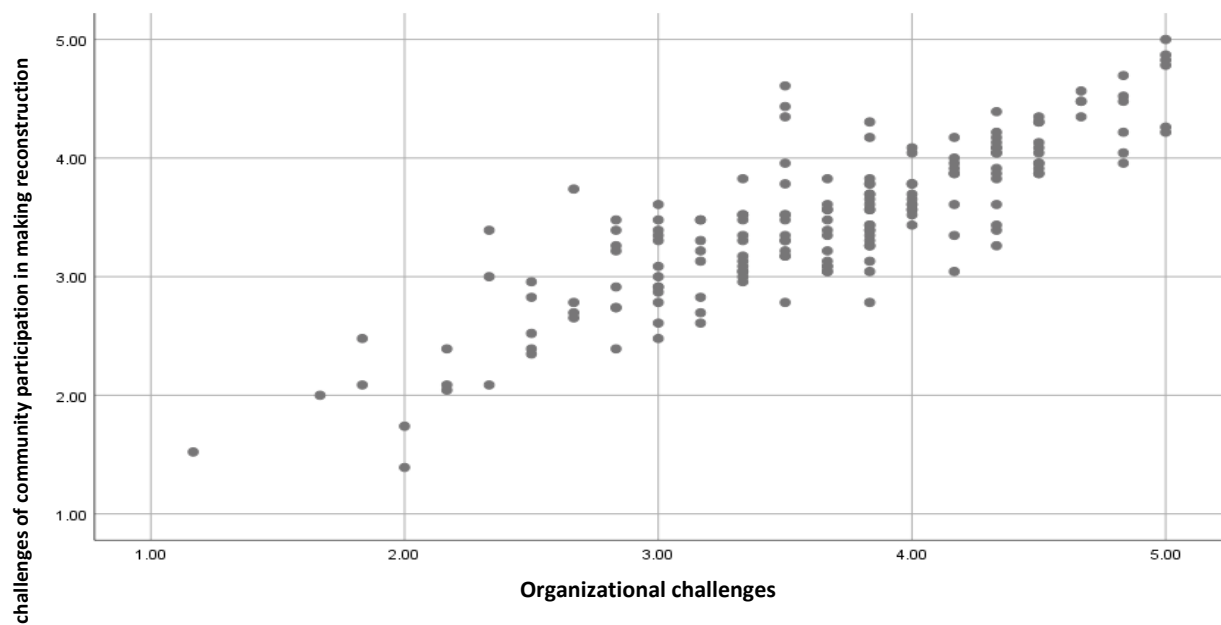


Figure 5-5 Scatter plot of the relationship between the second component and the challenges of community participation



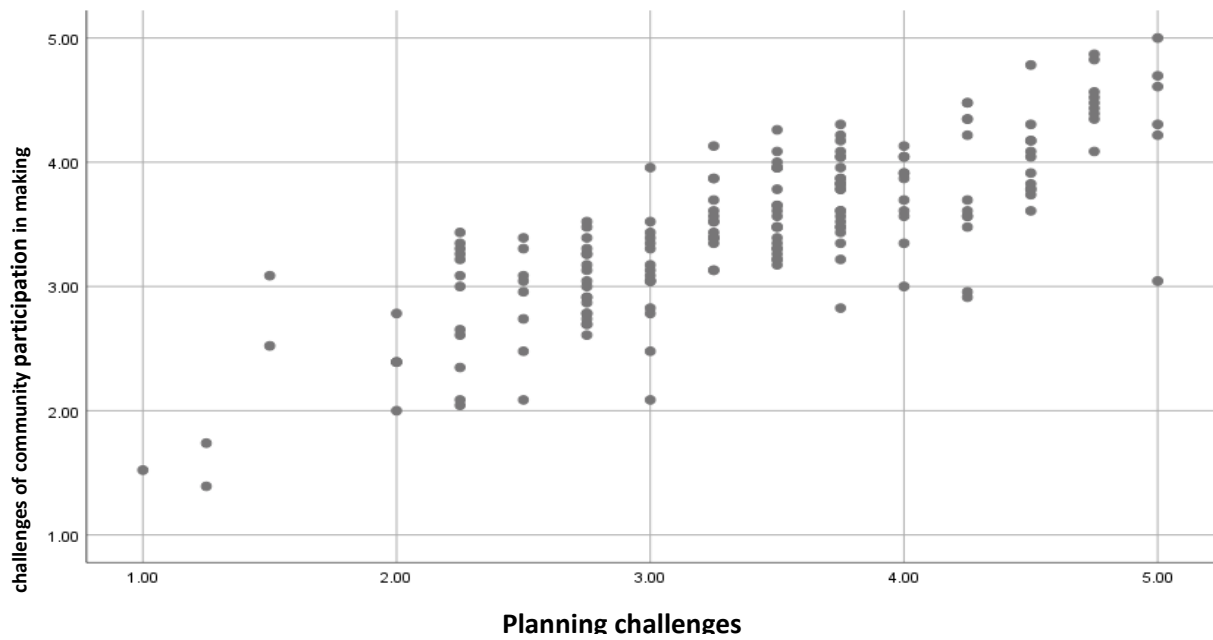


Figure 5-6 Scatter plot of the relationship between the third component and the challenges of community participation

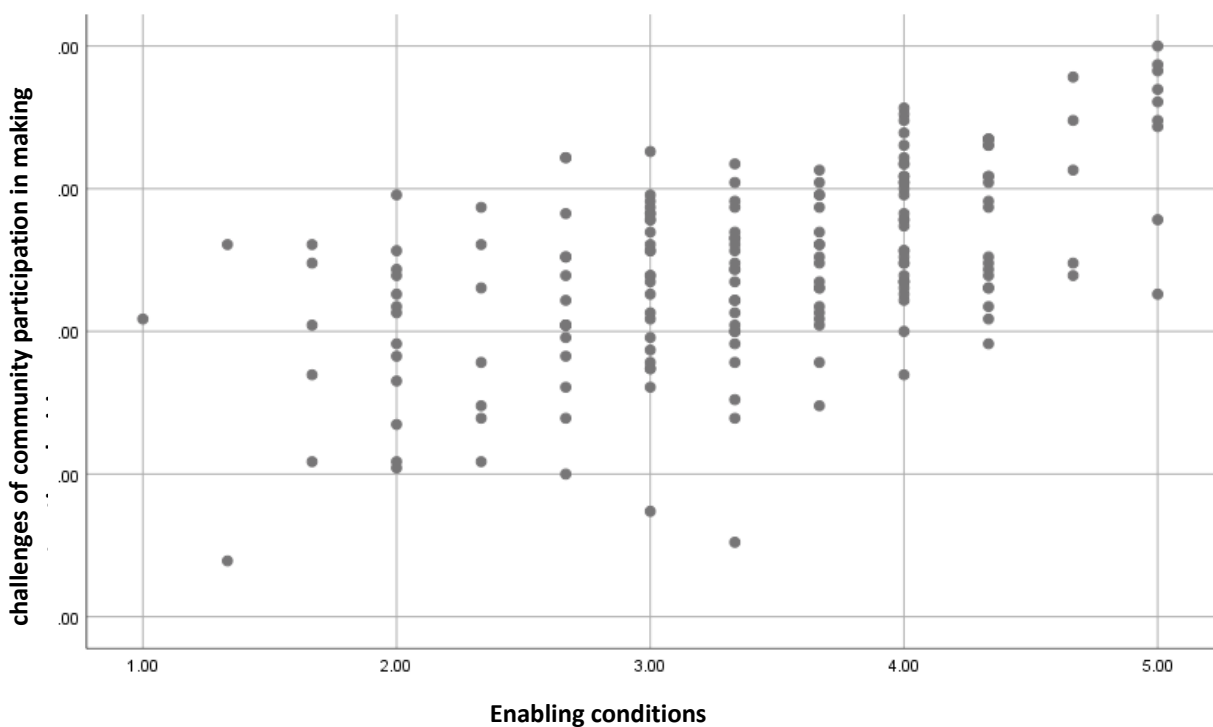


Figure 5-7- Scatter plot of the relationship between the fourth component and the challenges of community participation

participatory decision-making, which P-value amounts to (0.922). We can also observe a noticeable resemblance to a clear line in Figure (5-5) and Figure (5-6), which also depicts the

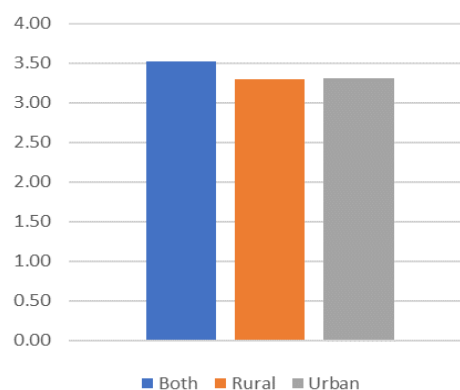
strong relationship between planning and organizational challenges and participatory decision-making. However, the line is less evident in Figure (5-7), which suggests a reasonable uncertainty about whether there is a relation between enabling conditions and participatory decision-making.

### 5.5. Examining the difference between the participants in the reconstruction projects within the rural and the urban settlements

We report the analysis of the test that measures the difference between the rural reconstruction project responses and the urban reconstruction project responses to understand the influence the type of locality has on participatory decision-making.

For this test, we used the One-Way ANOVA test and its alternative Lao Kruskal-Wallis Test when the hypothesis of a normal distribution is rejected.

First, we tested the overall difference among the type of locality. The challenges of participatory decision-making, Table (5-12) shows that the significance is higher than the level of 0.05, which means that there are no real differences between the individuals who participated in reconstruction projects within the urban settlements and those who participated within the rural settlements. Thus, the locality type, urban or rural, does not influence participatory decision-making.



*Figure 5-9 Arithmetic averages of the challenges of community participation in making reconstruction decisions in general, according to the type locality of experience*

		N	Mean	SD	P-value
Challenges of community participation in making reconstruction decisions in general	Both	93	3.5161	0.66463	0.247 <sup>b</sup>
	Rural	33	3.3017	0.65425	
	Urban	8	3.3098	0.88142	
a. One Way ANOVA					

*Table 5-12 The difference between the participants in urban and rural reconstruction projects in the overall component and its factors in Questionnaire Two*

Figure (5-8) shows the arithmetic averages of the challenges of participatory decision-making according to the locality of the reconstruction project. We notice the proximity between urban and rural-related responses. We then tested the difference for each phrase. Annex 4 shows the results. Results show that there is no real, statistically significant in all the phrases of the

challenges of participatory decision-making except for the challenge of (Q17 - The perceived urgency of reconstruction by decision-makers.)

The following charts show the phrases' arithmetic averages according to the locality type of reconstruction projects.

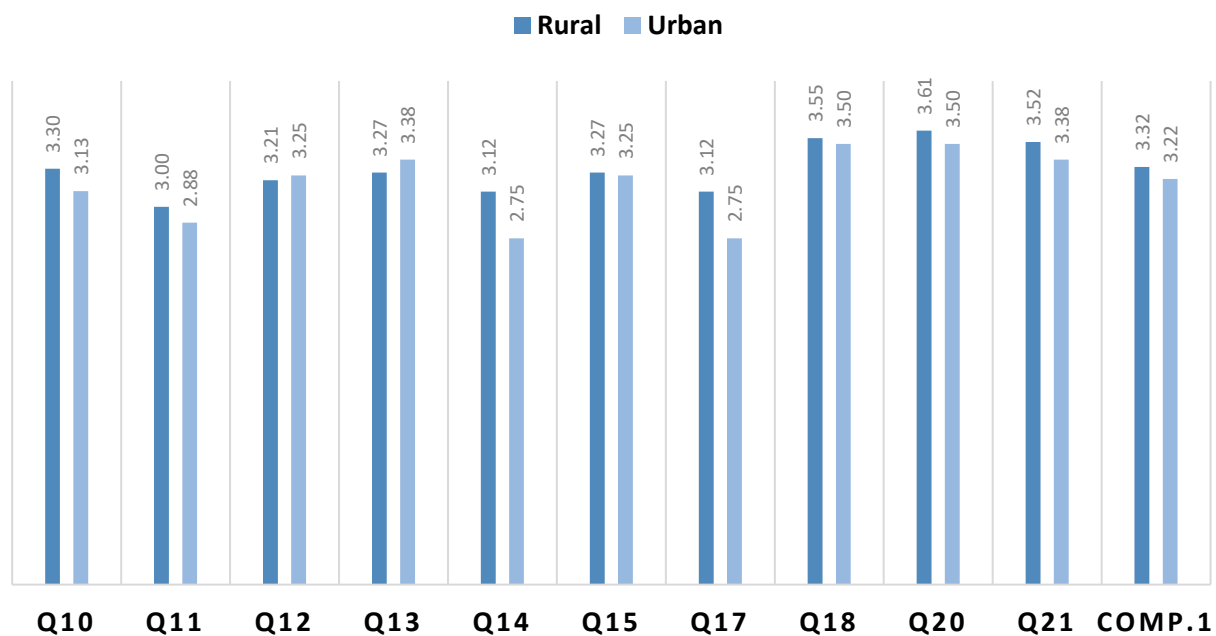


Figure 5-10 Arithmetic averages of the first component and its variables according to the type locality of experience in Questionnaire Two

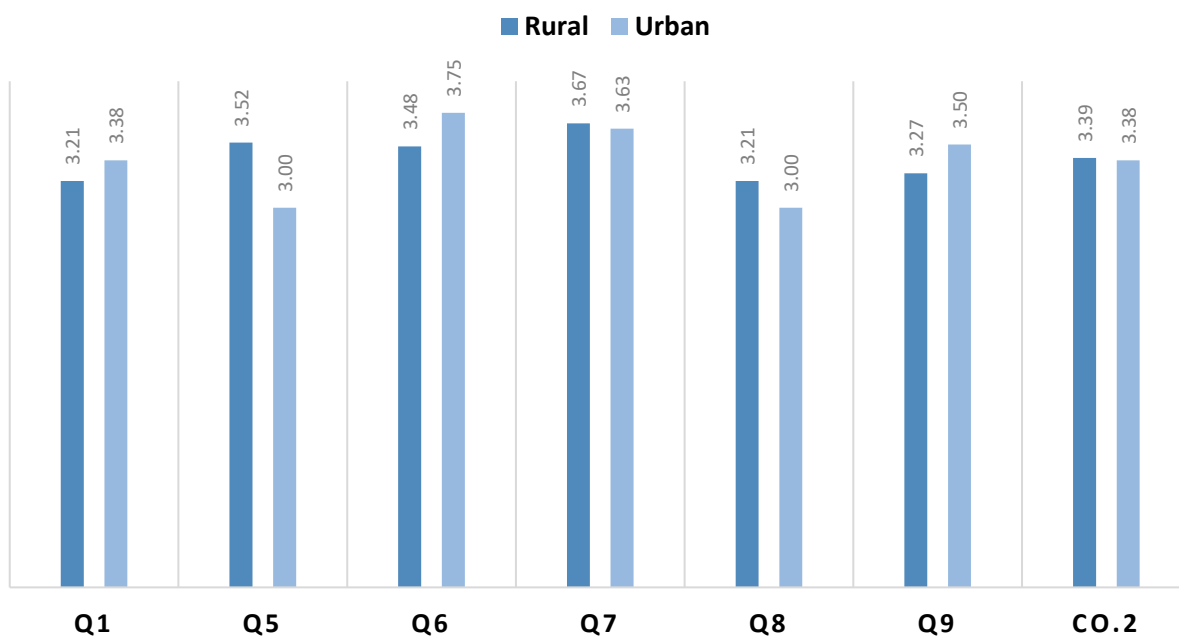


Figure 5-11 Arithmetic averages for the second component and its variables according to the type locality of experience in Questionnaire Two

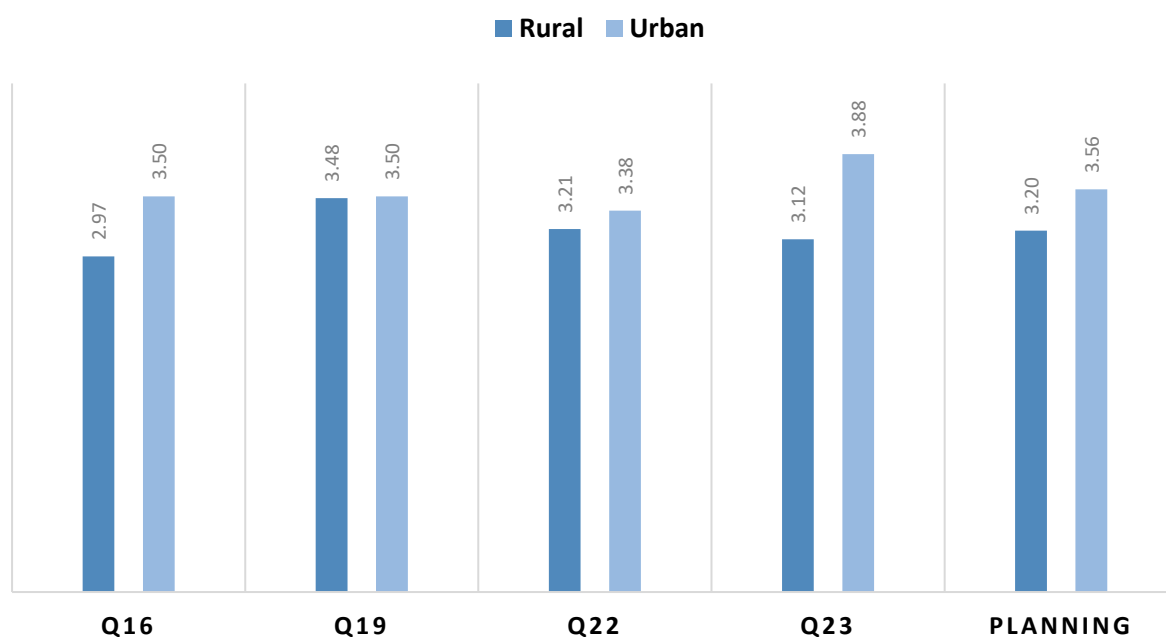


Figure 5-12 Arithmetic averages of the third variable and its phrases according to the type locality of experience in Questionnaire Two

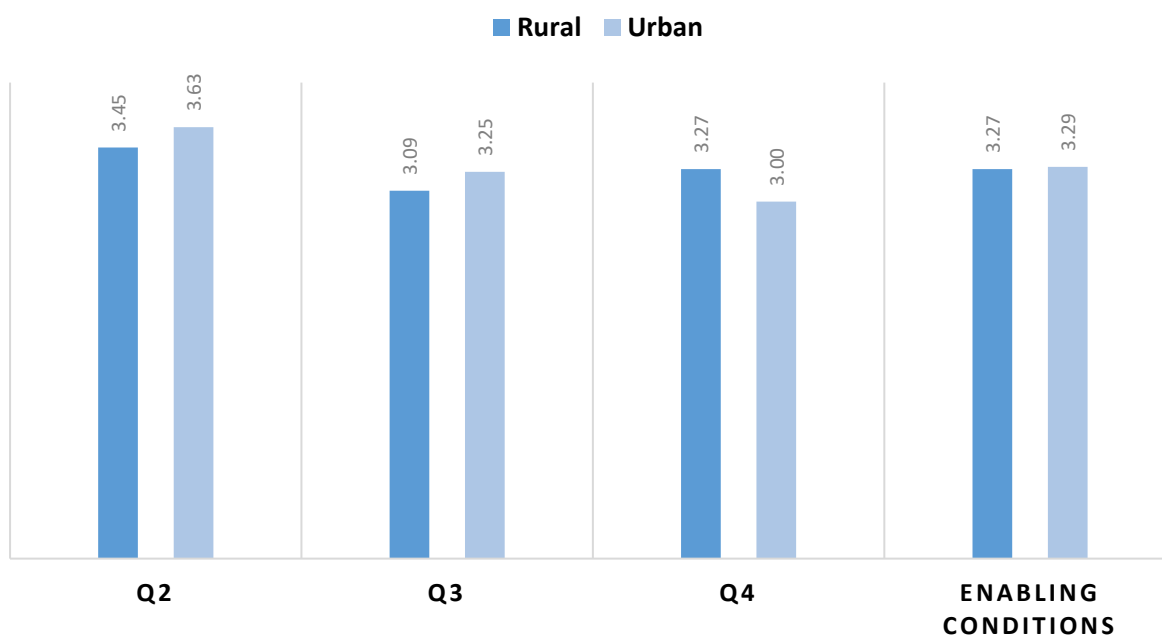


Figure 5-13 Arithmetic averages of the fourth component and its variables according to the type locality of experience in Questionnaire Two

Figures (5-10) to Figure (5-12) illustrate the details of the difference between the localities and each challenge. We found that the difference is significant in social and planning challenges. The rate of agreeing to the planning challenges is higher for urban localities, while the rate of agreeing to social challenges is higher for rural localities. Table (5-13) shows where each challenge has a

higher agreement rate with respect to the type of locality. We notice that the issues of the sense of belonging and representation of groups are among the rural reconstruction challenges.

Rural challenges		Urban challenges	
Q5	Disproportionate representation of marginalized groups of the community and the elite	Q1	Lack of understanding of community participation in the decision-making process.
Q8	A fragmentary structural organization that complicates the approval of community efforts.	Q2	Poor living conditions or livelihood for the community in temporary accommodation
Q10	Detachment of community organizational system from the institutional structure	Q3	Lack of national regulations that support community participation
Q11	Lack of collective sense of belonging	Q6	Central decision-making system for micro-level projects.
Q14	Discrimination of decision-makers against minority groups. (Ethnic, religious, racial)	Q9	Inability to link decision-making at the local level to the implementation bodies
Q17	The perceived urgency of reconstruction by decision-makers.	Q13	Lack of confidence in the ability of the community to make decisions.
		Q16	Decreased participation due to a Prolonged planning process.
		Q23	Isolating master land use planning from community-level decision-making.

*Table 5-13 The tendency of related challenges for each locality according to the statistical results of Questionnaire Two.*

## 5.6. Ranking of factors in each component in Questionnaire Two

This section elaborates on evaluating the severity level of each component compared to the other. To compare the severity of each challenge compared to the other, we computed the mean value and the corresponding severity index, the standard deviation, the T-test, and the P-value for each challenge. The P value comparison between the average of factors with the average of the scale shows that significance was always smaller than 0.05, indicating the respondents' tendency to give the stated scores.

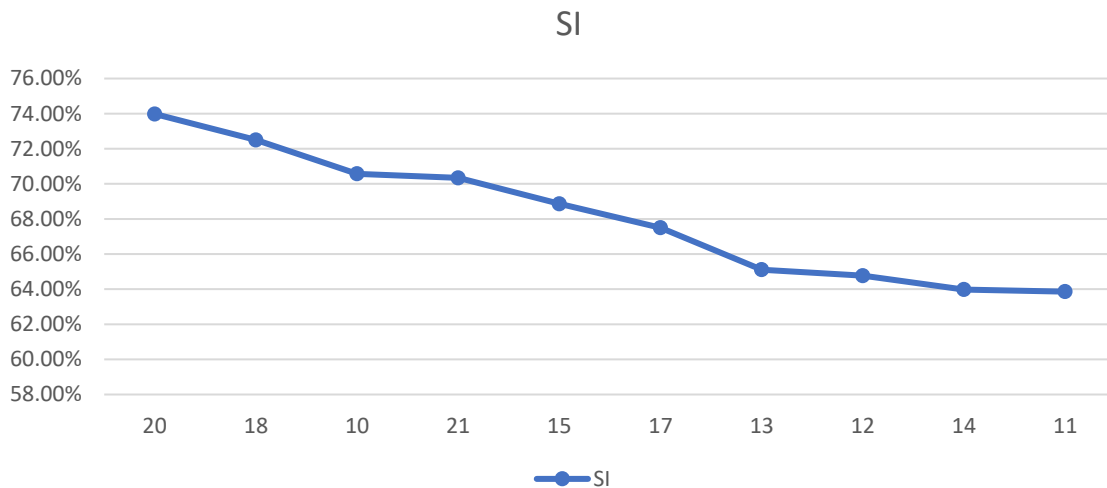
*Ranking of challenges in component 1 (Social challenges)*

The following are the phrases of the first component: (Social challenges)

- Q10 Detachment of community organizational system from the institutional structure
- Q11 Lack of a collective sense of belonging
- Q12 inability to adapt to the methods of communication of the locals
- Q13 Lack of confidence in the ability of the community to make decisions.
- Q14 Discrimination of decision-makers against minority groups. (Ethnic, religious, racial)
- Q15 Lack of organizational structure within the community with public and political support
- Q17 The perceived urgency of reconstruction by decision-makers.
- Q18 Absence of a clear process for managing community participation.
- Q20 Imposing preconceptions of what is best based on established principles by the experts.
- Q21 Conflicting priorities between the affected community and decision makers that aim for development.

Component 1: Social challenges								
	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q20	3.70	73.98	1.13	8.18	0.00	Agree	1	2
Q18	3.63	72.50	1.08	7.66	0.00	Agree	2	5
Q10	3.53	70.57	1.03	6.80	0.00	Agree	3	9
Q21	3.52	70.34	1.20	5.74	0.00	Agree	4	10
Q15	3.44	68.86	1.11	5.30	0.00	Agree	5	14
Q17	3.38	67.50	1.09	4.55	0.00	Neutral	6	15
Q13	3.26	65.11	1.18	2.88	0.01	Neutral	7	19
Q12	3.24	64.77	1.23	2.58	0.01	Neutral	8	20
Q14	3.20	63.98	1.38	1.92	0.06	Neutral	9	22
Q11	3.19	63.86	1.25	2.04	0.04	Neutral	10	23
<b>Co 1</b>	<b>3.41</b>	<b>68.15</b>	<b>0.77</b>	<b>7.01</b>	<b>0.00</b>	<b>Agree</b>	<b>-</b>	<b>3</b>

*Table 5-14 The first component in Questionnaire Two results (Social challenges)*



*Figure 5-14 Severity index variation for the variables in social challenges*

Respondents agreed with the challenges of the first component in general. Average answers ranged between 3.70, which corresponds to approval, and 3.19, which corresponds to neutrality, while the component ranked third in importance compared to the other studied components . Concerning the component phrases, most respondents agreed on five out of ten phrases being among the challenges facing community participation in making reconstruction decisions. The highest severity index was (73.98%) for (Q20 - Imposing preconceptions of what is best based on established principles by the experts), making it the most agreed social challenge; this reflects that decision-makers tend to avoid community participation based on their preconceptions. Five questions in this component had a mean value corresponding to the degree of neutrality; this tendency for neutrality for half of the phrases in this component reflects the need for a more detailed understanding of the effects of social challenges on community participation. The gradual variation of the severity index in **Figure (5-13)** shows no significant difference in the impact of each social challenge included.

#### *Ranking of challenges in component 2 (Organizational challenges)*

The following are the phrases of the second component: (Organizational challenges)

- Q1 Lack of understanding of community participation in the decision-making process.
- Q5 Disproportionate representation of marginalized groups of the community and the elite
- Q6 Central decision-making system for micro-level projects .

Q7 Inadequate coordination mechanism for linking the community with the central decision-making system

Q8 A fragmentary structural organization that complicates approval of community efforts.

Q9 inability to link decision-making at the local level to the implementation bodies

Component 2: Organizational challenges								
	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q7	3.93	78.64	0.97	12.80	0.00	Agree	1	1
Q6	3.65	72.95	1.05	8.20	0.00	Agree	2	3
Q5	3.61	72.27	1.15	7.11	0.00	Agree	3	6
Q9	3.59	71.82	1.09	7.22	0.00	Agree	4	7
Q1	3.51	70.23	1.21	5.59	0.00	Agree	5	11
Q8	3.51	70.23	1.08	6.25	0.00	Agree	6	12
<b>Co 2</b>	<b>3.63</b>	<b>72.69</b>	<b>0.76</b>	<b>11.04</b>	<b>0.00</b>	<b>Agree</b>	<b>-</b>	<b>1</b>

Table 5-15 The second component in Questionnaire Two results (Organizational challenges)

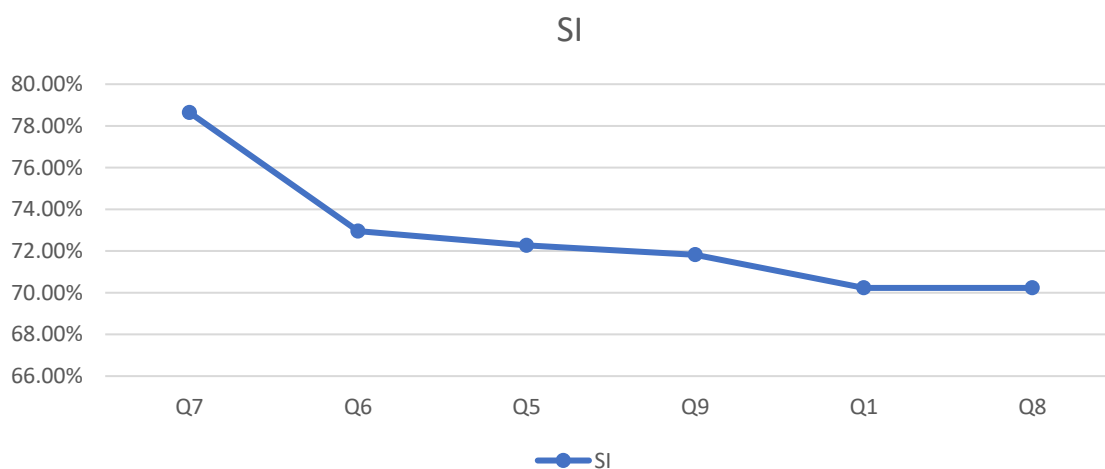


Figure 5-15 Severity index variation for the variables in organizational challenges

The second component analysis shows that the respondents agreed with all phrases of the second component. With a severity index of 72.69%. The mean ranged between 3.93 and 3.51. In comparison, the component ranked first in importance compared to the other studied component. With regard to the component phrases, the highest mean (3.93) was for (Q7 - Inadequate coordination mechanism for linking the community with the central decision-making system). This high ranking indicates that organizational conditions may impose the most challenge for



participatory decision-making. This factor ranks first among the total 23 challenges in importance. **Figure (5-14)** shows the high difference in severity between this challenge and the rest of the organizational challenges. This high difference means community participation's biggest challenge is coordinating community efforts with central decision-making.

#### *Ranking of challenges in component 3 (Planning)*

The following are the phrases of the third component (Planning challenges)

Q16 Decreased participation due to a Prolonged planning process.

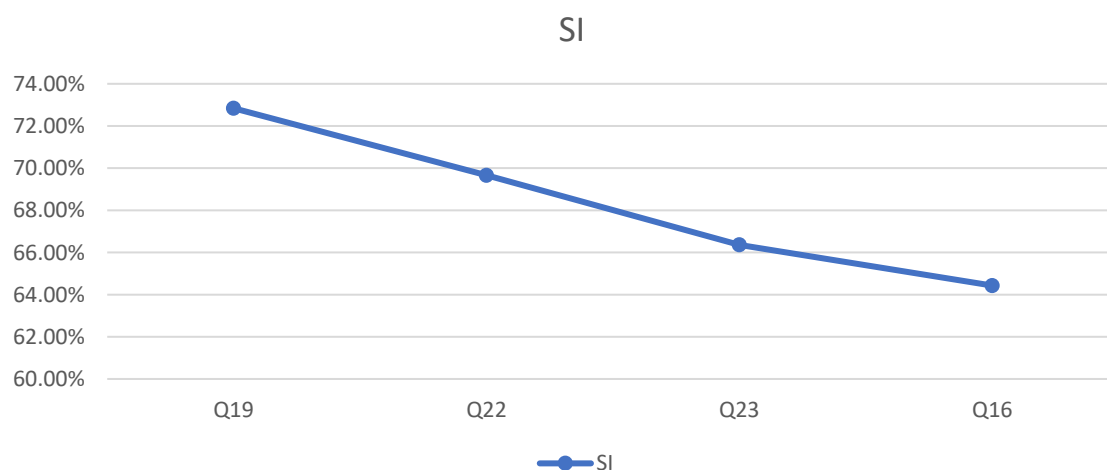
Q19 Lack of financial transparency or public information on the reconstruction process.

Q22 No clear definition of decision types that the community will be involved with.

Q23 Isolating master land use planning from community-level decision-making.

Component 3: Planning challenges								
	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q19	3.64	72.84	1.21	7.04	0.00	Agree	1	4
Q22	3.48	69.66	1.13	5.69	0.00	Agree	2	13
Q23	3.32	66.36	1.08	3.91	0.00	Neutral	3	17
Q16	3.22	64.43	1.09	2.71	0.01	Neutral	4	21
<b>Co 3</b>	3.42	68.32	0.85	6.47	0.00	Agree	-	<b>2</b>

*Table 5-16 The third component in Questionnaire Two results (Planning related challenges)*



*Figure 5-16 Severity index variation for the variables planning challenges*

The results of **Table (5-16)** show that respondents agreed with the third component phrases in general, indicating the presence of planning challenges for participatory decision-making. However, the sample only agreed on two phrases out of four. The respondents tended towards neutrality in the two challenges of Q16- Decreased participation due to a Prolonged planning process, and Q23- Isolating master land use planning from community-level decision-making.

*Ranking of challenges in component 4 (Enabling Conditions):*

The following are the phrases of the fourth component (Enabling Conditions)

Q2 Poor living conditions or livelihood for the community in temporary accommodation

Q3 Lack of national regulations that support community participation

Q4 Lack of logistical means for conducting meetings, such as transportation, accommodations, and/or technological tools of communication.

Component 4: Enabling Conditions								
	Mean	Severity Index	SD	t-test	P-value	Result	Group Ranking	Overall ranking
Q2	3.54	70.80	1.12	6.39	0.00	Agree	1	8
Q3	3.37	67.39	1.22	4.01	0.00	Neutral	2	16
Q4	3.28	65.57	1.17	3.15	0.00	Neutral	3	18
<b>Co 4</b>	<b>3.40</b>	<b>67.92</b>	<b>0.88</b>	<b>5.97</b>	<b>0.00</b>	<b>Agree</b>	<b>-</b>	<b>4</b>

*Table 5-17 The fourth component in Questionnaire Two results (Enabling Conditions)*

The severity index for the enabling conditions was 67.92%, corresponding to approval according to the scale. However, the severity does not reflect a high impact of capacity issues on participatory decision-making. Moreover, the component ranked fourth in importance compared to the other studied components.

In summary, the result of the 23 phrases representing the challenges of participatory decision-making shows that the sample agrees with the challenges of participatory decision-making represented in Questionnaire Two. In comparison, the severity index for Questionnaire Two was 69.34%. **Table (5-18).**

	the challenges of community participation in making reconstruction decisions					
	Mean	Severity Index	SD	t-test	P-value	Result
	3.467	69.34	0.66	9.408	0.000	Agree

*Table 5-18 The results of the challenges of community participation in making reconstruction decisions*

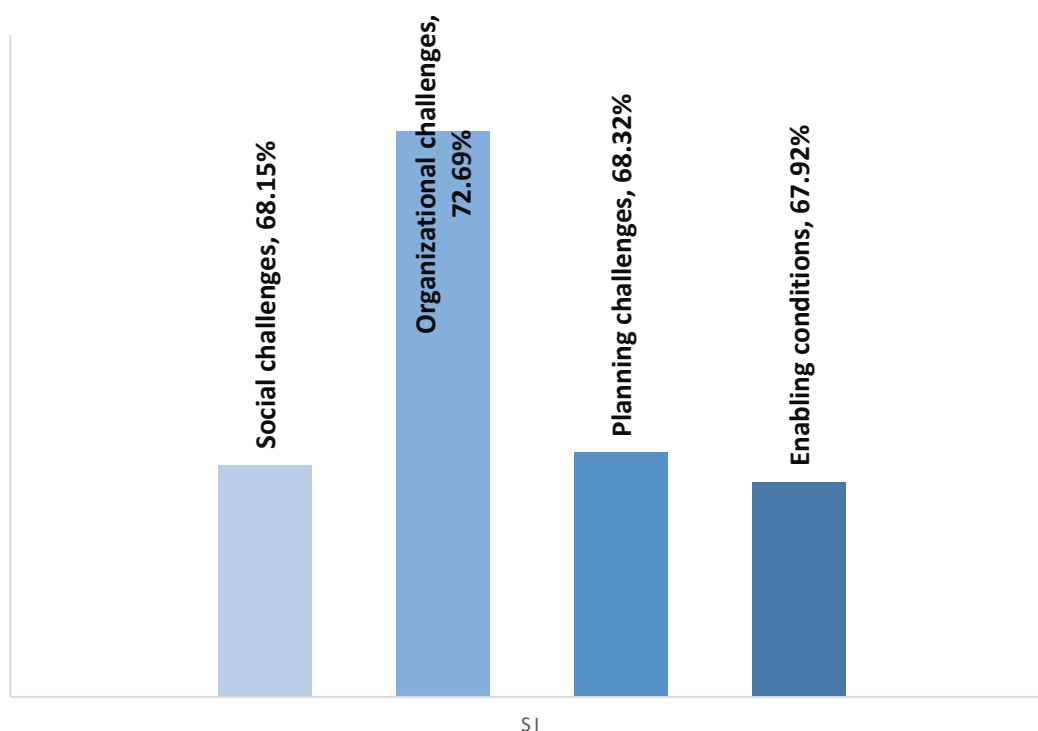
In more detail, the sample agreed on 15 phrases out of 23. The sample tended towards neutrality for nine different phrases. **Table (5-19)** shows the results for all phrases and the overall ranking. The Table indicates that the challenges that may impact participatory decision-making are decreased participation due to a Prolonged planning process and discrimination of decision-makers against minority groups. (Ethnic, religious, racial),

Moreover, lack of collective sense of belonging, while the most significant challenges that impact participatory decision-making are inadequate coordination mechanisms for linking the community with the central decision-making system, imposing preconceptions of what is best based on established principles by the expert, and central decision-making system for micro-level projects. On another note, the organizational challenges are the most distinguished concerning the type of challenges that impact participatory decision-making, **Figure (5-16)**. In contrast, the other challenges components (Social challenges, Planning challenges, and enabling conditions) have proximity in their impacts on participatory decision-making.

#Q	Variables	Overall	Result
Q7	Inadequate coordination mechanism for linking the community with the central decision-making system	1	Agree
Q20	Imposing preconceptions of what is best based on established principles by the experts.	2	Agree
Q6	Central decision-making system for micro-level projects.	3	Agree
Q19	Lack of financial transparency or public information on the reconstruction process.	4	Agree
Q18	Absence of a clear process for managing community participation.	5	Agree
Q5	Disproportionate representation of marginalized groups of the community and the elite	6	Agree
Q9	Inability to link decision-making at the local level to the implementation	7	Agree
Q2	Poor living conditions or livelihood for the community in temporary accommodation	8	Agree
Q10	Detachment of community organizational system from the institutional structure	9	Agree

Q21	Conflicting priorities between the affected community and decision-makers that aim for development.	10	Agree
Q1	Lack of understanding of community participation in the decision-making process.	11	Agree
Q8	A fragmentary structural organization that complicates the approval of community efforts.	12	Agree
Q22	No clear definition of decision types that the community will be involved in.	13	Agree
Q15	Lack of organizational structure within the community with public and political support	14	Agree
Q17	The perceived urgency of reconstruction by decision-makers.	15	Neutral
Q3	Lack of national regulations that support community participation	16	Neutral
Q23	Isolating master land use planning from community-level decision-making.	17	Neutral
Q4	Lack of logistical means for conducting meetings, such as transportation, accommodations, and/or technological tools of communication.	18	Neutral
Q13	Lack of confidence in the ability of the community to make decisions.	19	Neutral
Q12	Inability to adapt to the methods of communication of the locals	20	Neutral
Q16	Decreased participation due to a Prolonged planning process.	21	Neutral
Q14	Discrimination of decision-makers against minority groups. (Ethnic, religious, racial)	22	Neutral
Q11	Lack of collective sense of belonging	23	Neutral

*Table 5-19 Overall ranking for each factor of challenges of participatory decision-making in Questionnaire Two*



*Figure 5-17 Severity index for each component in Questionnaire Two*

<i>Co#</i>	<i>Component</i>	<i>Ranking</i>
2	Organizational challenges	1
3	Planning challenges	2
1	Social challenges	3
4	Enabling conditions	4

*Table 5-20 Summarized component ranking in Questionnaire Two*

### 5.7. The analysis of the Open questions in Questionnaire Two

Among 176 participants in the questionnaire, (137) participated in the open questions, and there were 162 entries overall. The questions targeted individuals with previous experience in community participation in recovery projects after disasters. The questions were:

- How do you evaluate the experience? Was it effective and useful or obstructive and useless?
- Are there any other constraints for community participation in decision-making for post-disaster reconstruction projects? Can you share your experience?

The degree of elaboration in each entry varied between 4 and 196 words. We subjected the answers to qualitative content analysis. We extracted the condensed views from each entry, then conducted a thematic analysis to identify patterns of themes in the data. One of the advantages of thematic analysis is that it is a flexible method that can be used both for explorative studies and for deductive results. We used the following steps:

- Assigning codes to participants with their role in the reconstruction project
- Extracting the condensed views from each answer
- Searching for patterns or themes in the data across the different open answers.
- Reviewing themes.
- Defining and naming categories
- Grouping data to their relevant category

After the initial data scanning, we excluded 74 entries from 44 participants from the analysis. Those entries did not provide sufficient descriptive information related to the questions; they were too broad or abstract. Therefore, entries from 93 participants were analyzed to find patterns. During initial scanning, we noticed three forms of data provided by the participants based on their experience, the role of community participation, challenges of community participation in

recovery projects, and measures for effective community participation. The role of each participant included in the analysis is in [Annex \(5\)](#).

The findings are organized according to the highest number of entries in each theme; this aids in comprehending the most agreed-on views. Therefore, they have the most relative validation. We balanced the number of categories formed by reducing the number so it gives meaning without confusion. It also gives a sufficient number of categories to avoid obscured distinctions.

It is worth noting that some categories are inter-relevant. This interrelation goes to the nature of the study, which has interrelated factors. Nonetheless, we formed categories to be descriptive, avoiding abstraction or narrow identifications. Moreover, the interpretation of the responses has a range of different interpretations possible based on the literacy of the transcript and narrative. The quotes can be referred to for reliability and elaboration in [Annex 6](#)

Table 5-21 Number of entries for the open question in Questionnaire Two according to the role of participants

		Number of participants	94	9	18	25	5	8	15	14
Theme		Category	Sum	Assessment role	Coordination role	Management role	Monitoring role	Planning role	Staff in recovery projects	Staff in response projects
Benefits	1	Cost efficient	2	0	0	1	0	1	0	0
	2	Increasing satisfaction	4	0	1	2	0	0	1	0
	3	Increasing ownership	11	1	3	3	1	0	1	2
	4	Long term success	4	0	2	2	0	0	0	0
	5	Relevance to the needs	15	3	2	6	0	2	1	1
	6	Provide information	3	0	1	1	1	0	0	0
Challenges	1	Capacity	6	0	3	0	0	1	1	1
	2	Clear process	7	0	3	2	0	0	2	0
	3	Communication issues	3	1	1	0	1	0	0	0
	4	Coordination	4	0	1	0	0	0	2	1
	5	Corruption	6	0	1	2	0	1	0	2
	6	Difficult and slow to implement	10	0	1	6	1	1	0	1
	7	Influence from other groups	8	0	1	4	0	0	2	1
	8	Lack of community initiative	4	0	1	1	0	0	0	2
	9	Lack of livelihood means	3	1	1	0	0	0	1	0
	10	Lack of trust	3	0	0	1	0	0	1	1
	11	Limited decision making power	9	1	0	2	1	0	1	4
	12	One size fits all projects	2	0	1	0	0	0	0	1
	13	Representation of groups	9	0	2	5	0	0	2	0
	14	Social and cultural norms	8	1	5	1	0	0	1	0
	15	Understanding community participation	5	0	0	2	0	1	2	0
		Number of entries	151	10	35	47	6	8	24	21

Upon numerical analysis of several entries according to participant role in **Table (5-21)**. We noticed that the highest number of entries were provided by participants in management roles (25 participants) next highest was participants in coordination role (18 participants), this affected the distribution of entries as they were the highest among these two roles, the cultural challenge was mentioned the most in coordinators (5 entries), while managers had the highest entries in the challenges: "difficult and slow to implement" (6 entries), "representation of groups" (5 entries), and "influence from other groups" (4 entries), participants in assessment role reported the benefit of relevance to the needs of community the most in relation to number of participants, this distribution of entries may be contributed to the close relation between the nature of the challenge and their role, which adds to the validity of their answers, moreover, the distribution of participants between staff in response projects, and staff in recovery projects were approximately converged, this creates balanced coverage of entries between response and recovery stages.

There were 49 entries on the role of community participation. The most frequent entries related to benefit for community participation, "The relevance to the needs of the community," where we allocated 15 entries to this category, and "increasing ownership" was the next most frequent benefit. Challenges-wise, the most frequent reported challenge was "difficult and slow to implement," with ten entries. Next frequently were "representation of groups" and "limited decision-making power" (9 entries).

#### 5.7.1. Role of community participation in recovery projects

##### Relevance to the needs of the community

Community participation can be used to design reconstruction activities according to their needs.

*"It was challenging but worth trying and proved helpful in customizing our activities as per needs of the communities."* P19

Designing activities according to the needs leads to better management of expectations. Three participants shared something relevant to managing expectations through needs assessment, for example:

*"It was so effective, community participation is important in designing the projects based on their views, needs, and expectation."* P3

Community participation, even though it is time-consuming, it is necessary for identifying priorities, which is rather important in planning



*"It took longer but was very effective because it [...] guaranteed that the real needs were met or prioritized"* P137

Another role of community participation in planning is connecting standards to the community needs, P63, who is a response director, described how they perform activities to include the community in decision-making:

*"We always organize town-hall events, involving local community stakeholders creating a localized grass-roots response. We connected our standards to their needs and understanding."*  
P63

### Increasing ownership

Community participation increases ownership, increasing responsibility, and commitment toward achieving good results. However, if the community is not equal throughout the reconstruction stages, according to P108, maximum engagement is usually in a needs assessment.

*"If the participation of the beneficiaries is effective the success of the project is more important to them"* P59

*"It was very rewarding. The communities, as long as upstream, we take the time to explain to them and that the reconstruction is directly vital to them, you cannot imagine the enthusiasm they put into it."* P75

### long term development and sustainability

Increased ownership benefits in achieving sustainable progress, as explained by participants (P116) and (P54). They confirmed the benefits of ownership in achieving long-term development and sustainable results.

*"As per my evaluation, the projects in which I was engaged were. well, received by the community with the sense of ownership ,Community participation increased the sustainability of initiative, as community had sense of ownership and continued the work even after the closure of formal activities."* P116

*"Rather effective to guarantee long-term impacts and continuous involvement"* P54

*"Involving them has always been a factor for the success of our projects and especially for a good handling of the works after the Project."* P12

Moreover, the Community knows what is best for their local context and how they will use the rebuilt environment for more sustainable results.

*"It is a necessary process that can prevent some mistakes and ensure better relevance and usefulness of the final results." P73*

A researcher and project staff in disaster recovery Also share the same viewpoint.

*"It is important to keep the relation open with the communities to develop the program, evaluate and lessons learned to secure the accountability and sustainability" P3.*

### Increased satisfaction

Four participants shared similar views on engaging the community in increasing the acceptance of results and satisfaction of beneficiaries.

*"Community involvement and participation has been helpful, because it has really brought out the problems that the community is affected. This commitment guarantees the sustainability and acceptance of projects." P133*

P30, who had a role in the reconstruction of housing units in municipalities, claims that engaging communities in the reconstruction process help are important in a better understanding of the local context ,in addition to increased satisfaction

*"Challenging, but useful. By including communities into the process of planning is important as it helps better understand situation and needs on the ground, adjust project to the needs of targeted community which, at the end of the day, will help to avoid unnecessary complains and conflicts with stakeholders on different stages of project implementation. " P30*

P100, a reconstruction project manager, shared the experience that engaging the community does not necessarily lead to acceptance of results. Financial constraints can affect the implementation of community preferences. None the less, community choices can affect the architectural identity through their choices of housing designs.

*"In the Philippines, for example, following Typhoon Yolanda, beneficiaries could choose their walling, and when walking through the village, it was hard to recognize the houses rebuilt by the program.*

*On the other hand, on another project in CAR, the beneficiary could choose the number of square meters but the choice of materials, for budgetary reasons was fixed by the organization, and it was more complicated to get the project accepted by the communities." P100*

### Other benefits of community participation

Two participants shared that community participation is more cost-efficient if done affectively. Two other participants pointed out that it helps provide information and increase the understanding of how the community uses the facilities and infrastructure.

*"It was very nice to hear from the community what they want and what is required of the community as per the geographical location of the project, as they know better than us the location the environment, and their daily usage of community infrastructure. We came up with a joint unanimous Shelter plan that was required by the community and we also have to meet our budget requirements." P97*

In addition to the benefits that were described above, a few singular views were noticed, such as:

- Reducing shock P3
- The community having practical and realistic input on planning reconstruction P9
- Increasing awareness, Facilitating early recovery P124
- coordinating the organization's activity, pushing the organization in the right direction " P131
- identifying the potential risks related to the project and identifying the adequate implementation strategies P116
- crucial to rehabilitate commune areas and buildings, which in return reinforce peace P21
- Increasing the resilience strength of the community is important for the ethic part of workers in the humanitarian field P1
- Helps in formulating standards in a format that the community understands better. P63

P27 shared more details on his experience in engaging the community in decision-making for reconstruction projects, P27, who works in Information management, said that the community could offer solutions to problems, such as infrastructure issues. Therefore, they have a role in planning, especially in outlining concepts, then outside aid Can be in the form of technical assistance, assistance in implementation, or offering needed resources for implementation.

*"When Bangladesh had a refugee inflow, the newcomers started assimilating with the locals. Water shortage therefore worsened as a result of a combination of rising demand and a low water Table. It would be quite challenging and time-consuming to do the technical evaluation to establish whether the water Table is suiTable for a borehole. However, during the focus group*

*discussion with the host communities addressing the issue, we had some prompt responses to the plan. such as where the water Table should be adequate, how to get water from a hilly terrain, how to store water, etc. After all, the answers or concepts already existed; they only required assistance in implementation. As a result, it is clear that consulting the local populace is the greatest way to understand their hopes for the future and to inform them about impending changes that will benefit both sides." P27*

#### 5.7.2. Challenges of community participation in recovery projects

We identified 15 themes with similar views on community participation challenges in recovery projects. Those are:

- Difficult and slow to implement
- Social and cultural norms
- Representation of groups
- Influence from other groups
- Limited decision-making power
- Corruption
- Lack of Clear process
- Capacity constraints
- Little Understanding of community participation
- Lack of community initiative
- Communication issues
- Coordination issues
- Poor living conditions
- Lack of confidence in decision-makers
- one size fits all projects

##### Difficult and slow to implement.

The most recognized challenge was that community participation is difficult and slow to implement. Ten different participants had similar views. Here are some of the condensed views that reflect on this challenge:

- difficult to implement and sustain P122

- difficult to conduct on a big scale, and also difficult to sustain for long periods. P41
- Projects usually need time and trust to see tangible results P54
- Responses to crises require rapid action and decision-making, so planning is mainly done at a high level. P32
- time-bounded quick recovery project P127
- time, training, and monitoring required P43
- takes time and effort. P73

For example, P99 Emphasizes the usefulness of community participation but points out that it is not easy nor fast to implement,

*" Post disaster reconstruction programs and participatory approaches are most of the time useful and impact full, but can and must always be evaluated. My experiences as an architect, advisor and evaluator convince me that participatory approaches are useful on many aspects (including beside design matters) but are not easy nor fast to implement"* P99

Two participants described the issue not on time available but on short-result oriented thinking of the decision-makers.

*"Short-result oriented thinking vs. long-term result-oriented thinking. When people are desperate, it is hard for them to consider future."* P21

*"Period according to the donor implementation was not sufficient to real separate and distinguish the intervention between the early recovery and the reconstruction starting"* P135

P85 said that community participation in several cases has remained superficial.

*"It was very difficult to ensure effective participation of communities at the planning stage, as effective participation of communities requires time, patience, and flexibility on part of the organizations planning such projects. I have felt that community participation in a number of cases has remained superficial. "* P85

### Social and cultural norms

Such as allowing women to engage in public discussions or when decision-makers do not have sufficient understanding of how the culture affects the needs of beneficiaries.

*"Social and culture structures which do not always allow some groups to participate. For example in Niger, with their cultural values, women were not allow to discuss in public with men or leaders*

*or authorities. But with our different interventions and contributions, the actually participate and are involved in all community affairs at local and national level."* P15

*"lack of understanding of cultural consideration that may influence the beneficiaries perspective and understanding of their needs"* P136

Other views related to this challenge were:

- Issues related to local culture and past experiences P117
- social, cultural, bureaucratic, and local political challenges. P14
- Project standards different from local culture, Lack of valuing local knowledge P37
- "The customs and traditions established in the community," norms and political issue"P67
- Disregard of cultural norms P45

#### Representation of groups

P51 and P47 touched upon the challenge of women's engagement the decision making P70 also talked about gender principles as a challenge for community participation. There is also the issue of excluding minorities or vulnerable groups (P98, P124).

P73, P14, and P4 shared that there is a challenge in selecting representatives representing the community's actual views. *"The 'representatives' of the community do not always represent the views of the majority"* P73.

*"In rural setting, community participation is one of the essential standards organizations must follow. In practice, this means engaging with a sample of community members at different levels (authorities, local leaders, IDPs, host community members). Participation took the forms of surveys, interviews and focus groups discussions.*

*"However, we always faced issues achieving meaningful participation. There has been always issues with the selected sample, as some times it is not representative and female engagement is not optima"*P4.

#### Influence from other groups

The participants shared different types of influence that can challenge community participation, most notably the political influence on reconstruction projects P40, P98 ,P129, and P3. *"Effective but at the beginning we had a kind of political interference as disasters happened in area*

*politically controversial. It has an opposite influence and the ruling party wanted to control the operation"*P38.

Elitism, or obstruction from influential groups P67 ,P17

*"it's useful for the affected people. but obstruction used come from the vested influential groups who has power, money and mussel."* P17

The perception of un conventional solutions by decision-makers

*"Community (and even professionals and authorities) perception towards novel ways of decision making, towards novel choices of technology & choice of materials palette (bio-climatic appropriate, and climate resilient choices of technology & materials such as use of rammed earth, adobe, compressed earth block are seen as a step backward as ""poor"" despite its superior thermal properties over ""conventional materials"" such as sand-cement block, concrete, fires brick etc. "* P101

Other possible challenges were the local authorities that may not be neutral to community decisions P6, P40, excessive paternalism of decision-makers, and *"The security situation within society and freedom of expression"*P40.

#### Limited decision-making power

The community may not always be able to clearly express their views during the planning P73, P25 ,P84, and P123. That may be because some communities do not allow certain community members to have the right to "express" an opinion in the name of the community P123 ,or because decision-makers maker *"expecting they know what is best."* P39

*"Language / Cultural obstacles (some communities do not allow certain members of their community to have the right to ""express"" an opinion in name of the community, often based on social standing in the community, sex, age, or rac""*P123

*"The ability for community concepts to be implemented. In sum, scope and financing has to be pre-determined to ensure that community-based decisions are implemented (e.g., if it is post-disaster housing design that our agency undertook in a village in India the community understood that their design inputs would be translated into architectural changes and features). Similarly, in the case of natural disaster impacts on IDPs - this group/community needs to have the decision-making power to make change to their location/village design/housing design. Without this decision-making power community engagement is not as powerful a tool and is rendered a check-list item to be completed by NGOs."* P84

*"For instance, a community will say that they want something (say, a bore hole, or a place to water their cattle) and based on what the donors think is good for them, they might get something totally different, even though what they need the most is an accessible water source." P39*

Three participants pointed out the role of the education level of the community on their decision-making power, P5, P125, and P10. *"The high rate of illiteracy and the social structure are the main constraints of community involvement namely in rural areas"*P106.

### Corruption

P123 described it as weak or self-interested leadership, P60 touched upon the role of financial transparency, while P33 had the opinion that organizations prioritize profit or 'make it a business' *"Corruption and weak or self-interested leadership (community leaders might express views in their own interest." P12. "Experience has been such that it is clear that the organizations in charge of the reconstruction make it a business to the point where it can be said that the management of the projects will not allow an effective intervention. Everything is done as if we wish that the problems persist"*P33.

### Lack of Clear process for community participation

Having a clear methodology and engaging the community in all stages is essential for effective community participation, according to P1. Therefore, there is a need for a more straightforward framework for community participation P4.

*"Clear vision and methodology to do quick assessments with the community to know more about it, leaders, needs, etc., that will give the big picture for the next step that will be to make them participate in every step of the process of reconstruction."* P1

However, it is usually improvised, rarely a formalized process P62, the process often relies on one focus group discussion, which is often flawed P8 *"Community involvement in planning is an invaluable addition to projects, as it permits the project concept to be checked against actual needs. Unfortunately, this is rarely done in a formalized process but rather takes place on an ad-hoc basis."* P62

This tendency for improvisation can be partially related to the Lack of standards for community participation *"Common standards for the community participation approach should be available for each response- adopted to the context not generic"*P104.



The lack of a clear process for community participation is one of the issues related to inadequate project planning that facilitate effective community participation. Other issues related to planning are the "one size fits all projects" and little understanding of community participation

#### one size fits all projects and Little Understanding of community participation

Applying 'One size fits all' Interventions even though different contexts was considered a challenge for community participation by P63 and P109

*"NGOs and the UN exporting one size fits all projects, needs more involvement and understanding, it is getting there but still slow" P6. "Experiences from humanitarian and development infrastructure development interventions elsewhere may not necessarily apply to other contexts. " P109*

The other planning issue is the little understanding of community participation P113, for example, the little understanding of the weaknesses and strengths of community P57 ,Lack of conceptual clarity on community participation. P126, little understanding of ways and methods of community participation P5 ,and lack of emphasis on implementing community participation P104

*"Lack of conceptual clarity on community participation. No decision for us without us! There are different levels of community participation - with the highest-level being community owned design - designed by communities and owned by communities with involvement of others. Rarely do we get such level of participations. Experts can facilitate the process, but the original idea, design and final decision on the most feasible design should be decided by community themselves" P1"*

*"Donors not putting enough attention to community participation approach in the organization's proposals. If donors know more about it, they would emphasize it in the call for proposals and organizations would have to plan for it" P104.*

#### Capacity constraints

Most notably, financial capacity P24, P98 ,P105, P62 ,P54 ,P4, P14

*"At the face of the planning, although time consuming, however, realistic plans were developed on rapid basis but the true compliance was a biggest issue, along with capacity, outreach, no-sufficient audits, weak grievance and redressal mechanism. " P1"**"capacity-wise (financial, logistic and administrative) has been always an issue in meeting communities' expectations.*

*Particularly after conflict, people expected to receive advanced reparation/modifications to their houses which in many cases was beyond the project scop""P4*

#### Lack of community initiative

In the form of a lack of motivation to participate in public discussion by the community, Limited will for participation, according to P98, is more notable in the urban context."

*" Is always meant with a number of challenges. Limited participation by a number of community members especially in the urban setting "P98. " Have the impression that the community has formed the impression that organizations have huge budgets and salaries, but we are a small organization and we do not have the first or the second. In our team, people spend 50% of their time working in the private sector to have enough money to live."*

*"At the same time, when we do public discussions of our strategy, needs assessment, people do not actively participate in both types of activities. Therefore, when us called not transparent, it demotivates us. I spent a lot of time to involve the community in decision-making in the organization, but nothing came of it." P60*

Lack of community initiatives can come from different reasons, such as the free interventions used as the main basis, to the point of maintaining communities irresponsibly. P40, or lack of initiative from expecting the government to implement the recovery project fully P35 ,or from some context which reinforces the lack of community initiative. P40 ,such as a lack of confidence from the community towards decision-makers. P130 ,P85 ,P123 ,or poor living conditions P94 , P5, P82.

*"There is much confusion following a disaster. Persons are trying to attend to food, shelter and other essentials. Community planning of reconstruction projects is a low-priority item for those trying to find food for their families." P82*

#### Coordination and communication issues

Lack of communication between the local administration, project management team, and the community. P28

Lack of coordination between actors" P133, P28, P79 ,or communication issues due to language barrier for example, P72, P123, P45

*"Poor coordination not only of humanitarian actors but also the government which is not a well structured policy in the management of disasters, so the humanitarian organizations do what they*

want and no conclusive results". P5"Communication matters only. The language spoken by the Project Team and the community has been something challenging despite the presence of the interpreter"P72.

### Other challenges to community participation

Here are the singular entries that present possible challenges for community participation

- Lack of emergency response plan P133
- Community usually rebuilds based on their experience, regardless of the flaws of their methods. P40
- Assistance delay P133
- The inability of actors to adapt to the fundamentals of accountability to the affected populations. P10
- Government restrictions. P10.
- Safety issues, weather problems, health conditions. P79.
- Security-related problems P67.
- Different views come up during the implementation or when the reconstruction is complete"P73
- Lack of Community organizational structure P81
- no sense of belonging or identity as a group P137

### **5.7.3. Measures for more effective community participation in recovery projects**

Eight participants included some suggestions for effective community participation. For example, P43 referred to the decreased commitment due to a prolonged process, so it is better to implement short small projects to gain trust. Short projects aim to show progress which builds trust ,while small projects help to learn the dynamics of the communities and the project team.

*" You can lose the trust and commitment of community members through extended and detailed planning without any ""concrete"" actions that people can see and react to (positive or negative) are seen by community members, Planning is important but small ""quick win"" projects should be implemented quickly. This may include Solar powered lights in locations already used by the community, simple shade structures etc. These can be permanent or temporary, but i believe community leaders need to be able to show progress so that trust can be built (even if installed structures, lighting etc. are replaced in the future based upon more detailed planning decisions, Through an approach that leads with planning but provides the community access to small projects in a relatively fast way helps build relationships, helps to understand the dynamics of the*

*communities and the project team, and helps each community to better understand what expectation the organization has (female participation, quality of work, engagement of people etc.)"* P43

P61 provided another suggestion. He said it is important to define how the community will participate from the beginning

*"In my opinion, community participation should be always part of our projects, as we are supporting communities, thus they should be the core of our interventions. It is important to define from the beginning how the community will participate, what would be their role, limitations, etc. In my experience, one of the challenges was that local authorities wanted to be part of community committees, which are usually a neutral body. Also, the engagement of women could be challenging, so sometimes we build committees with only women. As positive, we worked with community committees based on a community action plan agreed by them"* P61

It is also beneficial to keep the relationship open with the communities to develop the program and constantly evaluate lessons learned to secure accountability and sustainability.

*"it was so effective, the community participation is important in designing the projects based on their views, needs and expectation. the project should meet their needs and reduce the shocks. then it's important to keep the relation open with the communities to develop the program, evaluate and lessons learned to secure the accountability and sustainability"* P3

Other suggestions for more effective participation include:

- Establishing systems that are robust to ensure quality but flexible enough to allow homeowners to correct mistakes. " P43
- Searching for measures to align or adapt community participation with humanitarian responses tools and usual practices." P99
- Involving the community in all the different stages of the response, P107
- Adequate planning to avoid slowing the implementation process P68
- early involvement but swift reaction/action and frequent feedback, it is also important to involve the young people in decisions and actions. P103
- the human rights-based approach to post-disaster reconstruction projects is crucial P70
- participation of the community from the designing to the implementation phases of any project is essential P116
- Participation should be designed as an ongoing process P4

- There are a few variables that need to be taken into consideration :Planning community participation close approximately from the field, for there will be difficulties in understanding the context and dynamics if the national or international staff is based remotely, level of skilled HR; communication at community/district/provincial level; knowledge and presence of NGO in that specific context; will of the local government and community leaders to participate .P8

Overall, we notice similarities between the submitted answers for the challenges of community participation and the phrases of Questionnaire Two. The entries provided valuable entries that contributed to a comprehensive collection of possible challenges of participatory decision-making. It also benefited in the understanding of the challenges in a broader view as they helped add ten more possible challenges that we included in the phrases of Questionnaire Two. Most notably, being: A lack of community initiative, a Lack of confidence towards decision-makers, and one size fits all projects. However, some entries had similarities with the challenges in the questionnaire. **Table (5-22)** shows the similarities between challenges submitted in the open questions and challenges according to Questionnaire Two.

Similarities between challenges submitted in the open questions and challenges according to Questionnaire Two	
Challenges submitted in the open questions	Challenges according to phrases in Questionnaire Two
Difficult and slow to implement	The perceived urgency of reconstruction by decision-makers.
Representation of groups	Discrimination of decision-makers against minority groups. (Ethnic, religious, racial) Disproportionate representation of marginalized groups of the community and the elite
Influence from other groups/ Limited decision-making power	Conflicting priorities between the affected community and decision-makers
Lack of Clear process	Absence of a clear process for managing community participation.
Capacity constraints	Lack of logistical means for conducting meetings
Little Understanding of community participation	Lack of understanding of community participation in the decision-making process.
Communication issues	Inability to adapt to the methods of communication of the locals
Coordination issues	Inadequate coordination mechanism for linking community with a central decision-making system
Poor living conditions	Poor living conditions or livelihood for the community in temporary accommodation
Building based on past experience regardless of the flaws of the methods	Imposing preconceptions of what is best based on established principles by the decision-makers
The inability of actors to adapt to the fundamentals of accountability	Lack of financial transparency or public information on the reconstruction process.
Government restrictions	Lack of national regulations that support community participation
Lack of Community organizational structure	Lack of organizational structure within the community with public and political support
no sense of belonging or identity as a group	Lack of collective sense of belonging
No similarities in the submitted open answers	Central decision-making system for micro-level projects.
	A fragmentary structural organization that complicates the approval of community efforts.
	Inability to link decision-making at the local level to the implementation bodies
	Lack of confidence in the ability of the community to make decisions
	Detachment of community organizational system from the institutional structure
	Decreased participation due to a Prolonged planning process
	No clear definition of decision types that the community will be involved with.
Social and cultural norms Corruption Lack of community initiative Lack of confidence in decision-makers One size fits all projects Lack of emergency response plan Assistance delay Safety issues, weather problems, health conditions Security related problems Different views come up during the implementation	Isolating master land use planning from community-level decision-making.
	No similarities in the questionnaire phrases

*Table 5-22 Similarities between challenges submitted in the open questions and phrases according to Questionnaire Two*

in summary, we identify that the challenges of participatory decision-making have the following peculiarities,

#### THE TOP MEASURES FOR EFFECTIVE PARTICIPATORY DECISION MAKING

1	Designing flexible, participatory activities for each community according to its socio-political context.
2	Evaluating the degree of relevance of the reconstruction projects to community interests or their direct local built environment
3	Ensuring a flexible decision-making system for smaller societies to operate in micro projects
4	Providing transparency in sharing information on legal and financial constraints to the community to increase credibility and engagement.
5	Defining a clear process for managing community participation Institutionalization of participatory decision-making through forming committees and engaging community-based organizations,
6	Balanced representation of marginalized groups of community and the elite
7	Linking organizational decision-making structure to the implementation bodies.
8	Adequate living conditions and livelihood for the community in temporary accommodation
9	Building capacities of local government in linking community participation to central planning.
10	Presence of criteria for choosing priorities among different interests of the community.
11	defining the extent and criteria for community participation
12	Establishing a decentralized organizational structure to facilitate approval of participatory decisions with less bureaucratic procedures on the district and regional levels.
13	Clear definition of roles at the local level
14	presence of an organizational structure within the community with public and political support
15	the optimum use of community participation in decision making

*Table 5-23 Top measure for effective participatory decision making.*

In chapter five, we reported the analysis of Questionnaire Two, which aimed to assess the challenges of community participation in decision-making. Organizational challenges have the most influence on participatory decision-making. There are also social challenges, planning challenges, and enabling challenges. We also found that the locality type, whether urban or rural, does not influence participatory decision-making. Based on the ranking of individual challenges, we suggested the top measures for effective participatory decision-making based on the severity of challenges' impacts on participatory decision-making. This chapter also included a detailed

analysis of open-ended entries provided by individuals with experience in community participation in recovery projects. Their entries added to the understanding of the role of community participation and the challenges that may decrease the effectiveness of engaging communities in decision-making. In chapter six, we construct the model of participatory decision-making based on the findings from all previous chapters, then test the model with the feedback provided by individuals with experience in community participation in recovery projects.



## Chapter 6

# Testing the Models for Assessing Participatory decision making

In this chapter, we present and test two models for assessing participatory decision-making; the models are developed so decision-makers can aid them in assessing the uses of community participation in their reconstruction projects and different local contexts.

We test the model in three phases. Phase one tests the model for assessing the effectiveness of using community participation in a reconstruction project, phases two and three test the model for assessing what decision clusters to use community participation, and phase three tests the model for assessing when to use community participation in the reconstruction process.

### 6.1. Assessing the effectiveness of community participation in a reconstruction project.

We developed the model using the statistical analysis results of Questionnaire Two. (Table 5-19) shows the overall ranking for each factor of challenges of participatory decision-making in Questionnaire Two. First, we used the ranking to calculate the weights of each criterion with the Rank Order Centroid method (ROC), which is a simple way of giving weight to several variables ranked according to their importance. ROC is used when there are limited resources to make an exhaustive comparison of the data, therefore suited for this research stage. Weights are calculated using the equation:

$$wi = \frac{1}{n} * \sum_{j=i}^n \frac{1}{r_j}$$

Using the previous equation, and the ranking of challenges in Table (5-19), we developed the model in Table (6-1).

Factors	Ranking	wi	Potential values				
			1	2	3	4	5
Collective sense of belonging for the community	23	0.001	Good	Above Average	Average	Below Average	Poor
The understanding of community participation	11	0.034					
The living conditions or livelihood for the community in temporary accommodation	8	0.048					
The logistical means for conducting meetings, such as transportation, accommodations, and/or technological tools of communication	18	0.012					
Linking decision-making at the local level to the implementation bodies	7	0.053					
Linking community organizational system to the institutional structure	9	0.042					
The level of confidence in the ability of the community to make decisions	19	0.01					
The ability to adapt to the methods of communication of the locals	20	0.008					
Defining the process for managing community participation	5	0.07					
Defining decision areas that the community was involved with	13	0.027					
The planning time	21	0.01					
community participation in master planning	17	0.015					
			1	2	3	4	5
The central decision-making for micro-level projects	3	0.094	Low	Below Average	Average	Above Average	High
The level of urgency for housing reconstruction	15	0.023					
The level of imposing preconceptions of what is best by the experts	2	0.146					
Disproportionate representation of marginalized groups of the community and the elite	6	0.061					
Conflicted priorities between the affected community and decision makers that aim for development	10	0.039					
The level of discrimination of decision-makers against minority groups. (Ethnic, religious, racial)	22	0.003					
			1	2	3	4	5

The national regulations that support community participation	16	0.017	Efficient Sufficient Neutral Deficient Non-Existent				
The coordination mechanism for linking the community with the central decision-making system	1	0.16					
The structural organization that facilitates approval of community efforts	12	0.03					
The organizational structure within the community with public and political support	14	0.023					
The Financial transparency in the reconstruction process	4	0.082					

*Table 6-1 The model for assessing the effectiveness of community participation in a reconstruction project.*

We distributed the model to the participants from Questionnaire Two, which included individuals who previously worked on recovery projects. We asked them to **Evaluate the criteria in the last reconstruction project they participated in.** A number of 26 individuals responded. The countries from where the reconstruction projects were assessed varied. A complete sheet of answers with the countries is displayed in [Annex \(8\)](#).

We used the responses to identify the criteria values for each project and calculate the P value using the Simple Multi-Attribute Rating Technique (SMART), which is a method for conducting multi-criteria decision-making to assess the best project alternative based on a list of relevant criteria. We calculated the P value using the following equation:

$$P = \sum_{j=1}^n w_j * u_j$$

$U_j$  is the Arithmetic mean of the responses from the same project. In this sample, we assumed that the responses from the same country were from one reconstruction project. We then compare the P value with the threshold ( $\alpha$ ), whereas:

$P < \alpha$ : there is a tendency to use community participation in the reconstruction project.

$P \geq \alpha$ : there is a tendency not to use community participation in the reconstruction project.

At the end of this phase, decision-makers have a tendency generated with this tool to help them decide whether to use community participation in their reconstruction project or if it is necessary to apply measures that facilitate the participatory decision-making process. The values differ with each reconstruction process according to the local context. We provide a sample of the model we tested in [Table \(6-2\)](#).

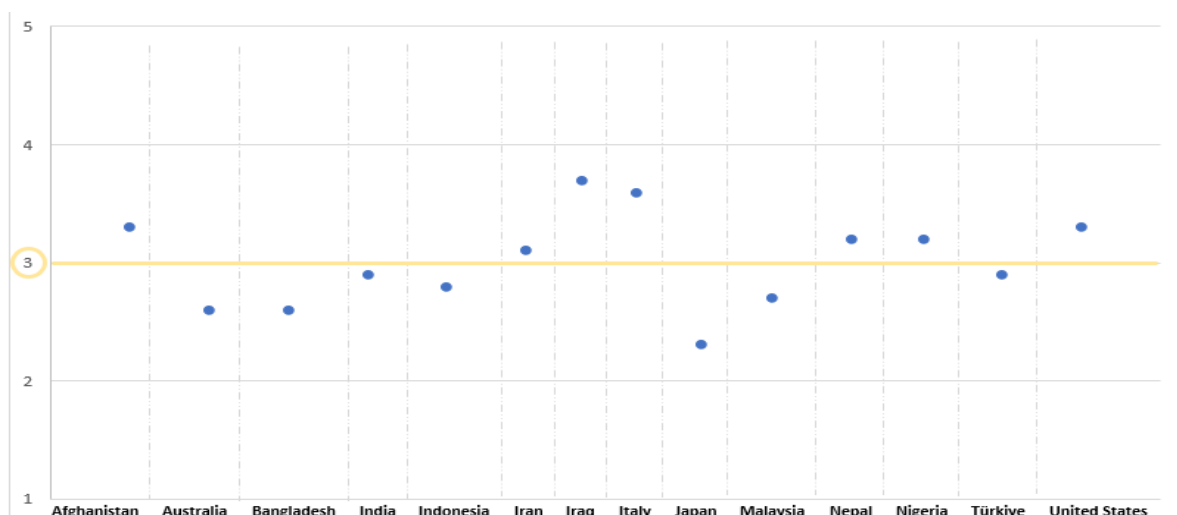
WI	Respondents	X 7	X 8	X9	Σ	X2 2	X2 3	X2 4	X2 5	X2 6	Σ
	Country	Indonesia				United States					
0.16	The coordination mechanism for linking the community with the central decision-making system	2	4	1	0.373	4	2	5	4	4	0.608
0.146	The level of imposing preconceptions of what is best by the experts	4	3	3	0.486	3	3	4	2	3	0.438
0.094	The central decision-making for micro-level projects	2	3	3	0.250	4	3	2	3	3	0.282
0.082	The Financial transparency in the reconstruction process	1	3	3	0.191	2	2	5	3	5	0.279
0.07	Defining the process for managing community participation	3	4	3	0.233	3	3	5	4	4	0.266
0.061	Disproportionate representation of marginalized groups of the community and the elite	2	3	3	0.162	2	3	5	3	4	0.207
0.053	Linking decision-making at the local level to the implementation bodies	2	4	3	0.159	3	3	5	3	3	0.18
0.048	The living conditions or livelihood for the community in temporary accommodation	2	4	3	0.144	1	1	4	4	4	0.134
0.042	Linking community organizational system to the institutional structure	2	3	2	0.098	3	3	5	4	4	0.16
0.039	Conflicted priorities between the affected community and decision makers that aim for development	3	4	4	0.143	4	2	5	2	4	0.133
0.034	The understanding of community participation	2	3	2	0.079	2	2	4	2	4	0.095

0.03	The structural organization that facilitates approval of community efforts	2	3	1	0.06	4	2	5	4	5	0.12
0.027	Defining decision areas that the community was involved with	3	3	3	0.081	2	2	5	3	3	0.081
0.023	The organizational structure within the community with public and political support	2	3	3	0.061	3	2	4	4	4	0.078
0.02	The level of urgency for housing reconstruction was	3	5	5	0.086	3	4	1	3	4	0.06
0.017	The national regulations that support community participation	1	3	2	0.034	3	2	4	4	4	0.058
0.015	community participation in master planning	2	3	2	0.035	4	3	5	3	4	0.057
0.012	The logistical means for conducting meetings, such as transportation, accommodations, and/or technological tools of communication	3	4	3	0.04	2	1	3	4	4	0.034
0.01	The level of confidence in the ability of the community to make decisions	3	4	2	0.03	2	3	5	4	4	0.036
0.008	The ability to adapt to the methods of communication of the locals	4	4	3	0.029	3	2	5	4	3	0.027
0.01	The planning time	3	3	2	0.013	4	2	5	2	4	0.017
0.003	The level of discrimination of decision-makers against minority groups. (Ethnic, religious, racial)	4	2	1	0.007	3	1	5	3	3	0.009
0.001	Collective sense of belonging for the community	1	2	1	0.001	2	2	3	4	3	0.003
	$P=\sum w_j * u_j$	<b>P=2.8</b>				<b>P=3.4</b>					

Table 6-2 The values submitted by eight respondents for the model for assessing the effectiveness of community participation

We set the threshold value ( $\alpha$ ) for the models at (3), representing neutrality. Three individuals participated in a reconstruction project in Indonesia. We observe that the P value for responses from Indonesia is (2.8), which is below the threshold; this means that there is a tendency to use community participation in that context. In contrast, there were five respondents from the United States, and the P value was (3.4), which is above the threshold; this means that in that context, there is a tendency not to use community participation. Interestingly, this result aligns with the qualitative study for the case studies, where we observed that community participation in Indonesia had features that facilitated participation, especially the organizational structure, whereas, in New Orleans, the bureaucratic system hindered effective participation.

In **Figure (6-1)**, we illustrate the various responses provided for this model. We notice a balance in values between those below the threshold and above it. Also, the responses are distributed around the threshold. This distribution indicates that reconstruction projects do not have one tend to use community participation.



*Figure 6-1 The P values for responses in the model for assessing the effectiveness of community participation*

## 6.2. Assessing the optimum use of community participation in a reconstruction project.

The second model aims to assess the optimum use of community participation in a reconstruction project. We used the ranking results from **Table (4-25)** in Questionnaire One. The variables in this Table were too extensive. We limited the criteria to the top 20 in terms of ranking. The developed model is shown in **Table (6-3)**. We asked the participants to **Evaluate the importance of the factors for the success of their most recent reconstruction project.**

A number of 36 responses were collected from individuals with experience in reconstruction projects. A complete sheet of answers with the countries is displayed in [Annex \(8\)](#).

Decision cluster	Factors	Ranking	WI	Potential values				
				1	2	3	4	5
Linking local context with	Linking expertise with the local context.	1	0.61	High Priority	Moderate priority	Neutral	Somewhat a Priority	Low priority
	Linking expertise with priority of needs.	2	0.28					
	Providing reliable information for planning	3	0.11					
Providing needs	Providing spaces and facilities to increase social interaction.	1	0.45					
	Considering the lifestyle of the community during housing design.	2	0.26					
	Linking livelihood to housing.	3	0.16					
	Planning services according to the priority of needs.	4	0.09					
	Considering family structure during housing design	5	0.04					
Management decisions	Increasing the community's ability to respond to possible disasters.	1	0.61					
	Developing coordination mechanisms between government, NGOs, and community.	2	0.28					
	Planning adequate implementation arrangements.	3	0.11					
Ensuring equity	Ensuring public transparency during the decision-making process.	1	0.52					
	Supporting strategy for the vulnerable when relocation is unavoidable.	2	0.27					
	Protecting the interests of vulnerable groups from the impact of gentrification.	3	0.15					
	Ensuring equity in distributing houses.	4	0.06					
Architectural identity	Enhancing the sense of place.	1	0.45					
	Considering cultural diversity characteristics during planning.	2	0.26					
	Considering spatial-belonging effects during planning.	3	0.16					
	Considering a relevance to the historical architectural identity.	4	0.09					
	Adaptation of previous mixed-use environment to new conditions.	5	0.04					

*Table 6-3 The model for assessing the optimum use of community participation in a reconstruction project.*

We conduct similar procedures for the previous model in [section \(6.1\)](#). After calculating the P value, we compare the P value with the threshold ( $\alpha$ ), whereas:

$P < \alpha$ : there is a tendency to use community participation in the designated decision cluster in a reconstruction project.

$P \geq \alpha$ : there is a tendency not to use community participation in the designated decision cluster in a reconstruction project.

At the end of this phase, decision-makers have a tendency generated with this tool to help them decide on what decision cluster to use community participation in. We provide a sample of the model we tested in [Table \(6-4\)](#).

Rank	WI	Factors	Pakistan	Congo
			X25	X27
1	0.61	Linking expertise with the local context.	1	2
2	0.28	Linking expertise with priority of needs.	1	1
3	0.11	Providing reliable information for planning	1	3
<b>P value for linking context with planning</b>			<b>1</b>	<b>1.83</b>
1	0.45	Providing spaces and facilities to increase social interaction.	2	3
2	0.26	Considering the lifestyle of the community during housing design.	1	3
3	0.16	Linking livelihood to housing.	1	3
4	0.09	Planning services according to the priority of needs.	1	2
5	0.04	Considering family structure during housing design	1	3
<b>P value for Providing needs decision cluster</b>			<b>1.45</b>	<b>3.1</b>
1	0.61	Increasing the community's ability to respond to possible disasters.	1	4
2	0.28	Developing coordination mechanisms between government, NGOs, and community.	1	4
3	0.11	Planning adequate implementation arrangements.	1	3
<b>P value for Management decisions</b>			<b>1</b>	<b>3.89</b>
1	0.52	Ensuring public transparency during the decision-making process.	2	4
2	0.27	Supporting strategy for the vulnerable when relocation is unavoidable.	1	4



3	0.15	Protecting the interests of vulnerable groups from the impact of gentrification.	1	3
4	0.06	Ensuring equity in distributing houses.	1	2
<b>P value for Ensuring equity decision cluster</b>			<b>1.52</b>	<b>3.73</b>
1	0.45	Enhancing the sense of place.	1	3
2	0.26	Considering cultural diversity characteristics during planning.	1	3
3	0.16	Considering spatial-belonging effects during planning.	1	2
4	0.09	Considering a relevance to the historical architectural identity.	2	5
5	0.04	Adaptation of previous mixed-use environment to new conditions.	2	4
<b>P value for Architectural identity</b>			<b>1.13</b>	<b>3.06</b>

*Table 6-4 The values submitted by two respondents for the model for assessing the optimum use of community participation*

We notice that the P values from the Pakistan case are all below the threshold; this means there is a tendency to use community participation in all decision clusters. In contrast, in the response provided by the Congo reconstruction, the only P value below the threshold is for linking context with planning (1.83), which implies that there is a tendency to only use community participation in linking local context with planning.

The following Figures, **Figures (6-2) to Figure (6-3)**, illustrate all responses for the model. All responses for linking local context with planning are below the threshold. Moreover, most responses are around the (1) value, which indicates that linking context with planning is critical in most reconstruction projects. Interestingly, this aligns with the results from Questionnaire One. In contrast, **Figures (6-5) and Figure (6-6)** show that community participation was not recommended for ensuring equity decision clusters and considering the architectural identity.

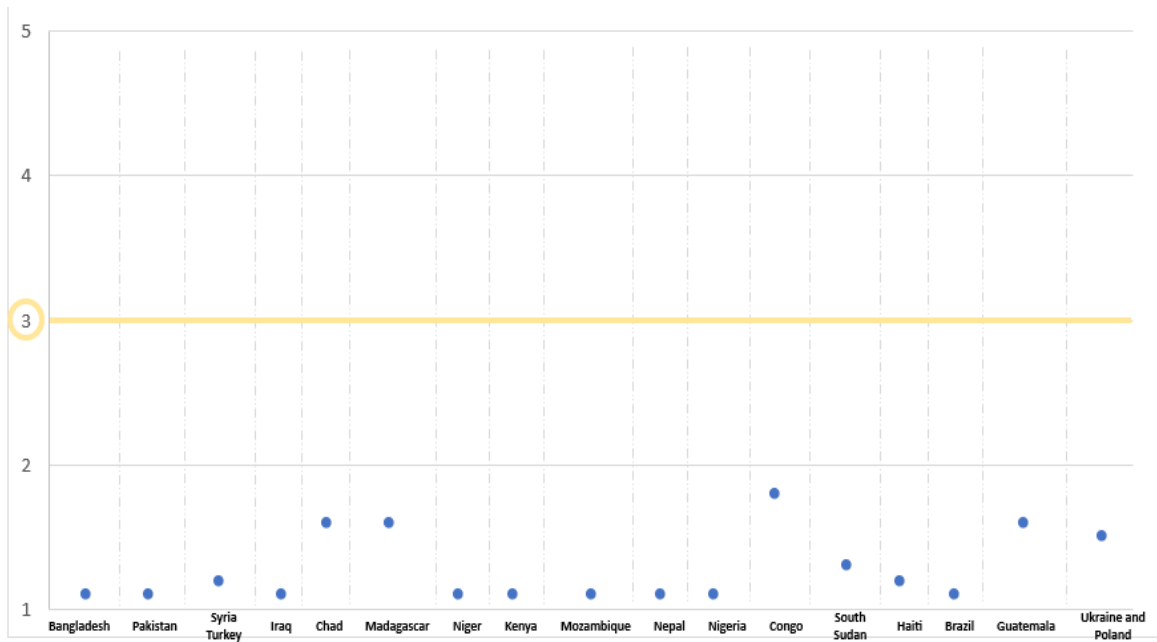


Figure 6-2 P values for Linking local context with planning in the model for assessing the optimum use of community participation

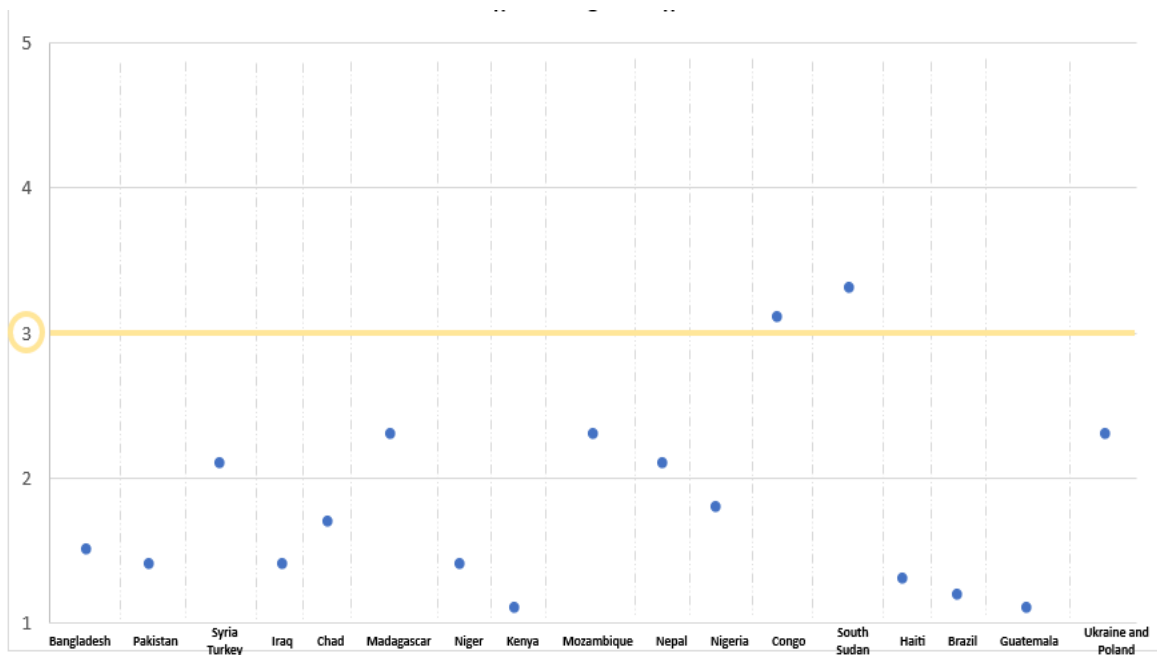


Figure 6-3 P values for Providing needs decision cluster in the model for assessing the optimum use of community participation

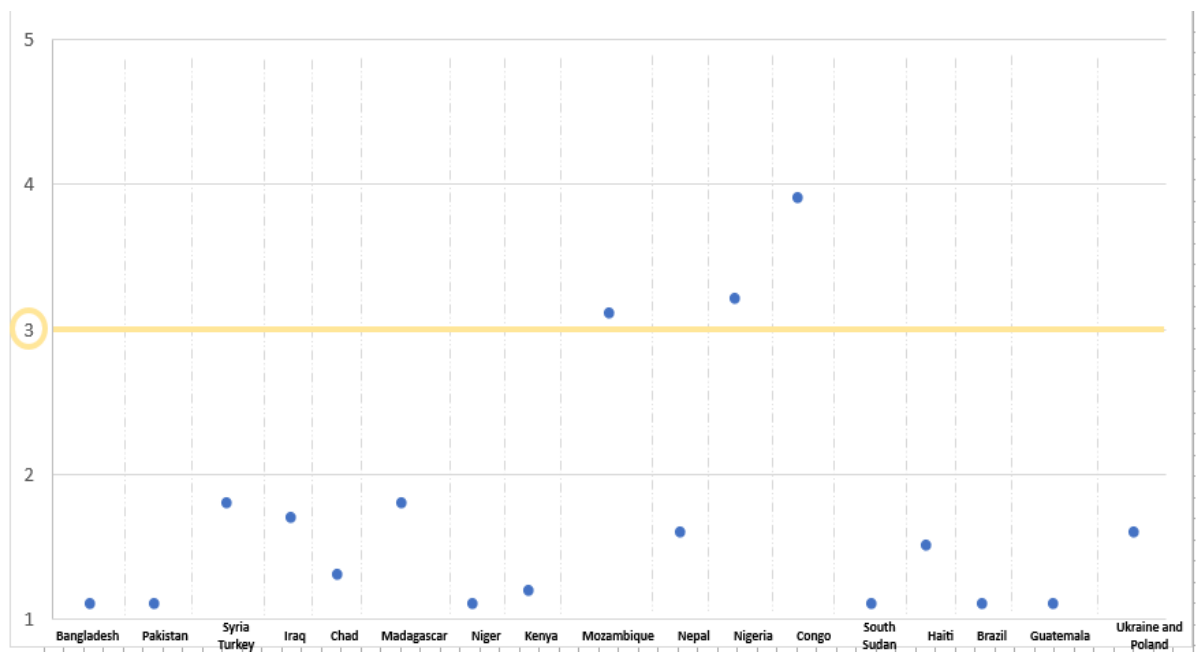


Figure 6-4 P values for Management decision cluster in the model for assessing the optimum use of community participation

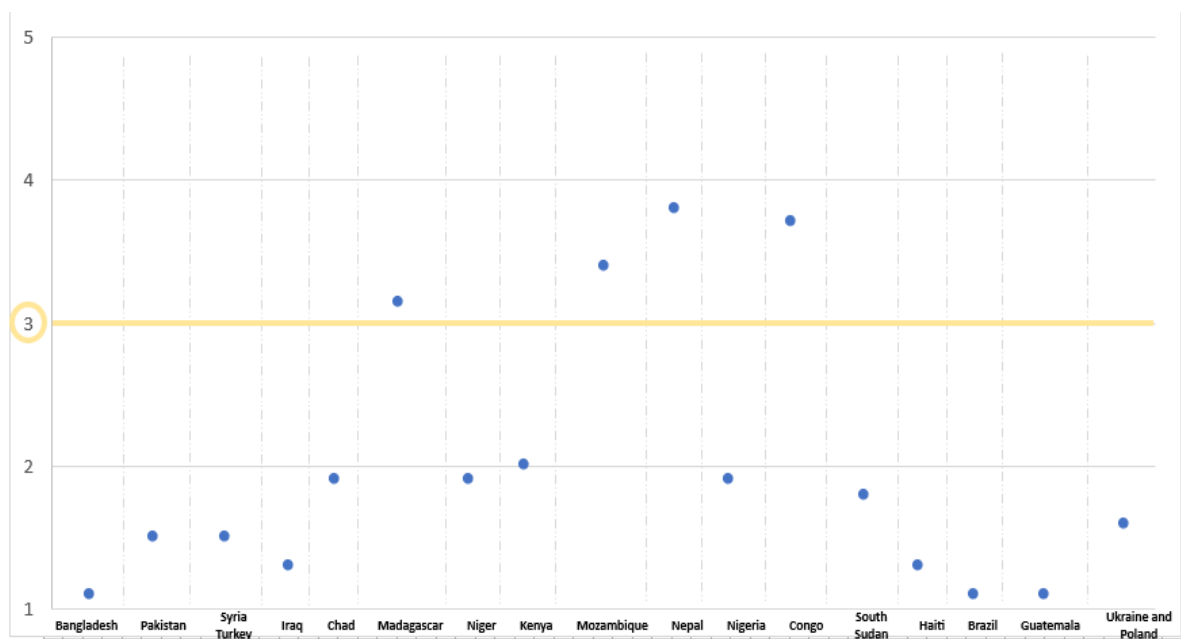


Figure 6-5 P values for Ensuring equity decision cluster in the model for assessing the optimum use of community participation

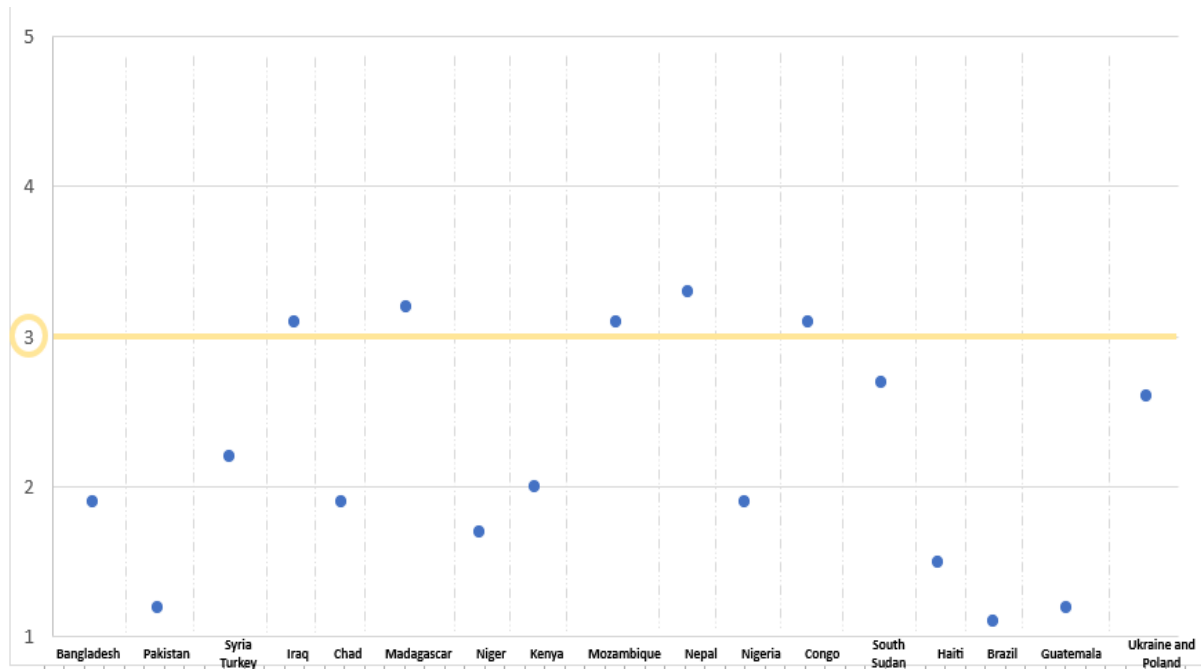


Figure 6-6 P values for Architectural identity decision cluster in the model for assessing the optimum use of community participation

### 6.3. Assessing when to use community participation in a reconstruction process.

To assess when to use community participation in the reconstruction process, we conducted Performance sensitivity using the results of the AHP questionnaire in [section \(4.2\)](#). [Figures \(6-7\) to Figure \(6-10\)](#) illustrate the performance test computed using Super decision software.

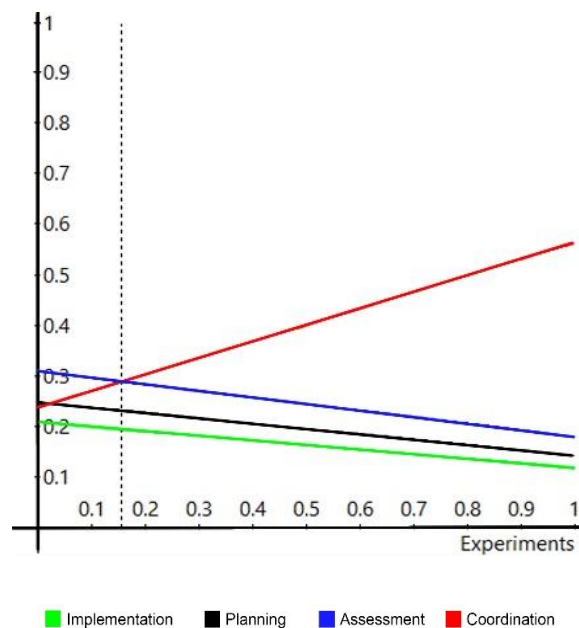


Figure 6-7 Sensitivity test for linking expertise criteria as the independent variable

Figure (6-7) shows the sensitivity test for Linking expertise as the independent variable. We notice a linear sensitivity diagram, and we see a point when we have a rank reversal; this means that when the weight of linking expertise is above 0.15, then instead of having assessment as most preferable for community participation, we start having coordination as most preferable, and this change becomes more visible as weight of linking expertise increases.

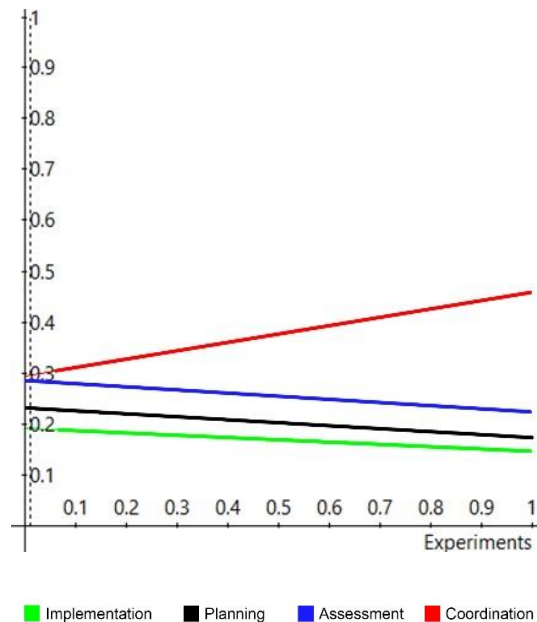


Figure 6-8 Sensitivity test for Providing community needs as the independent variable

Figure (6-8) shows the sensitivity test for Providing community needs as the independent variable. We notice that coordination activities are always the most preferable no matter the weights of criteria.

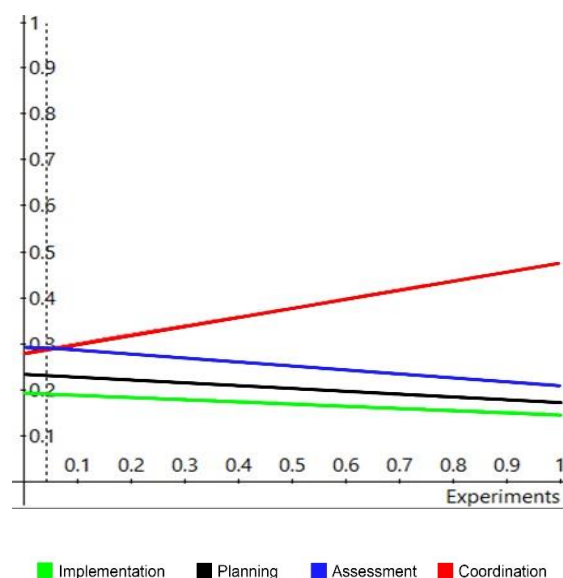


Figure 6-9 Sensitivity test for Ensuring equity as the independent variable

Figure (6-9) shows the sensitivity test for Ensuring equity as the independent variable. When the weight of ensuring equity is above 0.04, instead of having assessment as the most preferable for community participation, we start having coordination as the most preferable.

Finally, in Figure (6-10), We notice a linear sensitivity diagram for the Architectural identity. When the weight of this variable is above 0.16, instead of having assessment as the most preferable for community participation, we start having coordination as the most preferable, and this change becomes more visible as weight or linking expertise increases.

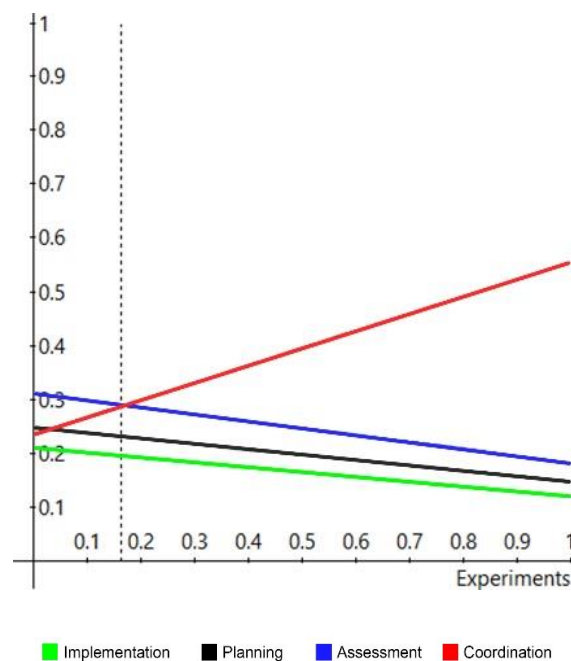


Figure 6-10 Sensitivity test for Architectural identity as the independent variable

In short, the results of the sensitivity tests show that for at least 84% probability, it is preferable to use community participation in coordination activities than in assessment activities. Then it is preferable to use community participation in planning rather than implementation activities.

# Results, Conclusion and Future Studies

## The results from the empirical study

### Result One

The statistical analysis indicates that the quantitated empirical study has an acceptable level of validity and reliability:

- \_ The values of Cronbach's alpha in Questionnaire One ranged between (0.708) and (0.909). The values for Questionnaire Two ranged between 0.85 and 0.61, all higher than (0.6). Thus
- \_ The result of the Split-half test of Questionnaire One was 0.96. The value of this test for Questionnaire Two was 0.84. Thus, the two questionnaire shows a strong stability coefficient.
- \_ Spearman Rho's coefficient results show strong internal reliability for both questionnaires. The relationship between each component and its factors is smaller than the significance level of 0.05. Indicating that each factor is representative of the component they append to.
- \_ In the AHP questionnaire, we excluded any judgments that exceeded 0.15 inconsistency rates from the statistical analysis.

### Result Two

The results from the Spearman correlation coefficient show a strong correlation of 0.828 between avoiding disparities between classes of society and engaging the community in decision-making; this indicates that disparities in society can hinder achieving equity. Same wise, there is a strong correlation of 0.828 between protecting the interests of vulnerable groups from the impact of gentrification and engaging the community in decision-making; this indicates that the gentrification phenomenon is related strongly to less successful reconstruction outcomes. In addition, Providing reliable information for planning is strongly related to Linking local context with planning because this factor had a value of 0.839 for the Spearman coefficient; this result aligns with the importance of basing reconstruction decisions based on "factors on the ground," or from down to top community reporting system, to ensure considering local context during planning. Moreover, there is a direct relationship of 0.592 between providing strong local workgroups and participatory decision-making; this is consistent with the feasibility of the model of coordination system between community and decision-makers based on organizing local

workgroups, such as in the case of Indonesia. There is a direct correlation of 0.712 between considering spatial belonging effects during the planning and participatory decision-making. There is also a direct correlation of 0.818 between considering the relevance of historical architectural identity and community participation; this proves the hypothesis that community participation has a direct role in decisions related to architectural identity after disasters.

### Result Three

According to the computed severity index for the variables in Questionnaire One, the respondents tend to rate that community participation has the most critical role in making decisions for the followings variables:

- Linking expertise with the local context.
- Linking expertise with priority of needs.
- Providing spaces and facilities to increase social interaction.
- Providing strong local workgroups.
- Increasing the community's ability to respond to possible disasters.

### Result Four

The results from the Factor Analysis in Chapter Four indicate that community participation has a role in decision-making in eight different decision clusters related to the built environment reconstruction after disasters: Management, ensuring equity, providing needs, architectural identity, human resourcing, urban planning, linking local context with planning, and political support for reconstruction plans.

The identified decision clusters are furthermore investigated by illustrating the scatter plot of the correlation between each component and community participation; the patterns indicate a strong relationship between management, Architectural identity, providing needs, Ensuring equity, and participatory decision-making. However, less clear lines formed between providing political support, human resourcing, and participatory decision-making according to respondents, which suggests a reasonable uncertainty about whether there is a role for community participation in decisions related to providing political support and human resourcing.

According to respondents, the most critical decision clusters for participatory decision-making are Linking local context with planning, ensuring equity, providing needs, and Architectural identity. We observe proximity in importance for those decision clusters (severity index over



85%). The role of community participation is less important, according to respondents in management 79.4%, political support 79.1%, and urban planning. 74.9%

#### Result Five

According to respondents, the most important management participatory decisions are increasing the community's ability to respond to possible disasters, developing coordination mechanisms , Planning adequate implementation arrangements, and providing response methods to reduce the impact of possible disasters.

The analyzed case studies align with the existence of a role for community participation in managing reconstruction. In the Broadmoor neighborhood, the affected community had a role in fundraising and monitoring the implementation of several public building and housing reconstruction projects.

The most important Architectural identity Participatory decisions are enhancing the sense of place, considering cultural diversity characteristics during planning, and considering belonging spatial effects during planning. There is little difference margin among all architectural identity factors, which reflects a tendency that all the factors are closely related to each other or the tendency that they may not be very distinguished in their effect on reconstruction outcomes. Those factors maybe significantly interrelated. For example, the decisions in Banda Aceh to build memorials and renovate certain buildings to emphasize the Islamic characteristics of the city aimed to emphasize the Islamic cultural identity in the city that reflects the identity of the inhabitants, which in return strengthened their sense of place and spatial belonging. That shifted the narrative in the city from the political conflict and the disaster towards setting a narrative based on the sense of belonging.

The most important Providing needs participatory decisions, according to respondents, are Providing spaces and facilities to increase social interaction , Considering the lifestyle of the community during housing design and ,Linking livelihood to housing ;this reflects that considering social needs can be as important as primary needs such as providing livelihood and providing services. While on the other hand, Adapting to future changes and requirements and Compatibility between characteristics of the old settlement with the new one" had the least severity index in providing needs category (78.21%); this result is prevalent considering that in reconstruction projects, responding to existing needs have a higher priority than responding to needs related to the future or past needs.

Ensuring public transparency during the decision-making process had the highest severity index (89.1%) regarding ensuring equity decisions, which reflects that public transparency is one of the most important factors for ensuring equity. Additionally, engaging the community in relocation decisions (88.8%) and engaging them in protecting the interests of vulnerable groups from the impacts of gentrification(86%) are also important for achieving equity.

According to statistical analysis for Questionnaire One, Linking local context with planning includes Linking expertise with the local context, linking local context with the priority of needs, and Providing reliable information for planning. All these variables are critical in participatory decision-making, according to respondents.

A moderately high importance is given by respondents to the role of participatory decision-making in creating political support for reconstruction plans (83.4%) and for providing political stability (74.7%)

Regarding community participation in human resourcing decisions, respondents give high importance to the role of the community in providing strong local workgroups (90.3%), less importance is given to increasing the capacity of skilled labor (80%), and the capacity of working staff (78.6%)

The respondents gave moderately high scores to the fifth component factor in general; this component had the least importance among all other components, with a moderately high importance (74.96%). Considering decentralization in services and traffic Had a "not sure" tendency among respondents; this result resonates that urban planning reconstruction decisions are the least preferable to engage the community in, according to the respondents; this suggests that there is a tendency to consider that experts are more inclined to engage in urban planning decisions and that it is more feasible to engage the community in those areas of reconstruction decisions making.

## Result Six

When testing the model for The optimum use of community participation with individual case studies in Chapter Six, we observe a tendency to use community participation in linking local context with planning in most analyzed case studies, which indicates that linking context with planning is critical in most reconstruction projects. Interestingly, this aligns with the results from Questionnaire One and the theoretical observations conducted in the three presented case studies (New Orleans, Aceh, and Northern Pakistan). However, less emphasis was observed on the actual

role of community participation in ensuring equity decision clusters and considering the architectural identity. When comparing the results from the tested model and the overviews of Questionnaire One, we notice that respondents recognize the importance of engaging the community in ensuring equity and architectural identity even though it is not yet manifested in real practical measures in engaging them in those types of decisions.

#### Result Seven

Respondents provided entries for an open question regarding the role of community participation based on their experience in recovery projects after disasters. The open question provided a flexible means to identify additional roles of community participation or add a perspective on existing ones. The most frequent role implied by respondents was "The relevance to the needs of the community," such as managing expectations through needs assessment and identifying priorities. The next most frequent role is "increasing ownership," such as increased responsibility and commitment toward achieving good results.

Other shared roles of participatory decision-making include long-term development and sustainability, and increased satisfaction. A few singular views include the benefit of having practical and realistic input on planning reconstruction by the community, increasing awareness, pushing the organization in the right direction, identifying the potential risks related to the project, and rehabilitating commune areas and buildings, which in return reinforce peace. Increasing the resilience strength of the community is important for the ethic part of workers in the humanitarian field, and helping in formulating standards in a format that the community understands better.

#### Result Eight

The results of the AHP questionnaire show that participatory decision-making is the highest in coordination activities, according to respondents, next is assessment activities, then planning, and the least priority, according to respondents, is implementation activities. However, there is a slight difference between the tested variables; this implies that most experts' opinions lean towards the idea that engaging the community in reconstruction activities is almost equally important in all four fields of decisions. The results of the sensitivity tests show that for at least 84% probability, it is preferable to use community participation in coordination activities than in assessment activities. Then it is preferable to use community participation in planning rather than implementation activities.

#### Result Nine

The results from the Factor Analysis in Chapter Five indicate that there are four types of challenges for participatory decision-making in reconstruction projects after disasters: social challenges, organizational challenges, planning challenges, and enabling conditions challenges. To further investigate the identified patterns, we analyzed the correlation scatter plots. We observe a strong correlation between social challenges, planning challenges, organizational challenges, and participatory decision-making. However, a less evident line for enabling conditions suggests a reasonable uncertainty about whether there is a relation between enabling conditions and participatory decision-making.

#### Result Ten

The results from the Spearman correlation coefficient show a strong correlation of 0.75 between social challenges and managing community participation. Moreover, there is a strong correlation between planning challenges and public transparency and a clear definition of decision types for community participation.

There is a strong correlation between the following variables and organizational challenges for participatory decision-making:

- The representation of marginalized groups.
- The understanding of community participation.
- The decision-making system for micro-level projects.
- The structural systems for approval of community efforts.
- Implementation bodies.

The result aligns with the case study in New Orleans. The institutional arrangements had high levels of bureaucracy that hindered the approval of grassroots initiatives. There were weak reporting mechanisms between decision-making and implementation bodies. Marginalized groups, such as low-income groups, had low participation even in the decision related to demolishing public housing or voucher programs.

#### Result Eleven

According to the severity index and factor analysis, the following variables represent social challenges for participatory decision-making:

- Imposing preconceptions of what is best based on established principles by the experts. (73.9%)
- Absence of a clear process for managing community participation. (72.5)
- Detachment of community organizational system from the institutional structure. (70.5%)
- Conflicting priorities between the affected community and decision-makers that aim for development. (70.3%)
- Lack of organizational structure within the community with public and political support. (68.8%)

#### Result Twelve

There is a relatively high margin difference between the severity indexes of the first-ranking challenge and other challenges; this indicates that an Inadequate coordination mechanism for linking the community with the central decision-making system is the most critical challenge of participatory decision making according to respondents; this aligns with one of the most critical challenges in New Orleans, where the planning was poorly coordinated at the community level. Top decision makers opted to divide the affected region into sections and identified the needs of each section, then compiled the needs into one plan without outlining the priorities according to facts on the ground or the local context.

#### Result Thirteen

According to the computed severity index for the variables in Questionnaire Two, we identify the top measures for effective participatory decision-making:

- Designing flexible, participatory activities for each community according to its socio-political context.
- Evaluating the degree of relevance of the reconstruction projects to community interests or their direct local built environment
- Ensuring a flexible decision-making system for smaller societies to operate in micro projects

- Providing transparency in sharing information on legal and financial constraints to the community to increase credibility and engagement.
- Defining a clear process for managing community participation
- Institutionalization of participatory decision-making through forming committees and engaging community-based organizations,
- Balanced representation of marginalized groups of community and the elite
- Linking organizational decision-making structure to the implementation bodies.
- Adequate living conditions and livelihood for the community in temporary accommodation
- Building capacities of local government in linking community participation to central planning.
- Presence of criteria for choosing priorities among different interests of the community.
- defining the extent and criteria for community participation
- Establishing a decentralized organizational structure to facilitate approval of participatory decisions with less bureaucratic procedures on the district and regional levels.
- Clear definition of roles at the local level
- presence of an organizational structure within the community with public and political support
- the optimum use of community participation in decision making

Some of the mentioned measures align with the features that optimized its efficiency in managing reconstruction in Northern Pakistan, such as ERRA having a high level of decentralization, clear roles, and Institutionalized participatory decision-making. The institutional structure in the case of Indonesia had enough flexibility to allow for community participation. The community had a role in identifying the previous placement of buildings, which was essential to land use planning. In contrast, the bureaucratic and rigid hierarchy in decision-making in federal establishments did not allow for linking the ongoing participatory decision-making with forms of aid released at the federal level; this had the negative outcome of making a plan that, even though it corresponded to the needs of the affected community, was rendered impossible to implement without making huge adjustments.

#### Result Fourteen

According to the computed severity index for the components in Questionnaire, the most critical challenges for participatory decision-making, according to respondents, are related to organizational issues 72.6%.

In short, both the case studies and the results of Questionnaire Two indicate that designing an organizational structure that facilitates community participation is one of the most critical factors for effective community participation.

The challenges related to planning, social, and enabling conditions have close severity index values (68.3%, 68.1%, and 67.9%), respectively. Thus, they compose challenges to participatory decision-making, but it is undetermined which one is more critical.

#### Result Fifteen

According to the respondents on the open questions, additional variables that may represent challenges for participatory decision-making include:

Social and cultural norms, such as allowing women to engage in public discussions or when decision-makers do not have sufficient understanding of how the culture affects the needs of beneficiaries.

Lack of community initiative: this can come from different reasons, such as the free interventions used as the main basis, to the point of maintaining communities irresponsibly, or lack of initiative from expecting the government to implement the recovery project fully ,or from some context which reinforces the lack of community initiative. ,such as a lack of confidence from the community towards decision-makers or poor living conditions.

Other challenges include One size fits all projects, Lack of emergency response plan or assistance delay, Safety issues, Different views coming up during the implementation, and Corruption.

The most frequently reported challenges in the open questions were difficult and slow to implement, representation of groups, and limited decision-making power.

## Result Sixteen

We analyzed the typology of the respondents to test where there might be a difference in the opinions of the community of experts in post-disaster recovery projects. We noted the following observations:

\_The empirical study targeted individuals with academic or practical experience in recovery projects. Countries in which the participants had experience varied between developed countries and developing countries. The variety of countries indicates that the results tend to represent the opinions of the international expert community.

The analysis of the Mann-Whitney test shows no statistically significant differences exist between the samples of staff members and researchers overall except in the (ensuring equity) component. This result indicates that the role of community participation in ensuring equity issues, such as protecting the interests of the vulnerable, avoiding disparities among society layers, and public transparency, all of these issues still have a gap between theory and practice on the role of effects on reconstruction.

Researchers tended to include community participation in considering the community's lifestyle during housing design compared with those who participated in reconstruction projects. They tended to prefer engaging the community in providing strong local workgroups in reconstruction projects, suggesting that the relation between local groups and community participation is different between practice and theory.

The factors emphasized by participants include subjects related to funds, monitoring, coordination, providing information, and capacity of working staff; therefore, we observe that most of the factors emphasized by the sampled participants are related to management; this may indicate that in the community of reconstruction practitioners, management issues are of a high level of importance.

There are no real differences between the individuals who participated in reconstruction projects within the urban settlements and those who participated within the rural settlements. Thus, the locality type, urban or rural, does not influence participatory decision-making.

The rate of agreeing to the planning challenges is higher for urban localities. Such as the Central decision-making system for micro-level projects, Isolating master land use planning from community-level decision-making and decreased participation due to a Prolonged planning process tend to be among the urban challenges for participatory decision-making.



These planning reconstruction issues for urban localities are demonstrated in the case study of the master plan for Banda Aceh. It opted for central decision-making and neglected the socioeconomic and socio-cultural factors. Influenced by macro projects narratives by influential people. The decisions were influenced by economic and political development, were thought at a macro planning level, and did not integrate the micro-planning of neighborhoods in the decisions made.

## Conclusions

The thesis provides information on community participation in built environment planning and redevelopment decisions after disasters. It explains what participatory decision-making is, when it should be used, and how it can benefit the community and stakeholders involved in the planning process. The thesis contributes to helping planners and decision-makers understand the importance of involving the community in different planning decisions and how it can lead to more sustainable and resilient outcomes over the long term. Additionally, it provides information on how to involve communities in decision-making processes.

### When to use participatory decision making

It is recommended to use participatory decision-making when:

1. Linking context with planning decisions.
2. Ensuring equity in decision-making processes.
3. Providing needs that are specific to the community.
4. Considering the architectural identity.

It is also recommended, with moderate importance, to engage the affected community in reconstruction management decisions; community participation can provide a perspective for more diverse options to implement a given policy according to the diverse characteristics of the reconstructed region. There is also moderate importance in engaging the community in decisions related to increasing the capacity of human resources. Community participation has a limited role in urban planning decisions, such as considering the decentralization of reconstructed settlement in services and traffic.

### Linking context with planning decisions.

The malpractices do not always come from mistakes made by one party or by an inferior approach. Still, they could be from the inability of policies to consider factors presented in a specific context. Choosing principles cascades several policies necessary to achieve that principle; it is essential to find out what those policies are and evaluate them under the local context, assess the challenges they face when they are implemented, and implement measures to adverse the malpractice they cause, this needs functioning information, monitoring, and evaluation system that is streamlined

to the main decision making body, this decision making body have a link to implementation bodies and ability to release funds in a decentralized way.

Engaging the community in decisions related to linking context with planning means involving the community in the planning process and considering their knowledge and experiences; it is the most critical role of community participation. Linking local context provides input about the affected area's local context and constraints, giving perspective to the experts' decisions., knowing the preferences, and defining the community's priorities. Moreover, it provides a start for defining priorities to avoid confusion prompted by bureaucratic processes, administration conflict, and complex or unclear policies. Without community participation in linking the local context with planning, planners may overlook important social, economic, and environmental factors that could impact reconstruction outcomes. Therefore, involving the community in such decisions can lead to better planning outcomes that are more relevant to the longer-term development of the built environment according to the socio-economic and socio-cultural contexts.

Furthermore, involving the community in decisions related to linking expertise with local context can help to identify potential challenges or constraints that may not be immediately apparent to outside experts. For example, residents may know environmental conditions or cultural practices that could impact the success of a particular project. By involving the community in these decisions, planners can better understand these issues and work to address them proactively.

### **Ensuring equity in decision-making processes.**

Community participation in ensuring equity decisions increases accountability by increasing transparency on challenges and limitations. It can also give more credibility to governmental decisions. This approach is essential for ensuring that planning decisions are more inclusive and responsive to diverse community's needs.

Engaging the community to achieve equity in decision-making can be achieved mainly through ensuring public transparency during the decision-making process. Ensuring equity can also be achieved by engaging the community in forming strategies that support the vulnerable when relocation is unavoidable and strategies that protect their interests from the impacts of gentrification. And finally, by engaging them in forming strategies that ensure equity in distributing houses.

**Providing needs that are specific to the community.**

Engaging the community in decisions related to the priority of needs means involving the community in the planning process and considering their priority of needs. This approach can help ensure that planning decisions are more effective and sustainable by prioritizing the long-term development that benefits a higher rate of affected people instead of favoring the optimum short-term goals or projects that aim for economic development encouraged by influential groups. Additionally, involving the community in these decisions can help build trust and credibility between government officials and community members, which can be especially important in situations with a history of mistrust or conflict.

Without community participation in forming strategies that ensure equity and relevance to their needs, the resulting plans may not be relevant to the community's needs and preferences, leading to dissatisfaction and resistance to implementation. Community participation enhances the consideration of the community's lifestyle in housing designs, Linking livelihood to housing, and Planning services according to the priority of needs.

**Ensure relevance to the architectural identity.**

In a post-disaster scenario, the scale of destruction causes a sudden and significant change in the built environment; disasters also cause significant demographic changes that trigger economic, social, and cultural changes in the affected areas. All these sudden and significant changes tend to form an opportunity for decision-makers in a top-down hierarchy to push agendas to adopt construction projects that aim for perceived development, such in the slogan "build back better," the combined scale of destruction, and new plans for development tend to cause a significant change in the architectural identity of the affected area and fragmentation of planning, all these lead to changes in the urban fabric that have long term effect on the socio-cultural and socio-economic development of the society.

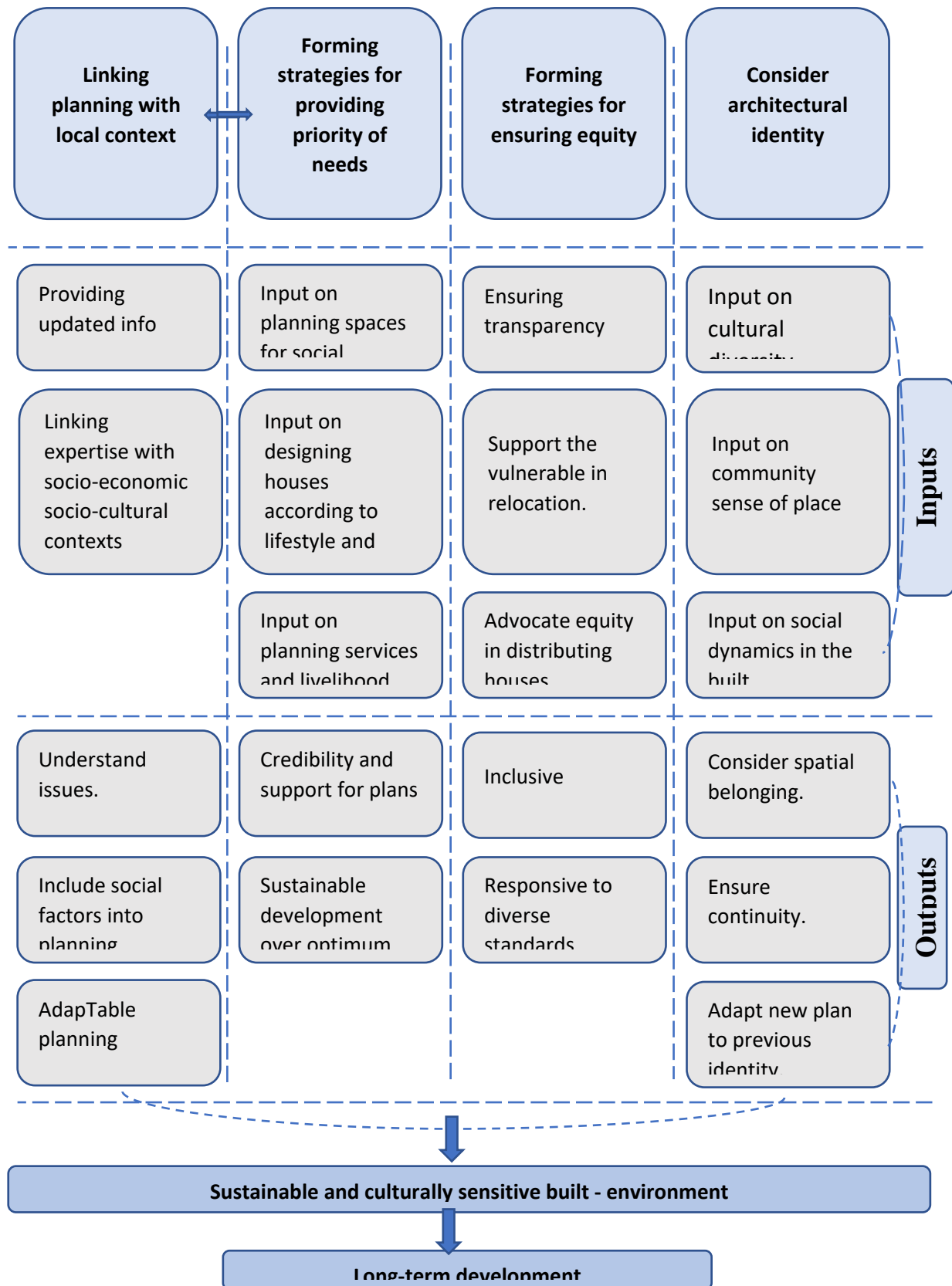
The role of community participation in forming strategies for consideration of architectural identity stems from the crucial role of community participation in decreasing uncertainty in decision-making by providing context on socio-cultural factors that are difficult to assess by an outsider. For example, the community input may provide context on social dynamics in relation to the built environment and consideration of architectural identity, such as considering cultural diversity attributes during planning, considering spatial belonging effects, and the possibility of adverse outcomes on the architectural identity due to reconstruction decisions. Without

community participation in considering spatial belonging effects during planning and relevance to historical architectural identity, Architectural identity may be in disharmony with the cultural identity, or it may not disrupt the relationship between the social dynamics and the built environment. The importance of engaging the community in architectural identity increases with an increased sense of belonging. A few factors affect the sense of belonging: home ownership, length of residence, homogeneous society, political stability, and clusters of affected groups in transitional housing.

There is a high importance on engaging the community in strategies that consider the sense of place and spatial belonging effects. Such as engaging the community in achieving continuity with the previous architectural identity, the affected community determine the elements of the previous built environment characteristics that they prefer to sustain in the newly constructed settlement. This hypothesis is confirmed by the statistical analysis showing a strong direct relationship between two variances (considering spatial belonging effects during planning) and (considering the relevance to historical architectural identity). Community participation in decisions related to architectural identity can ensure that planning decisions adapt previous architectural characteristics to the new conditions after disasters. For example, when planning spaces and facilities, involving the community can ensure that the reconstructed built environment provides continuity with the socio-economic dynamics within the previously built environment, such as planning the public facilities and mixed-use spaces based on the livelihood activities, their vital routes, and adequate spatial location.

Overall, Participatory decision-making increases relevance to the community's needs, increases ownership, and enhances planning for long-term development and sustainability. It also increases social capital and trust between stakeholders. Engaging the community in decisions related to linking expertise with local context is crucial because it can help to ensure that planning outcomes are more sustainable and resilient over the long term, which can help to identify potential risks or challenges that may arise over time and work to address them proactively. It is also important to engage the community in forming strategies that ensure equity and provide for their needs. By involving the community in these decisions, planners can better understand the social, economic, and environmental factors that may impact the success of particular reconstruction projects after a disaster. The thesis emphasizes the importance of considering spatial belonging effects during planning and relevance to historical architectural identity, which can help to preserve cultural heritage and identity. Overall, the larger implications of the study are that participatory decision-

making is a tool for creating more sustainable, equitable, and culturally sensitive urban environments.



*A framework for community participation in decision making*

## **How to use participatory decision making**

The thesis provides some insights into achieving effective community participation in decision-making processes. There are four different types of challenges. The most impactful are the organizational challenges, especially the inadequate coordination mechanism for linking the community with the central decision-making system. There are three other types of challenges with proximate impact on participatory decision-making and significantly less impact than organizational challenges. The three types are social challenges, planning challenges, and enabling challenges.

### **Organizational factors**

The organizational structure is the most crucial factor for the effectiveness of community participation. The main challenge for participatory decision-making is the inadequate coordination mechanism for linking the community with the central decision-making system.

Establishing formal communication lines between decision-makers and the community facilitates creating an organizational structure for community participation. Usually, the communication between the community and decision-makers involves creating a dedicated website or social media platform where residents can access information about the planning process, provide feedback, and ask questions. It can also involve holding regular public meetings or town hall events where residents can engage directly with decision-makers. However, those methods are unreliable in achieving equal and lengthy engagement. We advise creating a participatory decision-making system integrated within the organizational structure, such as forming committees and engaging community-based organizations.

The community participation model in Aceh Indonesia showcased how organized community participation can be part of the organizational structure for reconstruction to provide more flexibility in managing reconstruction based on "facts on the ground" or "local context." Integrating community participation and organizational structure creates opportunities for ongoing engagement and collaboration between the community and decision-makers. This integration can involve creating advisory committees or other formal structures that allow residents and stakeholders to provide ongoing input and feedback throughout the planning process. The following is a suggested example of an organizational structure that facilitates community participation:

The central decision-making, usually on provincial and national levels, formulates the general principles. They inform those policies to the organizations on the local government level, which might be city, or province level, coordinate with the national and international agencies to interpreting policies into a detailed plan, The decision makers related to community participation are mainly in this level, the participatory decision making system include the local government on the top level, giving instructions to the implementation bodies, and instructions to facilitators and enablers, each facilitator is responsible in coordinating between local government decision makers, and the local community workgroup, the facilitator reports the information on local context obtained by the workgroups to decision makers, he also reports decisions to enablers assigned to each workgroup, the enabler formulate the decisions by local government into the detailed activities assigned to the workgroup, activities for each community differ according to the community social factors, enabling conditions, and phase of the reconstruction process. Activities may range from informing the community on decisions to planning and implementing micro-projects. In this case, facilitators report the micro-plans outlined by the community to the decision-makers at the city or province level so they integrate them into the master plan. Facilitators report on how community input was used in the decision-making process. The streamlining of communication, therefore, between the community and decision-makers in two ways. This streamlining is related to the efficient deployment of existing capacity, the clear definition of roles and processes of participatory decision-making, the transparency of constraints and funding management, and flexibility in governance.

In addition to the organizational structure strategies mentioned earlier, several other strategies can be used to create an organizational structure that facilitates community participation.

#### Balanced representation of marginalized groups and the elite

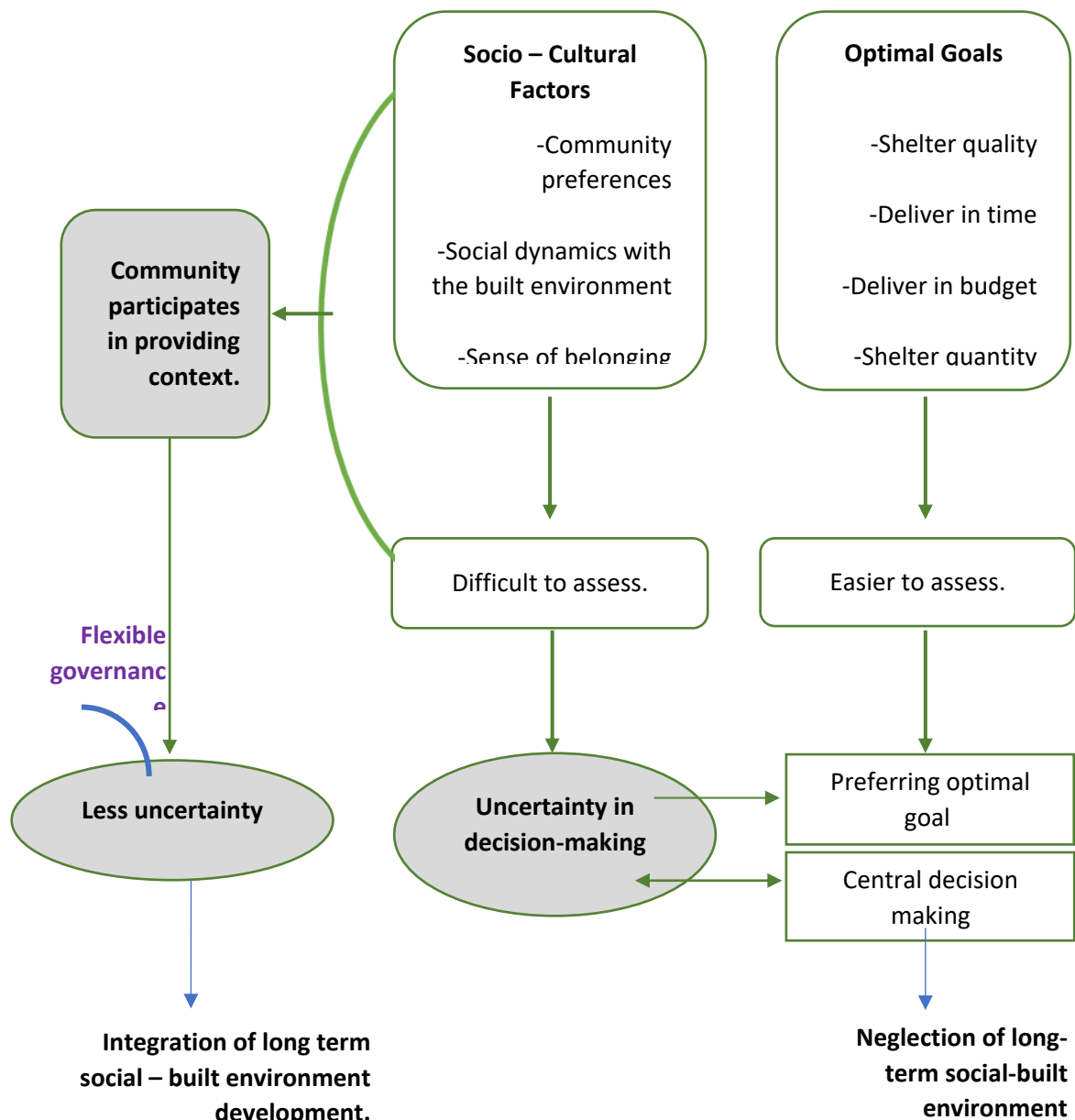
It is important to recognize and address power imbalances within the community. This recognition means taking extra steps to engage marginalized groups, such as low-income residents or those who may not have traditionally been involved in decision-making. It also means being aware of power dynamics within the community and taking steps to ensure that all voices are heard and valued equally, and ensuring that the planning process is inclusive and accessible to all members of the community.



### Ensuring a flexible governance

reconstruction programs tend to lack consideration of the local contexts. This stems from the lack of flexibility in adapting management structures that cope with local differences, such as the lack of decentralized financial mechanisms of international organizations and the inability of the bureaucratic systems to adapt to local preferences. The central decision-making system is highly uncertain because of a lack of information on complex social systems. Because the rigid hierarchy of governmental decision-making leads the decision-makers to impose specific manuals that are unsuitable for every situation, the advantage of participatory decision-making in the Broadmoor neighborhood was that the community had more control over decisions; the community created flexible decision-making mechanisms, allowing them to avoid the rigid hierarchy of governmental decision-making. A degree of flexibility is needed in setting a detailed implementation plan rather than imposing specific manuals. The grassroots initiatives are more able to adapt to the changes in time and place than a centralized decision-making body; they are more aware of the resources available and the needs in every phase of the reconstruction process.

Flexibility in governance ensures less uncertainty in decision-making. Flexibility in governance can be achieved by ensuring enough flexibility in managing funds, which is related to linking funds to implementation, which is in itself related to decentralized funds management, and streamlined link to implementation bodies. Less uncertainty is also related to the presence of information on local context and updated information based on facts on the ground; both can be achieved by down-to-top reporting by the community workgroups while ensuring streamlining their roles within the organizational structure to decrease the fragmentation of their efforts.



*the role of community participation in decision making*

#### Establishing a decentralized organizational structure with links to implementation bodies

The budget is a critical capacity element when making decisions. Even in the early stages, when there is uncertainty in the amount of funding, knowing the approximate funding facilitates making plans faster and more realistic. Linking planning with implementation capacities decreases the failure of plans, such as when the Unified New Orleans Plan delayed approving the plan because the plan was way off the funding available. Linking planning with funding increases transparency and credibility between decision-makers and the affected community by setting realistic goals instead of promoting slogans like "building back better" for public support.

In a more bureaucratic system, such as a federal system, it is advised to rely less on central governance in reconstruction programs after disasters. Instead, a decentralized organizational structure can facilitate the approval of participatory decisions with less bureaucratic procedures on the district and regional levels. It is important to link the decision-making system to the implementation bodies by setting up an implementation governmental body with access to updated information on the ground and independent authority to release funds.

#### Empowering the community to operate in micro projects

Central micro-project decision-making was one of the main challenges for effective community participation, especially in urban reconstruction. It is recommended to empower communities to operate in micro projects. This empowerment means creating opportunities for residents and stakeholders to provide input on smaller-scale projects or initiatives that directly impact their neighborhoods or communities—and integrating their input into the master plan to achieve holistic recovery.

Involving the community in these decisions can help build capacity and empower residents to take an active role in shaping their communities. By providing opportunities for training and education, planners can help to develop local expertise and leadership skills that can be leveraged for future projects, which can help create a more self-sufficient and resilient community over time.

#### Define the extent and criteria for community participation.

Defining the extent and criteria for community participation also facilitates the participatory process. Criteria can involve identifying the specific issues or decisions that will be open to community input and establishing clear guidelines for how community input will be collected and used. Ultimately defining the tasks and activities of each group. The extent of community participation depends on social factors, such as the sense of belonging and the will to participate, the presence of a strong civic society, the presence of organizational structure within the community with public and political support, and agreeing on realistic and specific goals. Depending on these factors, the decision-makers may empower the community in decision-making for micro-projects, or they can have a role in providing information and monitoring.

Alternatively, the community may be informed on decisions to ensure transparency and compliance.

There is a strong relationship between organizational structure and social and planning factors. The open questions analysis shows the importance of those factors on effective community participation; the most trending theme for the challenges of community participation is that engaging the community is difficult and slow to implement; there are also the challenges related to cultural norms, influence by other groups, lack of community initiative, and the 'one size fits all projects. Several social and planning strategies can be used to achieve effective community participation in decision-making processes.

### **Planning factors**

The community participation in decision making does not always lead to efficient decision making, as it was the case in the New Orleans Unified Plan, even though the community engaged in deciding the priorities and approving the plan, the plan itself was constructed as a combination of goals from all neighborhoods, which made the plan unrealistic to implement with the budget available, therefore, a participatory planning approach is suggested, by creating a collaborative decision making process through the districts representatives to reach decisions that integrate the inputs of the community representatives into the development of the whole urban area, this approach can be more beneficial than planning through combining each district needs into one plan, as was the case in the Unified New Orleans Plan, However, it is crucial to adopt this approach with the presence of adequate organizational structure as discussed earlier, the participatory decision-making can be initiated by creating a common ground on key public facilities that serve the community, then revising with the master plan for conflicts and synergies. Few planning strategies increase the effectiveness of participatory decision-making.

Providing transparency in sharing information on legal and financial constraints to the community to increase credibility and engagement.

Transparency is critical in participatory decision-making. Imposing preconceptions of what is by the experts, the lack of financial transparency, and the lack of public information are critical planning challenges for effective community participation. It is essential to build trust between the community and decision-makers. Priorities should be decided based on realistic expectations, which calls for considering the legal and financial constraints when engaging the community in making decisions. This consideration can be achieved by being transparent about the planning process, providing regular updates on progress, and responding promptly to concerns or feedback

from residents and stakeholders. It is also important to provide feedback on how community input was used in the decision-making process. Feedback can involve providing regular updates on how community input was incorporated into planning decisions and explaining why certain suggestions were not adopted. Another strategy is to provide clear and accessible information about the planning process and the issues being addressed. This can involve creating user-friendly materials such as brochures, fact sheets, or infographics that explain complex planning concepts in simple terms. It can also involve using plain language and avoiding technical jargon that may be difficult for non-experts to understand.

#### Clear definition of decision types the community will be engaged in

To avoid a one size fits all participatory decision-making, defining the decision types the community relates to the most is recommended. Community participation in housing reconstruction decision-making after disasters is usually about including their needs in policy-making. However, different types of decisions may benefit from community participation, as discussed earlier (ensuring equity, providing needs, architectural identity, management, and human capacity). By deciding the appropriate type of decision for the community's involvement, the reconstruction process can be optimized, and the frequent challenges of using community participation can be minimized, such as being slow and hard to implement.

#### Integrative decision-making at the urban and district scales.

There are three levels of reconstruction in urban settings, the first level is the reconstruction of infrastructure and public services, the second level is the reconstruction of neighborhoods, and the third level is the reconstruction assistance for individual properties. These three levels influence the decision-making of each other. The status of the neighborhood effect the decision-making for individual aid; rebuilding public services in each neighborhood lead to a higher rate of reconstructed houses on the city level. Community-driven reconstruction is concerned primarily with rebuilding neighborhoods; therefore, integrating community participation within master planning is the basis for integrating neighborhood-level planning into the master plan, linking the three levels of planning.

The interaction between the neighborhood and city-wide planning in the case of New Orleans was poor, a lost opportunity that, if considered, better results could be achieved; hence it is crucial to consider using a bottom-up decision approach in combination with a top-down decision approach, or an integration of plans on the two levels, especially in the presence of existing strong civil society that can organize and play an active role in implementation, or when the society has

specific characteristics that can negatively impact the decision making. Even though the community has an active role in planning, backed by agreeing on shared goals, the local government has the final decision on where to locate the public facilities according to land use.

### Social factors

There is a strong direct relationship between the social attributes of a community and the facilitation of participatory decision-making; social attributes include the sense of belonging, methods of communication of the locals, the ability of a community to make decisions, homogeneous community, and agreeing on realistic and specific goals between groups of the community. There are a few measures that can increase the capacity of the community to participate in decision-making.

#### Building capacities of local government in linking community participation to central planning.

While community participation has a role in increasing capacity, it is necessary to channel these efforts into the formal organizational structure; this means that the local government needs to create new organizational structures, such as facilitators and enablers, which all require resources and tools. Community participation can deplete resources; national and international organizations have a role in building local government's capacity to link community participation to central planning. By building partnerships, they can provide funding, human resources, training, and logistics to facilitate the process.

#### The presence of organizational structure within the community with public and political support

Another strategy for achieving effective community participation in decision-making processes is to build partnerships and collaborations with local organizations and stakeholders. Working with community-based organizations, non-profits, or other groups with a strong community presence can help mobilize residents around specific issues.

A strong civic society is one factor for increased community engagement in improving enabling conditions, such as the case of Katrina, compared to the weaker community engagement in Pakistan and Indonesia. The presence of a strong civil society in terms of capacity and management proved to be a factor in increasing the role of the community in response and their effectiveness in reaching goals. It was noticed that the influence of civil society increases in the presence of some organizational capacity in the community before the disaster.

The capacity of civil society can be increased by providing assistance and creating tools that integrate their efforts into the organizational structure, such as creating local work groups. Local work groups are the nuclear unit of effective community participation. Local work groups facilitate participatory decision-making by engaging the community in monitoring and increasing the flow of information to top decision-makers. Local work groups facilitate participatory decision-making by providing a platform for community members to share their ideas and opinions. This approach can increase accountability by engaging the community in monitoring, which can help implement planning decisions effectively.

By building the capacity of residents and stakeholders, planners can help create a more engaged and empowered community better equipped to participate in decision-making processes. This involves providing workshops or training sessions on leadership development, public speaking, or advocacy skills.

#### The optimum use of community participation in decision making

The optimum use of Participatory decision-making is ensured by engaging the community early and often in planning. Community participation is most important at the beginning of each phase of the reconstruction process. The role of community participation in each phase decreases as the reconstruction progresses. In more detail, community participation is essential in coordination activities, then assessment activities, then planning activities, then implementation activities. Engaging the community in coordination activities is twice as important as engaging them in implementation activities; this coincides with the results that the most critical field to engage the community is linking context with planning with coordination-related activities. This result, therefore, implies that the owner-driven approach, which is related to implementation activities, may not be the most efficient approach to engaging the community. Comparing the efficiency of using community participation between owner-driven and linking needs further study.

#### Defining a clear process for managing community participation

Dividing the participatory decision-making process into phases is one approach for ensuring a clear process for managing community participation. The participatory decision-making process includes dividing the process into phases according to the priorities and resources available. This division increases adaptive planning in the presence of uncertainty, especially on how to use funds in the early stages of recovery. The phases also help better track the progress of reaching goals and link the funding with the decision-making.

Evaluating the degree of relevance of the reconstruction projects to community interests or their direct local built environments,

Another thing that can facilitate participatory decision-making is the presence of mutual goals and vision. Lack of community initiatives and lack of confidence in decision-makers compose challenges to engage the community in reconstruction. The community is more willing to participate when they feel a strong relevance of the project objective to their interests or when the projects directly enhance their local built environment by evaluating the degree of relevance of the reconstruction projects to community interests or their immediate local built environment. The community will be more likely to be invested in its development and have a vested interest in its success. It is recommended to achieve that by defining criteria for choosing priorities among different interests of the community. Furthermore, to be flexible in the planning process. Flexibility means adjusting plans based on feedback from residents and stakeholders and being open to new ideas or approaches that may emerge during the planning process.

Finally, a few enabling conditions affect community participation, such as the environment they temporarily inhabit; providing adequate living conditions in temporary housing can facilitate the process. However, the study shows that the type of locality, whether urban or rural, does not affect participatory decision-making. However, there is a slight difference in a few subjects; When we analyzed each variable, we found that one challenge could be more evident in rural reconstruction. The challenge is the disproportionate representation of marginalized groups of the community and the elite. Another challenge could be more evident in urban reconstruction: "isolating master land use planning from community level decision making.

Other enabling factors are creating regulations for facilitating community participation and meeting logistics. Opportunities like new technologies can also facilitate the participatory process.

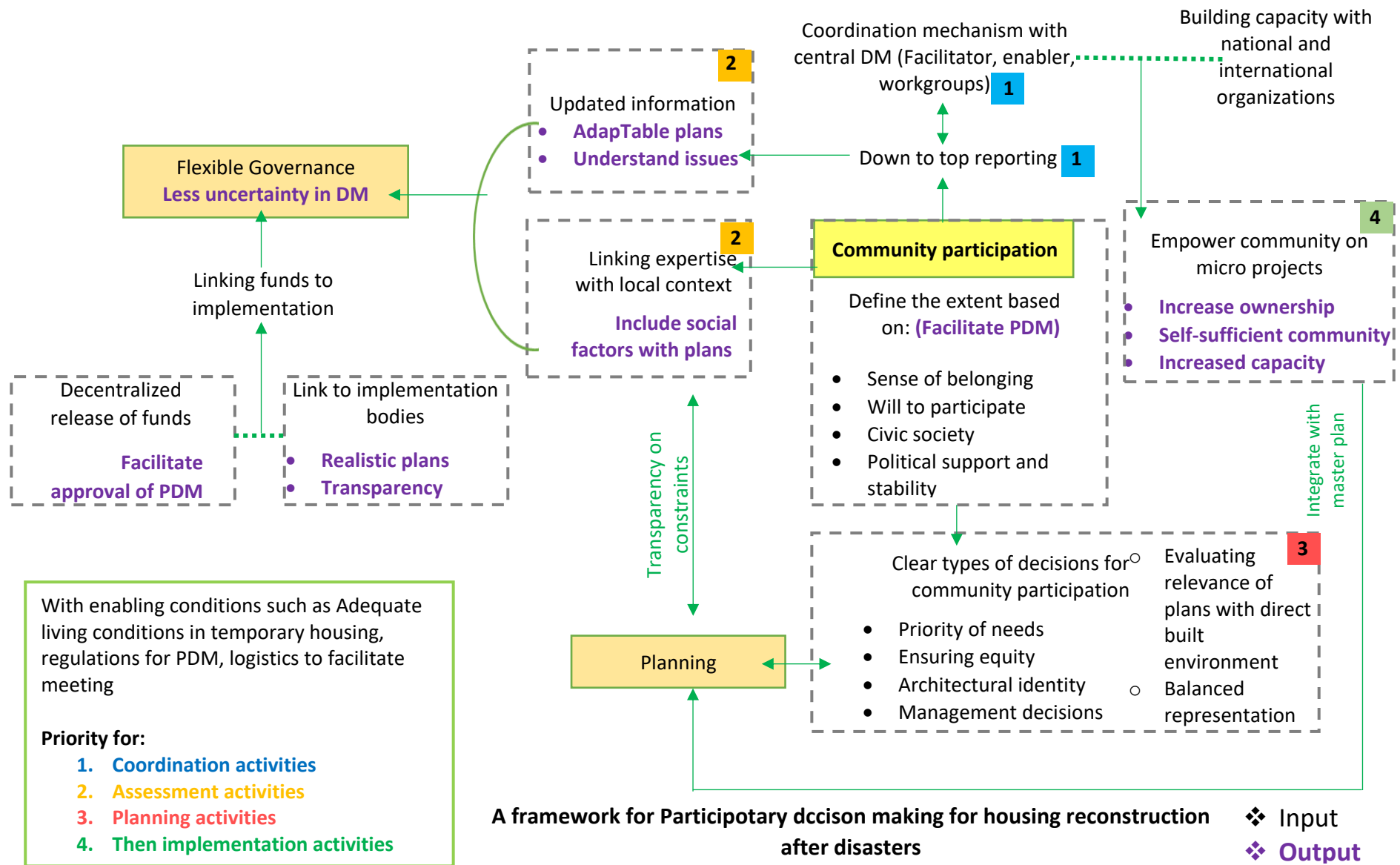
Different challenges can impact participatory decision-making, such as organizational, social, planning, and enabling challenges. By understanding these challenges, we recommended strategies to overcome them and improve community participation in decision-making. Suppose the challenges to community participation in decision-making are not identified and addressed. In that case, it can lead to a lack of engagement from the community in reconstruction projects, leading to dissatisfaction and even resistance. Additionally, without effective community participation, there is a risk of overlooking crucial local knowledge and expertise that could contribute to more successful reconstruction efforts. Therefore, addressing these challenges is crucial for ensuring that reconstruction projects are successful and sustainable over the long term.



## Future studies

Possible future studies related to participatory decision-making in built environment reconstruction include analyzing the impact of cultural and social factors on how to design community participation activities; another possible study is investigating the role of local government and other stakeholders in facilitating community participation for the built environment reconstruction decisions. New research could analyze the mechanism linking the local context with planning using community participation. Alternatively, it could investigate the role of technology and social media in facilitating community participation and engagement in decision-making processes. Finally, researchers could explore how to effectively integrate local knowledge and expertise into reconstruction projects to ensure they are culturally appropriate and sustainable over the long term.

**Participatory housing reconstruction has been increasingly acknowledged and implemented in recent years. Few challenges hindered integrating participatory decision-making into housing reconstruction planning as a formal approach to reconstruction decision-making. However, overcoming those challenges can be overcome through increased experience, increased recognition, and understanding of participatory housing reconstruction, especially in the framework of integrating socio-cultural and socio-economic local context in reconstruction planning, by addressing how to integrate their form of organizational structure into the formal institutional structure of reconstruction, and providing a supportive organizational structure. By following these strategies, decision-makers can help to create more inclusive, equitable, sustainable, culturally rich, and disaster-resilient communities that reflect successful reconstruction outcomes.**



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# Annex 1

## Framework for the reconstruction process

Phase one: Initiating and Enabling.			
Category	Number	Activity	Details
Coordination and management	1	Setting and implementing a participation plan	A list of the essential stakeholders required to participate in the reconstruction is to be made first (Corsellis and Vitale,2008), it is important to engage the smaller and less experienced organizations in the coordination process, they also advise to only engage "limited number of partners with efficient capacity to ensure fast and consistent coordination", (Arshad and Anthar, 2005)
	2	Establishing a governance system.	(Mintzberg,1980) considered the organizational process as manifestation of the coordination mechanism, because it defines the order and interrelation of the activities of each organization, establishing organizational system is a process as well it is essential for creating the coordination mechanism for managing various activities ,Governance structure can consist of number of levels, the most prominent levels usually are the central level authority, and local level authorities, government have an important role in the governance of reconstruction on the central and local level, the central and local government " have a key role in coordination management, to overcome the cultural differences." (Arshad and Athar,2005), it is important to set criteria for choosing key personnel in authority positions, such as them having merit to avoid exploiting the funds, professional expertise in the field of management, or scientific background, also, a united or integrated command authority facilitate clear channels of coordination. (Brassard,et.al,2016)
Assessment	3	Conduction initial assessment	the government delegate and participate in the initial or rapid assessment with other stakeholder's participation, such as the participation of international agencies, local communities, and NGOs, the rapid assessment aims to identify and quantify the affected population and their situation, evaluate the degree and estimated quantity of damaged houses, in order classify the damaged houses and population, and to estimate the costs and resources needed for reconstruction, using maps and surveys as tools .(Bilau, et.al, 2018), also, a coordination assessment is carried out to ensure consistency among participant when developing the coordination structure, that is conducted by categorizing stakeholders based on their objectives, resources, challenges, interconnections, geographic location, etc. (Asian Development Bank, WB, 2005)
Strategy	4	Developing initial strategy	after organizing for the initial planning, context analysis is conducted based on the rapid assessment, the priority of housing reconstruction is discussed, the initial strategy and objectives are defined, then, the process and follow up actions are built up.(Choularton,2007)

Coordination and management	5	Defining responsibilities and roles of stakeholders	the government decide the responsibilities of the participants, and how long it will take for them for their participation to be in active, (Asian Development Bank, WB, 2005) the government may assign different agencies and organizations according to their specialties or interest, or to fill gaps and needs, respond cities assigned could be defined to specific issues only or set of responsibilities, either way, commitments to those responsibilities is secured by the appropriate mechanisms or tools necessary.(Corsellis and Vitale,2008)
	6	Developing coordination mechanism and structure	describing the relationship between the different entities, (Arshad and Athar,2005), the parameters of coordination, and the fields of Coordination, such as building capacity (transferring skills, lessons, budgets, and assets). (Barron,2013), the coordination mechanism must be flexible, coherent, and involve all stakeholders at all reconstruction phases, flexibility means that coordination procedures adapt to the capacity of stakeholders throughout the reconstruction process.(Asian Development Bank, WB, 2005)
	7	Developing mechanisms for information and communication management.	information management form the basis of coordination, and the early information management support consistency of information, to establish an information mechanism , also, the type of information sharing is agreed on to prevent the unauthorized distribution of information, (Arshad and Athar,2005), and to avoid confusion, finally, stakeholders should be informed on the regulations of the government, (Bilau,2017)
Implementation	8	Making the institutional arrangements	After defining participants, their roles, and the authority system, more detailing into the institutional body should be defined, such as establishing local committees for consultations with the affected community, coordination platforms, temporary institutional bodies with specified tasks, (Bilau,2017), and" conduct public information campaign to inform public opinion on the scale and scope of the recovery effort". (Batra and Chaudhry,2005,)
<b>Phase Two: Information Gathering and Analysis</b>			
Coordination and management	9	Set up an assessment institutional arrangement to carry out assessment work	After establishing assessment committee to carry out assessment work, experts, local community, agencies, and the necessary staff are invited to participate in the detailed assessment, some of the international agencies that have expertise in assessments are the UN Disaster Assessment and Coordination (UNDAC) and UN-HABITAT, other institutional arrangements include establishing the managing team that have a role in coordinating efforts. (Fitzpatrick, 2010)
	10	Define roles of participants in assessment	The assessment mechanism and the roles of participants are defined based on the their capacities, finally, the composition of assessment teams are set. (Corsellis and Vitale,2008)
Strategy	11	Identify objectives, scope, coverage area, timeline and resources.	
	12	Develop resource mobilization strategy.	

Assessment	13	Conducting detailed assessment	assessment of houses	Damage scale and type of damage of houses and infrastructure.	(PNDA vol A, 2013), (Da Silva,2010), (barenstien and leeman,2012)
				Socioeconomic situation of the affected community and their livelihood means.	
				Affected communities needs	
				Previous damaged houses features (materials, construction methods, designs, etc.)	
				Affected communities' capacities (skills, ability to participate in construction, etc)	
			Assessment of land issues:	Land identification and ownership statues.	(barenstien and leeman,2012), (Corsellis and Vitale,2008), (Da Silva,2010),
				Number of land owners, landless, renters, informal or illegal people among the displaced.	
				Services and infrastructure locations,	
				Land institutions and mechanisms efficiency prior and post to the disaster in reserving land and property rights.	
	Vulnerability and hazard mapping assessment	Land institutions and mechanisms efficiency prior and post to the disaster in reserving land and property rights.	(Corsellis and Vitale,2008)		
Using satellite and aerial photography technology and backed up by participatory mechanisms and expert assessments."					
Stakeholders Capacity assessments.	This includes, the assessment of the local construction skills and capacity, and the capacity of the government and other institutions involved in managing reconstruction, and assessing potential donors.	(Da Silva,2010),			
Environmental assessment					
	14	Conclude assessment by reviewing for gaps in assessment or needs, cross checking, reporting and sharing recommendations.			
Strategy	15	Data analysis from all sources			
	16	Define local context that will impact reconstruction			
	17	Define needs of affected community			
	18	Define priorities after consultations with the locals			
	19	Define capacities			
	20	Set beneficiaries criteria	Stakeholders decide the criteria for identifying beneficiaries, then assigning staff to begin the procedures of identifying beneficiaries. (Da Silva,2010),		
Implementation	21	identifying beneficiaries			

Phase Three: Planning and Design			
Coordination and management	22	Coordinate with stakeholders to carry out planning procedures,	Engage representatives of the local communities, representative in the planning process, and engage local universities and private sector to provide technical expertise in the planning, ensure the information from the detailed assessment is properly used in the planning, (Da Silva,2010),
	23	Update coordination structure according to agreed plans	Ensure coordination and communication structures and mechanisms are efficient, develop them if necessary according to the agreed plans,
	24	Engage locals in developing standards that balance their needs with the capacity and technical requirements.	Coordinate with the locals to achieve standardized technical standards and codes for the design that balance their needs with technical requirements, funds, resources and capacity available, (BAPPENAS,2005)
Assessment	25	Assess shelter policies	Engage legal experts in identifying gaps in the national law, (Corsellis and Vitale,2008), this includes according to Da Silva addressing inconsistencies with the international law, principles and standards. (Da Silva,2010),
		Assess the strategic objectives, according to local capacity, needs, and local context	
Strategy	26	Develop Objectives	Agree on objectives with stakeholders, Set indicators of achieving the objectives, Develop the monitoring mechanisms to evaluate indicators (Corsellis and Vitale,2008),
	27	Decide on strategies and approaches	Like the type of assistance, methods of implementations, relocation(site selection, the livelihood, socio cultural, environmental, economic impacts), risk reductions plans,
	28	Define standards and codes. (Da Silva,2010),	
	29	Develop standards and codes in detail	Requirements should meet the local, national and international standards, consider the most critical factors that may impact the critical indicators of successful reconstruction, and consider the level of standardization to achieve optimized quality and costs in balance with the beneficiary's requirements, define resources standards. (Da Silva,2010)
	30	Set standards for housing designs (Da Silva,2010),	Housing design standards should meet the cultural, climate, economic, easy access requirements in size, building material and spatial arrangements
			Considering the use of local materials and technologies, or imported ones.
			Considering turning transitional houses if existed to permanent.
			Considering the use of prefabricated elements.
			Easy to maintain houses by the locals.
			Housing designs ability to adapt, extent, adjust to meet future or present beneficiaries' requirements, and the ability for beneficiaries to develop the skills to make the adjustments.
			Considering the use of sustainable technologies like renewable energy and rainwater harvest.
	31	Develop land use plans (Da Silva,2010),	"Integrate micro-planning for settlements into macro land-use and spatial plans." (Corsillies and Vitale, 2008)
			Only plan resettlements when necessary.

			Include risk reduction strategies into land use plans using after analyzing risk assessments and hazards mapping
			Consider the over all local context (livelihood, environmental issues, cultural, etc.)
			Include public buildings, livelihood facilities and infrastructure strategies.
	32	Scenario building	Scenario building is developed where the future impact of the strategy is discussed with their responses, and back up plans as a risk mitigation process, this includes setting the best, worst, and the most likely case scenarios.
	33	Develop resourcing plans, (Corsellis and Vitale,2008),	
	34	Develop programs to resolve land issues	
	35	Listing funding requirements for the implementation stage. (Corsellis and Vitale,2008),	
	36	Define timeframe and budget	
37	Set the following actions		
Implemen- tation	38	Collect resources	"Mobilize logistical means" , develop procurement system, conduct bidding. (De ville de goyet,2006)
	39	Implement programs aiming to resolve disputes related to eligibility to assistance, land issues, and other legal issues. (Corsellis and Vitale, 2008).	
Phase Four: Construction and Delivery			
Coordination and management	40	Make institutional arrangements for implementation	Coordinate responsibilities and roles in implementation phase
			Coordinate responsibilities and roles in implementation phase
			Identifying authority in each area, and communication lines. , (Bilau,2017)
			Monitoring units.
	41	Coordinate implementation issues	Coordinate information sharing on adequate implementation practices. (Azmeri, et.al, 2017.)
Coordinate " an integrated land management policy between different ministries and agencies,(forest, agriculture, urban development, etc)" (Banba and Shaw,2017)			
Conduct regular meetings to set agendas to keep up with the overall strategy and timeframe and feedback to reevaluate strategies. (Barron,2013)			
42	Set and deploy teams, (Bilau, 2017)		
Assessment	43	" Conduct Local capacity assessment during the implementation stage" (Ali,2016.)	
	44	Monitor resources prices and market changes,	
	45	Assess the resources used based on standards developed. , (Bilau,2017)	
	46	Conduct health and safety assessments. (Da Silva,2010),	
	47	Assess completion of objectives after evaluating indicator	
Strategy	48	Develop implementation plans, (Da Silva,2010),	Decide on required labor, equipment and resources.
			Set systems of managing funds, with consideration to economic risks like inflation.
			Set system for managing occurring issues and implications
			Set system for monitoring and evaluation in implementation.
			Draw up handover strategies after completion of objectives, (Corsellis and Vitale,2008).
Implement- ation	49	Initiate and manage construction	
	50	Monitor construction	Map coverage and objectives done
			Evaluate process using indicators set.
	51	Execute handovers	List handover capacity and requirements
			Execute handover

Table 1Framework for the reconstruction process

Enabling Procedures: Phase one		
Category	Activity	Details
Regulations	Preparing a memorandum of understanding	Corsellis and Vitale, (2008) recommend preparing a memoranda of understanding that include all NGOs participating in the reconstruction, the MOU involve the activities that they will engage in, their specified roles and responsibilities, timeframe of participation, and policies or standards that they must abide.
	Regulate the coordination mechanism	Participate with the government in regulating the coordination mechanism overall and the institutional arrangements, this includes "addressing gaps on intergovernmental and cross jurisdictional coordination matters" with the different government sectors and the national and international agencies participating in the reconstruction, (Banba and Shaw,2017), there is also the need for " an updated and comprehensive legal basis for the present and forward-looking requirements of disaster management coordination".(BAPPENAS,2005)
Logistics	Provide facilities, transportation, information tools, and accommodation to facilitate coordination and planning	Providing facilities, transportation, and accommodation means to facilitate coordination and planning, (Arshad and Athar,2005), then Decide on the adequate information tools that facilitate coordination, (internet networks, computers, etc), (Ali,2016).m after analyzing the existing communication tools and requirements for developing those tools based on stakeholders needs, the information tools help to link the different parties to a the information, consultations, and commands needed. (Bilau,2017)
Human resource	Training programs on coordination to the management staff	Training programs on coordination are conducted to the management staff. (Bilau,2017)
Financing	Estimate initial funding	The scale of the initial funding is estimated, (Da Silva,2010)
	Concede coordination budget	The budget for maintaining the coordination plan is conceded, (Corsellis and Vitale,2008)
	Delegate an independent entity to manage financing	An independent entity is delegated to manage and monitor the financing of the reconstruction program. (Bilau,2017)
Monitoring	Establish a coordination monitoring mechanism and system	Engage the appropriate parties to participate in establishing a monitoring system, (usually a third party consultant is advised to manage the monitoring of the reconstruction program), after that, a coordination onitoring mechanism and system is developed and established. (BAPPENAS,2005)
Enabling Procedures: Phase Two		
Logistics	Provide accommodation, transportation to assessment teams	
Human resource	Conduct training on effective assessment.	
Financing	Listing funding requirements for assessment work (Corsellis and Vitale,2008)	
	Assess potential donors and appeal to them to finance assessment work.	



Enabling Procedures: Phase Three		
Category	Activity	Details
Regulations	Developing regulatory systems to resolving land issues	Such as land ownership certification and inheritance right, "establish regulations addressing land use and urban planning, building codes, environmental and resource management, health and safety standards, disaster risk management" (Banba and Shaw,2017)
	Set structure and procedures for complaints, (Da Silva,2010),	
Logistics	Assessing limitations in supplying resources	Assess the sources of limitations in supplying resources, (De ville de goyet,2006)
	Identify alternative sources to overcome the large demand	Identify alternative sources to overcome the large demand,
Human resource	Engage local and international expertise in planning	Using local expertise is essential in understanding the local context to have better decisions in housing recovery, also, the international expertise is preferable (technicians, planners, architect and engineers, etc). (Da Silva,2010),
Financing	Develop long term plans for financial resource planning, mainly by the government. (Ali,2016)	A funding mechanism is developed, the funding mechanism is recommended to allow for flexibility in the spending, allow the funds to reach the local level, and the establishment of uniformed standards and adequate funding amounts to all sources, (Corsellis and Vitale,2008), and allow for quick disbursing, audits should be conducted to monitor expenditures for finances channeled to organizations except for NGOs.
Monitoring	Develop and establish monitoring and evaluation systems, (Bilau,2017)	That include dispute resolving systems and audit systems.
Enabling Procedures: Phase Four		
Category	Activity	Details
Regulations	Regulate quality of construction,(Gfdrr, 2016,)	
	Ensure compliance to contracts.	
	Provide documentation.(Bilau,2017),	
Logistics	Adhere to resourcing plans,	The plan pay include: defining materials to be used and the sufficient amounts, (Da Silva,2010),, seeking supplier, examining suppliers capacity before assigning them, provide storage facilities and secure supply routes, , (Bilau,2017), monitor availability and prices of resources according to the market (Clark, et.al, 2005) provide resources for long lead times to avoid delays, conduct inspection for materials, (Bilau,2017), and provide sanitation and water services in implementation sites.(BAPPENAS,2005)
Human resource	Build capacity	Provide coordination and management center in site,
		Define recruiters capacity (Da Silva,2010),
		Health and safety measures, and other related work in field practice.
		Conduct training programs to familiarize staff to construction techniques, standards, (Fitzpatrick, 2010)
		Conduct training to resourcing personnel to manage procurements(Bilau,2017),

		Conduct training to supervision and inspectors staff on effective monitor control. (Bilau,2017),
		Communicate standards to participating organizations to increase compliance to standards. (Bilau,2017),
		Provide technical guidance. (Bilau,2017),
	Recruit staff and labor (Bilau,2017),	Including local artisans, construction workers, volunteers, beneficiaries,
	Provide adequate supervision	Provide supervisors, define responsibility to evaluate poor construction that needs to be demolished or adjusted, (Da Silva,2010),
	Provide recruitment needs	Provide accommodation or transportation.
<b>Monitoring</b>	Develop and establish monitoring and evaluation systems, (Bilau,2017)	That include dispute resolving systems and audit systems.
	Provide monitoring, to ensure adherence to standards, schedules, and safety measures, (Bilau,2017),	
	Test building materials to ensure adequate specifications,	
	Evaluate quality at key stages (Da Silva),	
	Share monitoring review with related stakeholders to provide feedback and update strategies.	

*Table 2Enabling Procedures for the reconstruction process Framework*

## Annex 2

### Factors Affecting Outcomes in General Cases Studies

		Disaster	Cause	Effect	Ref	Factor affected outcome
1	Lebanon	Civil war, 1990	Contractor driven and low public participation	Prioritizing economic development and profit by attracting foreigners' investments in luxury offices and high-rise residential complexes, and the reconstruction had which led to exclusive spaces not accessible to the different groups living in the city.	(WB,N,D)	<ul style="list-style-type: none"> <li>* Neglecting effects of development projects on the community</li> <li>* Dispersing dynamic interconnections of different parts of the settlements</li> <li>* Neglecting previous mixed use in the new master plan</li> <li>* Disparities among society layers</li> </ul>
2	Lebanon	Civil war, 1990	Beirut Central District took a centralized reconstruction approach, confining a private company named Solidere to rebuild central Beirut, this company prioritized economic investing by attracting " foreign investors to finance luxury offices and apartments within the setting of the city's iconic architecture and prioritized 3the transformation of old souks (markets) into commercial spaces devoid of community life"	<p>*Central Beirut became exclusive to certain classes and not accessible to all socio-economic groups even though it was in a central transportation node prior to the war and used to connect people from different socio-economic backgrounds,</p> <p>*The new urban design detached the area from rest of the city which left failing businesses and empty apartments,</p> <p>*" The typology of large blocks designed for high-rises stood in stark contrast to the low rise, dense fabric that characterized the pre-war architecture of the city center"</p>	(WB,N,D)	<ul style="list-style-type: none"> <li>* Neglecting previous mixed use in the new master plan</li> <li>* Dispersing dynamic interconnections of different parts of the settlement.</li> <li>* Lack of spaces and facilities for social interactions</li> <li>* Disparities among society layers</li> </ul>
3	Mozambique	Earthquake, 2006	People had to move out into distant places from their farms	<p>*Had either to reject the financial support and stay in their destroyed homes,</p> <p>*Or they had to build temporary shelter near their farms to live in during agriculture work seasons, male members of the family could only return home at weekends</p>	(Corsellis and Vitale, 2008)	Lack of livelihood recovery within reconstructed settlement

4	Mozambique	Earthquake, 2006	Lacking centralized planning,	different agencies implemented varied standards which resulted in varied quality, even some houses lacked sanitation, "a lack of adequate technical and legal backing"	(Corseilis and Vitale, 2008)	Inequality in distributing houses
5	India	Orissa cyclone, 1999	the grants were not sufficient for families to build the same house size that they used to have,	lack of satisfaction.	IRP, 2010	Lack of consideration of family structure and lifestyle during housing designs
6	India	Orissa cyclone, 1999	The corruption and political rivalry	hindered reconstruction.	Pelling, et.al, 2004	Lack of political support for reconstruction plans
7	Honduras	Hurricane Mitch, 1998	the government relocate families in new built houses with improvised temporary solutions for infrastructure,	this generated multiple issues like, expensive infrastructure later on, unoccupied houses, poor living condition quality, public health problems in terms of sanitation, increased segregation of residents and lack of employment.	(Lyons, et.al, 2010)	Lack of accompaniment infrastructure reconstruction
8	Honduras	Hurricane Mitch, 1998	the housing designs did not accommodate more than six people, (parents and children only), even though it was a custom to have multiple generations living at the same household.	some members of the extended family were separated and stayed in the high risk areas despite being members of the close family culturally	(IFRC, 2007)	Lack of consideration of family structure and lifestyle during housing design
9	Japan	Kobe earthquake, 1995	weak government role	social factions	(Kobe action plan 2003)	disparities among societal layers

10	Japan	Kobe earthquake, 1995	Even though the destruction scale was more prominent in the rural areas, the demand of housing was more in the city than the suburbs, this demand detected the existence of a socio economic polarization towards urban areas	immigration from rural to urban area	(Amaratunga and Haigh, 2011)	<ul style="list-style-type: none"> <li>* Dependency of reconstructed settlement on neighboring settlements in services, traffic or livelihood.</li> <li>* Lack of linkage of the reconstructed settlement with the surrounding environment.</li> </ul>
11	India, Maharashtra	Latur earthquake, 1993	the new planned settlements did not consider the old city characteristics, while the old settlement had high density layout, houses were made of mud and stone, the new land use plan did not accommodate the social dynamics of the inhabitants, the new settlement had wide streets with a grid pattern, this layout was more spread out than the old village and did not provide the public and private open spaces that were once present in the old village, those open spaces were necessary for the livelihood of the inhabitants, especially for artisans, it was not until several years later that people were able to modify the houses and settlement to accommodate their lifestyle needs.	<ul style="list-style-type: none"> <li>* dissatisfaction among the settler that led to changes in the settlement to accommodate their lifestyle and needs.,</li> <li>* many instances of unoccupied houses, instead, the people built houses using their old methods which did not provide efficient earthquake resistance,</li> <li>* the new modern settlements occupied ten times land than original villages.</li> </ul>	(Jigyasu, 2002)	<ul style="list-style-type: none"> <li>* Lack of consideration of current architectural identity of a settlement in the master plan</li> <li>* Lack of spaces and facilities for social interactions</li> <li>* Neglecting previous mixed use in the new master plan.</li> <li>* Lack of linkage of the reconstructed settlement with the surrounding environment.</li> </ul>
12	Haiti	Haiti earthquake, 2010	<ul style="list-style-type: none"> <li>* lack of leadership</li> <li>* Lack of clear roles of government agencies</li> <li>* diversified spatial preference of stakeholders.</li> </ul>	fragmentation of planning and implementing, each stakeholder acted according to their own preferences,	(McCallin, et.al, 2015)	<ul style="list-style-type: none"> <li>* Planning adequate implementation arrangements</li> <li>* Establishing a dedicated organizational structure for managing reconstruction with enough flexibility in making decisions</li> </ul>
13	Haiti	Haiti earthquake, 2010	designs of houses were not appropriate to the hot tropical climate, they had low ceilings	houses were inadequate for living especially in summer.	(Neiman, 2015)	Neglecting the effects of land nature on reconstructed houses
14	Turkey	Marmara earthquake, 1999	the absence of waste management plan.	made it difficult to do the necessary sorting to recycle, causing harm to the environment.	(Pelling, et.al, 2004)	Harming the environment or depleting natural resource

15	Turkey	Marmara earthquake, 1999	shortfall in employers to monitor and inspect the reconstruction implementation, more over, low compensations amounts that were given to beneficiaries	little to no modifications were made to correct the faults that could compromise the building for future earthquake	(Pelling,et.al,2004)	Lack of capacity of working staff in reconstruction management.
16	Turkey	Marmara earthquake, 1999	neglecting renters or squatters as beneficiaries for support is a common issue in reconstruction programs,	leaving them to be among the vulnerable groups in post disaster housing,	Arslan,et.al,2008	Lack of supportive strategy to protect the vulnerable groups from the impacts of gentrification.
17	Turkey	Marmara earthquake, 1999	design of the houses were inappropriate to the lifestyle of villagers, they were not used to live in small apartments.	Dissatisfaction	Bilau and Witt,2016	Lack of consideration for family structure and lifestyle in housing design
18	Iran	Bam earthquake,2003	policies "did not take into account the existence of polygamous households in the city", they were unable to define the grants whether to be distributed according to family or household	inequalities in distributing houses	Tafti and Tomlinson,2015	Inequity in distributing houses
19	Iran	Bam earthquake,2003	the use of prefabricated steel structural elements considering it is faster to construct with than the traditional techniques of building with mud and brick.	city of Bam had significant changes in its characteristic where it lost the architectural fabric identity of the old city	Barakat,2003	Lack of consideration of current architectural identity of a settlement in master planning

20	Iran	Bam earthquake, 2003	A new president was elected after two years from the start of reconstruction, the new cabinet were more reserved in dealing with the international organizations, furthermore, they established new groups that had new agenda which undermined ongoing efforts, they issued restrictions on the delivery system of housing programs	decreasing the effectiveness of international groups efforts, like BAUC, and inefficiencies in the delivery system.	Arefian, 2018	Lack of political support for reconstruction plans
21	Iran	Bam earthquake, 2003	Poor supervision	defective structures, it was noticed upon inspection that structural joints were not properly made.	Jha et.al, 2010	Inadequate monitoring
22	Iran	Bam earthquake, 2003	demonstrations erupted due to the lack of information sharing on the distribution of relief items.	the UNDP, established a program to facilitate information sharing with the public, the means of distributing information was by using notice boards, web sites in local language, printed newsletters and guidelines.	Arefian, 2018	Lack of public transparency during decision-making process
23	India	Tamil Nadu, 2005 Tsunami	NGOs were not all experienced in reconstruction and implemented inadequate policies that had a negative impact, they demolished thousands of the vernacular houses because they thought they were a downgrade and unsafe, even though they were undamaged, culturally and climate appropriate, and withstood the disaster with less damage than local buildings that were built with concrete.	the plans changed later due to protests from the locals to oppose this plan, the houses built eventually with local timber.	Rawal et.al, 2006	<ul style="list-style-type: none"> <li>* Lack of knowledge of local context</li> <li>* Lack of consideration of current architectural identity</li> <li>* Neglecting sense of belonging</li> </ul>

24	India	Tamil Nadu ,2005 Tsunami	<p>the new built houses were sometimes smaller than 35 m2, with no flexibility for extensions it modifications, the new designs lacked the locally preferable design elements:</p> <ul style="list-style-type: none"> <li>* the astrologers are consulted by the owners to determine the orientation of the entrance, the size of walls, and number of doors and windows, the astrologers even have a role during the construction phase where they preform rituals to protect the inhabitants of harms.</li> <li>* concrete houses are not desirable in their local climate condition</li> <li>* The designs of the new houses neglected the veranda, which is a semi open space where the inhabitants spend their leisure time at day, and it turns into a sleeping room at night</li> <li>* lack of the prayer room, which is used as storage, and people usually sleep in this during monsoon season,</li> <li>* locals like bright colors with geometric patterns which was not considered either.</li> </ul>	Lack of satisfaction with new reconstructed houses	Sankar,2009	<ul style="list-style-type: none"> <li>* Lack of consideration of current architectural identity</li> <li>* Neglecting cultural diversity in master planning.</li> </ul>
25	India	Tamil Nadu ,2005 Tsunami	the contractors opt to clear the land from any houses and trees before starting reconstruction,	loss of vegetation had negative impact on many levels, for they were used as source of income and other uses like generating food, firewood, and industrial wood, they provided thermal comfort and had cultural significance as a notion of health, aesthetics and culture value	Jha et.al, 2010	<ul style="list-style-type: none"> <li>* Harming the environment or depleting natural resource</li> <li>* Lack of consideration for cultural diversity</li> </ul>



26	India	Tamil Nadu ,2005 Tsunami	the coastal area in Tamil Nadu that were considered lucrative for tourism businesses, the policy makers viewed the occurrence of the tsunami as an opportunity to seize the land for economic development projects, another reason fir the relocation plan is the government perceived the vernacular housing type as a "downgrade", and the perceived views of what is considered resistant housing, all of these led to demolishing thousands of undamaged houses which were appropriate culturally, even though some communities preferred to be located into more "modern" houses, other communities preferred staying in site close to their livelihood means,	lots of people rejected the relocation plans that would interrupt their livelihood opportunities, that resulted in the government allowing reconstruction in site while adhering to mitigation policies to prevent future risks.	(Barenstein and Pettet. 2007),(Rawal et.al (2006)	<ul style="list-style-type: none"> <li>* Neglecting effects of development projects on community</li> <li>* Lack of consideration of current architectural identity of settlement in the master plan</li> <li>* Lack of livelihood within reconstructed settlement.</li> <li>* Lack of supportive strategy for the vulnerable when relocation can't be avoided..</li> <li>* Weakening political stability</li> <li>* Neglecting sense of belonging</li> </ul>
27	India	Tamil Nadu ,2005 Tsunami	contractor driven usually have their priority set to making profit, and the lack of supervision on contractors exacerbated the effects of poor skilled labor and poor construction materials, the labor did not use proper curing techniques	the houses built lacked resistant features,	Sankar,2009	Inadequate monitoring
28	India	Gujarat earthquake,2001	contractors used low cost construction methods, such as reusing doors and windows remaining after the earthquake,	not providing monitoring over their work produced lower quality housing.	Bilau,et.al,(a)2015	Inadequate monitoring
29	India	Gujarat earthquake,2001	middle income owners that had more than a single story building were not eligible to aid, planners did not have enough technological knowledge to build more than a single story building and thought it was risky.	Inequality in distributing houses	Vahanvati,2017	Lack of skilled labor

30	India	Gujarat earthquake, 2001	lack of legal framework made the different private agencies and NGOs implement their own approaches.	led them to hire contractors more often.	Vahanvati, 2017	Fragmented planning
31	India	Gujarat earthquake, 2001	building with local skills and materials using traditional technologies have their roots in principles of Gandhi, this culturally motivated building movement had its effects on the reconstruction policies in Gujarat, even though there were instances of NGOs using imported technologies and materials, this led to yet another example of disparity from the local architectural identity.	Instances of people rejecting the houses and modifying houses to their preferences.	Vahanvati, 2017	* Lack of consideration of current architectural identity.  * Neglecting cultural diversity in master planning.
32	India	Gujarat earthquake, 2001	enforcing the housing designs on beneficiaries in Gujarat rather than consolidating with the local practices	led community to reject the government grants and seek the help of the NGOs that were more open to build houses	Vahanvati, 2017	Lack of consideration of family structure and lifestyle during housing design
33	India	Gujarat earthquake, 2001	international NGOs were mostly involved in the rural reconstruction, while urban reconstruction were avoided	exacerbated the issues of urban informal settlements	Sapat and Esnard, 2016	Dispersing urban and rural development in master planning
34	India	Gujarat earthquake, 2001	There were instances of using concrete in building, which was not suitable to the local climate	significantly decreased the satisfaction.	Lizarralde, et.al, 2009	Neglecting the effects of land nature on reconstructed built environment

35	India	Gujarat earthquake, 2001	the local government did not strictly prohibit urban self settlements, proving land ownership were not strictly required, this was contributed to concerns over potential political consequences if people were not given shelter support.	. squatters built informal houses again and the issue of informal settlements were not resolved.	OCHA, 2006	Weakening political stability
36	India	Gujarat earthquake, 2001	in one of the reconstructed relocated settlements , the urban pattern was distributed according to socio economic categories instead of considering the local's social distribution pattern that was more of caste based, as a result, families were isolated from their communities and relatives,	people resulted to sell their new houses	Barenstein, 2005	Lack of spaces and facilities for social interactions.
37	India	Gujarat earthquake, 2001	Timeline of reconstruction affects quality control, for example, rebuilding houses started shortly after the disaster before monitoring strategy was initiated, on the other hand, the quality control declined over time, after 5 years, implementing earthquake resistant houses lost it's priority to have the houses delivered according to time schedule, therefore, the regular inspections were suspended and quality of houses declined.	poor quality houses	(Sapat and Esnard, 2016) & (Tafu and Tomlinson, 2015)	Inadequate monitoring
38	Sri Lanka	2005 Tsunami	inadequacy of coordination in distributing funds.	dependency on the work of NGO	Brassard, et. al, 2016	lack of monitoring capacity to manage funds
39	Sri Lanka	2005 Tsunami	proliferation of NGOs , there was a level of competing between agencies over partnering with the " best" NGO,	the houses reconstructed were negatively of different types, all depending on the donor's preferences, this lack of uniformity in shelter designs led to social tension and discrepancies in the quality of the houses built,	Brassard, et.al, 2016	<ul style="list-style-type: none"> <li>* Linking planning to current architectural identity</li> <li>* Avoiding disparities among society layers</li> <li>* Lack of coordination mechanisms between government, NGOs and community.</li> </ul>

40	Sri Lanka	2005 Tsunami	in the Mahaweli settlements, there were lack of paved roads or water, the people that moved in reported snake bites, malaria and other health problem.	low occupying rate	Brassard,et.al,2016	Lack of accompaniment infrastructure reconstruction
41	Sri Lanka	2005 Tsunami	selected ratio for technical support was 100 households per technical staff, this number proved insufficient due to the fact that household were scattered throughout wide area.	there was variance among quality of houses	Lyons,et.al,2010	Inequity in distributing housing
42	Sri Lanka	2005 Tsunami	generous funds than one town received in SriLanka led families to purchase land and build on their on, those people received shelter aid later by the reconstruction program.	Inequalities in distributing housing	World Habitat,200	Inequity in distributing housing
43	Sri Lanka	2005 Tsunami	despite the substantial participation of the beneficiaries in consulting them for the feasibility of building two story houses, the occupants complained about the housing layouts, such as lack of outdoor spaces, the kitchen did not operate in bio fuel which was the main cooking mean, the designs also used attached toilets instead of the more preferred detached ones.	reduced the satisfaction of the occupant	Coffey and Trignunaryah,2012	Lack of consideration of family structure and lifestyle during housing design
44	Sri Lanka	2005 Tsunami	the new settlement had a relative long distance from the markets which increased the transportation costs, furthermore, households suffered a decrease in assets that were important to their livelihood, like a significant decreased number of animals and access to free fish and vegetables	there options were to immigrate , or families had to obtain money through high interest lending sources, or consume their savings	World Habitat,2009	Lack of livelihood recovery within reconstructed houses.
45	Sri Lanka	2005 Tsunami	prioritizing economic profit in the expense of the livelihood of communities in the policy of "coastal buffer zone" where the communities' had been set to relocate despite their preference is otherwise	led to oppositions to this policy that resulted eventually to change it and allowing to build in situ.	Haigh,et.al,2006	* Neglecting the effects of development projects on community * Neglecting sense of belonging

46	Sri Lanka	2005 Tsunami	in Tamil Nadu and in SriLanka, there were accusations of corruption made by the public to the local authorities	led to changes to the relocation plans.	Sapat and Esnard,2016	* Lack of public transparency during decision making process  * Lack of public support for reconstruction plans.
47	Sri Lanka	2005 Tsunami	in some eastern areas in SriLanka, the delays in reconstruction led people to self build their own houses, this led to serious issues in structural adequacy because the quality control and supervision was not existing in the early stages of construction when it was much needed,	led to cases of houses requiring demolition because they way too compromised structurally to be repaired to adhere to safety codes,	Lyons,et.al,2010	Inadequate monitoring
48	Sri Lanka	2005 Tsunami	the Habitat for humanity SriLanka initiated a program to construct 196 houses in a land provided by the government, the problem in the program arose when timing for housing projects were not aligned with infrastructure projects, it was not until three years later that formal services were provided.	the lack of electricity, sewage, water, or transportation means created issues of infrastructure after families moved.	Jha et.al, 2010	Lack of accompaniment infrastructure reconstruction
49	Sri Lanka	2005 Tsunami	the variations on housing policy throughout Sri Lanka for many different reasons, namely lack of strategies, coordination, capacity or monitoring.	Inequality in distributing houses	Nissanka et.al,2008	Fragmented planning
50	Sri Lanka	2005 Tsunami	Decision makers in SriLanka had prejudices against the traditional houses built in the coast areas which they thought it was more appropriate to have tourist resorts than "poor settlements in such high investment land."	Opposition from community to relocation plans	Lizarralde,et.al,2009	* Neglecting effects of development projects on community .  * Neglecting sense of belonging

*Table 3Factors Affecting Outcomes in General Cases Studies*

## Annex 3

### Questionnaire 1 form

#### Evaluating the relative importance of Community participation in housing reconstruction decision making

The purpose of this questionnaire is to assess the importance of community participation as input in housing reconstruction decision making, this will ultimately contribute to identifying the criteria for effective community participation and when to consider using a higher level of participation as a priority.

Your responses are voluntary and will be confidential. Responses will not be identified by individuals. All responses will be compiled together and analyzed as a group; this questionnaire will only be used as part of Ph.D. thesis.

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1- Name of the participant:

2- Did you participate in a housing reconstruction project, or did you research housing reconstruction in the past 30years?

Yes, I participated in a reconstruction project

☐

Yes, I did a research in housing reconstruction

☐

No

☐

3- In which country\countries was the project undertaken?

4- what has been your role in post-disaster reconstruction?

Beneficiary

☐

Government staff

☐

Private sector staff

☐

NGO staff

☐

Other

**Rate the importance of community participation as input for housing reconstruction decision-making in the following.**

**Please rate on a scale of**

- 1- Low**
- 2- moderately low**
- 3- not sure**
- 4- moderately high**
- 5- high**

<b>In the context of post-disaster reconstruction projects, Community participation is important in making decisions for:</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
5- Defining mechanisms for providing construction materials.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6- Providing reliable information for planning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7- Increasing capacity of skilled labor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8- Increasing capacity of working staff in reconstruction management.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9- Providing tools to increase funds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10- Providing tools for overcoming bureaucratic procedures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11- Linking expertise with local context.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12- Linking expertise with priority of needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13- Creating political support for reconstruction plans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14- Planning adequate implementation arrangements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15- Providing strong local workgroups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16- Increasing monitoring capacity to manage funds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17- Creating mechanisms for monitoring.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18- Linking private and public efforts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19- Developing a timeline for finishing reconstruction projects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24- Linking master plan to current architectural identity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	1	2	3	4	5
25- Considering a relevance to the historical architectural identity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26- Considering cultural diversity characteristics during planning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27- Adaptation of previous mixed use environment to new conditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28- Enhancing sense of place.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29- Considering spatial belonging effects during planning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30- Ensuring equity in distributing houses.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31- Avoiding disparities among society layers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32- Supporting strategy for the vulnerable when relocation is unavoidable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33- Protecting the interests of vulnerable groups from the impact of gentrification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34- Ensuring public transparency during the decision-making process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35- Linking livelihood to housing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36- Planning services according to priority of needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37- Considering family structure during housing design.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38- Considering lifestyle of community during housing design.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39- Providing spaces and facilities to increase social interaction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40- Adapting to future changes and requirements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41- Rationalizing the use of resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42- Supporting political sustainability.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43- Consolidating Urban economy while considering its effects on community.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44- providing response methods to reduce the impact of possible disasters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45- Increasing community's ability to response in possible disasters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



	1	2	3	4	5
46- Providing linkage with surrounding environment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47- Increasing dynamic interconnections with different parts of the settlement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48- Linking urban and rural development during planning.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49- Considering decentralization in services and traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50- Balancing between mass and space during planning land use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51- Compatibility between characteristics of old settlement with the new one.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52- Considering the effects of land nature on reconstruction.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Thank you.**

## Participants in Questionnaire 1

Name	Expert/Researcher	Countries were worked	The Role	Current Position
Adeleye Bamiji Michael	researcher			Department of Urban and Regional Planning, Federal University of Technology, Minna
Alain Bertaud	expert	Iran, El Salvador, Guatemala, Nicaragua, China, Armenia	World Bank staff	An urbanist and a senior research scholar at the NYU Marron Institute of Urban Management.
Albert de la Fuente Antequera	researcher			Civil Engineer, Academic, and Researcher at Polytechnic University of Catalonia
Ali Asgary	researcher			Professor, Disaster & Emergency Management, York University, Toronto, Canada
Alice Yan Chang-Richards	expert	Indonesia	NGO staff	Senior Lecturer with the Department of Civil and Environmental Engineering at the University of Auckland
Alicia Sliwinski	researcher			Associate Professor, Global Studies; Graduate Faculty in Cultural Analysis and Social Theory (CAST)
Amir Shahmohammadian	expert	Iran	Private sector staff	Assistant Professor at IAUCTB, Works on Disaster Risk Reduction, SDG
Amit Kumar	expert	Post Tsunami Construction Project for India, Indonesia and Sri Lanka + Post Earthquake projects in India, Pakistan and Afghanistan	Re-construction Design and Retrofitting	Coordinator- Safe & Resilient Infrastructure (Global) · Aga Khan Agency for Habitat
Anawat	Undisclosed			
Ann-Margaret Esnard	researcher			Professor, Public Management and Policy, Georgia State University
Anonymous	Undisclosed			
Anonymous	researcher			
Ashar Saputra	expert	Indonesia	University, Researcher	Expert consultant for UNOPS, 2012; Co-team Leader for Yogyakarta Resilience Cities, LPPM UGM with World Bank
Avar Almukhtar	researcher			Senior Lecturer at the School of the Built Environment, Oxford Brookes University
Bas Kolen	Undisclosed			Director of Research and Development at HKV, Netherlands.
Bassam A. Tayeh	expert	Palestine	Private sector staff	Professor Associate at Civil Engineering Department - Islamic University-Gaza.
Bernadette Devilat Loustalot	expert	Chile	Government staff	Centre for Architecture, Urbanism and Global Heritage (CAUGH) at Nottingham Trent University (NTU)
Bevaola Kusumasari	researcher			Disaster research centre at Gadjah Mada University · Laporkan

Bilau Abdulquadri Ade	researcher			Assistant Professor Department of Building, Federal University of Technology, Minna, Nigeria
Bipasha Baruah	researcher			Professor and Canada Research Chair in Global Women's Issues at Western University ·Canada
Brent Doberstein	researcher			Associate Professor at the University of Waterloo
Bruria Adini	Undisclosed			Head of the Department of Emergency Management and Disaster Medicine at Tel Aviv University.
Bryan Boruff	researcher			Associate Professor in the UWA School of Agriculture and Environment at The University of Western Australia (UWA).
Camillo Boano	researcher			Professor of Urban Design and Critical Theory at The Bartlett Development Planning Unit, UCL, University College London
Cassidy Johnson	researcher			Professor of Urbanism and Disaster Risk Reduction at the Bartlett Development Planning Unit, UCL - University College London
Chamindi Malalgoda	researcher			Senior Lecturer, School of Arts and Humanities - University of Huddersfield
Christina Batteate	researcher			Outreach Coordinator · UCLA Centre for Occupational & Environmental Health
Christopher Senseney	expert	Afghanistan	Government staff	Outstanding Academy Educator, Civil and Environmental Engineering Department-University of Colorado Boulder
Cut Mutiawati	researcher			Researcher at Syiah Kuala University   UNSYIAH · Department of Civil Engineering
Daniel Félix	researcher			Researcher
Daniel P. Aldrich	researcher			Professor of political science and Director of the Security and Resilience Studies Program at Northeastern University.
David E. Alexander	researcher			Professor of Risk and Disaster Reduction at University College London (UCL).
David O'Brien	researcher			Senior Lecturer, Faculty of Architecture, Building, and Planning · The University of Melbourne
david sanderson	expert	India	NGO staff	Collaborating Professor, Universitat de Catalunya
Didem Güneş Yılmaz	researcher			Dr at Bursa Technical University. Turkey
Dina D'Ayala	researcher			Professor of Structural Engineering at University College London
Diocel Harold Aquino	researcher			Associate Professor, Resilience Engineer, Risk Management, University of the Philippines Diliman, Manila, Philippines
Eduardo Zúñiga-Leyton	researcher			Ph.D., Lecturer, Researcher at Academic School of Industrial Engineering UDP, Santiago, Chile
Edwin Zea Escamilla	researcher			Head of Sustainable Building and Real Estate at the Centre for Corporate Responsibility and Sustainability (CCRS), Switzerland
Emlyn Witt	researcher			Associate Professor of Risk in the Built Environment, Tallinn University of Technology
Erica Seville	researcher			founded and co-leads Resilient Organisations
Erin O'Connell	researcher			Lecturer at the University of Waterloo

Evika Karamagioli	expert	Greece	academia	Scientific Associate, University of Athens, Greece
Ezeokoli Okechukwu Fidelis	researcher			Senior Lecturer, Department of Building, Nnamdi Azikiwe University, Awka, Nigeria
Faizatul Akmar Abdul Nifa	researcher			Lecturer · School of Technology Management & Logistics · UUM College of Business.
Farrah Zuhaira Ismail	researcher			Senior Lecturer. Expertise: Post-disaster Reconstruction, Disaster Management, University Technology MARA (UiTM). MALAYSIA
Fatemeh Farnaz Arefian	expert	Iran + International research on post-disaster reconstruction, such as Pakistan, Iran, Italy, and Philippines	The private sector in the practical work. For research, I have been a researcher.	An experienced interdisciplinary expert in disaster management and reconstruction
Fatemeh Mehdizadeh Saradj	researcher			Professor of Architecture and Environmental Studies, IUST
Fatma Lestari	researcher			Safety Science Professor, University of New South Wales, Sydney Australia.
Francisco Letelier Troncoso	expert	Chile	NGO staff	Professor Universidad Catolica del Maule
François Assad-Déry	Undisclosed			Research Professional at Center RISC-Le Centre de recherche et d'innovation en sécurité civile du Québec
Gayani Karunasena	researcher			Senior Lecturer, School of Architecture & Built Environment, Deakin University, Australia
Giuseppe Forino	researcher			Lecturer in Human Geography, Bangor University
Gregorius Agung Setyonugroho	expert	Indonesia	Private sector staff	Faculty Member of Universitas Atma Jaya Yogyakarta, Indonesia
Gruia Badescu	researcher			Researcher at the University of Konstanz/ Expert in Urban Development at CRIDL /University of Cambridge.
Haruka Tsukuda	expert	Japan	Advisor to local governments	Associate Professor- Architecture and Building Science. Tohoku University, Japan
Hassan Darabi	researcher			Assistant Professor, University of Tehran, Tehran, Iran,
Iffah Farhana Abu Talib	researcher			Senior Lecturer. Expertise: Disaster Risk Reduction and Resilience. University Technology MARA (UiTM).MALAYSIA
Iftekhar Ahmed	researcher			Associate Professor and consultant on urban and runs Final Year Architectural Studio at the University of Newcastle.
iIulia Celentano	researcher			
Ika Afianita	researcher			Researcher Universitas Amikom Yogyakarta

Irene Brisson	researcher			A scholar and designer of built environments invested in the cultivation of just and sustaining places for people
Irene Lill	researcher			Head of Department of Tallinn University of Technology, Tallinn (TTU)
Jagath Manatunge	expert	Sri Lanka, Indonesia, Turkey	Government staff	Senior Lecturer (Grade I), Department of Civil Engineering, University of Moratuwa
Jason von Meding	researcher			Associate Professor at the University of Florida
Jeffrey E. Hanes	researcher			Associate Professor of History, University of Oregon. United States of America
Jesse Hession Grayman	researcher			Senior Lecturer in Development Studies, School of Social Science, University of Auckland
Jestin Nordin	researcher			Director, Disaster Responsive Architecture. The University of Wellington. Pulau Pinang, Malaysia.
John Fien	expert	Australia	Researcher	Professor in the School of Architecture and Urban Design and teaches in the RMIT Master of Disaster
Jorge Inzulza Contardo	researcher			Co-founder of the Academic Network of Urban Design (READU). Urbanism Magazine Editor, University of Chile.
Jorge M Branco	researcher			Assistant Professor at the University of Minho – School of Engineering
joseph Ashmore	expert	Multiple/Global	UN / NGO in various roles	Academics and research staff
Jose Carlos Cardenas Gomez	expert	Peru	Government staff	CONSULTOR INDEPENDIENTE EN GESTIÓN DEL RIESGO DE DESASTRES
Kai Kaiser	expert	Philippines	IFI	Senior Economist, World Bank Group
Kamran Shafique	researcher			Academic in Strategy Entrepreneurship, and Management Disciplines at UQ Business School.
Kanako Iuchi	researcher			Associate Professor, Tohoku University, Japan
Karim Hadjri	Undisclosed			University Teacher in Architecture at the Sheffield School of Architecture.
Kelly Shannon	Undisclosed			Program Director, KU Leuven, Department of Engineering Science, Department of Architecture. Belgique
Keshab Sharma	researcher			Geotechnical Engineer at BCG Engineering Inc., Canada
Kevin Fox Gotham	researcher			Professor of Sociology, Tulane University
Keya Mitra	researcher			Professor Architecture and Planning - Indian Institute of Engineering Science and Technology
Lawrence Vale	researcher			Associate Dean -Head of the Department of Urban at MIT, Massachusetts Institute of Technology
Lee Bosher	researcher			Professor of Disaster Risk Management, WEDC, Loughborough University
Lori Peek	researcher			Director of the Natural Hazards Centre and professor in the Department of Sociology at the University of Colorado Boulder
Lucy Arendt	researcher			Professor of Management in the Donald J. Schneider School of Business & Economics at St. Norbert College
Luke Juran	researcher			Associate Professor. Department of Geography; College of Natural Resources and Environment.

Lyla MEhta	Undisclosed			Professorial Fellow at IDS. She trained as a sociologist (University of Vienna)
Mah Yau Seng	Undisclosed			Associate Professor, Faculty of Engineering, University Malaysia Sarawak
Mahmood Fayazi	expert	Iran	Government staff	Research Associate of Sichuan University, Chengdu (SCU)
Maria Bostenaru Dan	researcher			Dr at “Ion Mincu” University of Architecture and Urban Planning. Bucharest, Romania
Mark Pelling	researcher			Professor in Risk and Disaster Reduction at UCL
Matthew A. Koschmann	researcher			Associate professor in the Department of Communication at the University of Colorado Boulder
Matthew Hollow	researcher			Senior Lecturer in Strategy at The York Management School
Md. Shibly Sadik	researcher			Environmental and Disaster Risk Management specialist with a keen interest in strategic planning, policy, and institutional
MELİKE KALKAN	researcher			Researcher in post-disaster reconstruction area. Especially, in post-disaster temporary housing design strategy and multicriteria
Menaha Thayaparan	researcher			Senior Lecturer, Dept. of Electronic & Telecom., University of Moratuwa
Michael K. Lindell	researcher			An emeritus professor at the Department of Urban Design & Planning, University of Washington Seattle
Miriam Chaiken	Undisclosed			Formerly Dean at William Conroy Honors College -- New Mexico State University
Mittul Vahanvati	researcher			senior lecturer in sustainability and urban planning discipline at RMIT University.
mohammad parva	expert	Iran	Private sector staff	Construction Engineer · AHB (company)
Mohsen Ghafory-Ashtiany	expert	Iran	Research and policy	Founder and President of IIEES: International Institute of Earthquake Engineering and Seismology.
Montserrat Bosch-Gonzalez	researcher			Professor at EPSEB since 1992, attached to the Department of Architecture Technology at the UPC.Universitat Politècnica de Catalunya · Barcelona
Nadia M. Anderson	expert	United States	University advisor to local government	Associate Professor of Architecture and Urban Design and Director of the City Building Lab at the University of North Carolina
Nafisah Al-Huda	researcher			lecturer in the Civil Engineering Department, Engineering Faculty, Syiah Kuala University,
Nataliia Kussul	researcher			Professor at the National Technical University of Ukraine Kyiv Polytechnic Institute
Nawrose Fatemi	expert	Bangladesh	Private sector staff	Associate Professor at the Department of Architecture, University of Asia Pacific (UAP)
Nik Theodore	researcher			Professor of Urban Planning and Policy, University of Illinois Chicago.
NİLÜFER TAŞ	researcher			Professor at Yıldız Teknik University
Nino Chachava	expert	Georgia	NGO staff	Assoc. Prof. at the Faculty of Architecture, Urban Planning and Design of Georgian Technical University.

Nisha Arunatilake	researcher			Director of Research and a fellow at the Institute of Policy Studies (IPS) of Sri Lanka.
Norhazlina Fairuz Musa Kutty	researcher			Vacancy for a Graduate Research Assistance (GRA) at University Pertahanan Nasional Malaysia (UPNM)
Nurul Malahayati	researcher			Ph.D. student at the Faculty of Engineering University of Syiah Kuala
Omur Damla Kuru	researcher			Associate Professor, Florida International University
Paul Harvey	researcher			specialist consultants providing research and policy advice for humanitarian aid agencies and donor governments.
PG	Undisclosed			
Prabin Acharya	researcher			Grad Teaching Assistantship, Department of Civil and Environmental Engineering, University of Alberta
Puan Nik Nurul Hana Binti Hanafi	researcher			Postgraduate Student at the University of Technology Malaysia
Reshma Shrestha	researcher			Assistant Professor at Kathmandu University. Nepal
Richard Ball	expert	New Zealand	Government staff	Key consultants -senior management- Organisational resilience and Risk Specialists
Richard Jimoh	researcher			Professor at the Department of Building, Federal University of Technology, Minna, Nigeria
Rissalwan Habdy Lubis	expert	Indonesia	NGO staff	Knowledge Management Practitioner. Centre of Youth Studies (PUSKAMUDA)University of Indonesia.
Roger Few	Undisclosed			Professorial Research Fellow. Roger is part of our Global Environmental Justice Group. University of East Anglia
ruhizal roosli	expert	Malaysia	Government staff	lecturer and researcher in Disaster and Development at University Sains Malaysia.
S	researcher			
S.M. Amin Hosseini	researcher			Postdoctoral researcher at Delft University of Technology. Netherlands
Sandeeka Mannakkara	expert	Fiji, Australia, New Zealand, Sri Lanka, India, Pakistan	Academic researcher	Disaster Management Researcher, University of Auckland
Sara Pantuliano	Undisclosed			Chief Executive at ODI, Overseas Development Institute
Sebastiaan N. Jonkman	Undisclosed			Professor of Hydraulic Engineering at Delft University.
Seyed Ali Badri	researcher			Associate Prof., Geography and Rural Planning, University of Tehran
Sharifah Akmam Syed Zakaria	researcher			Associate Prof., at University Sains Malaysia.
Sinan Mert Şener	expert	Rep.of Turkey	As a researcher	Architect and a full professor at ITU Faculty of Architecture in Istanbul.
Siri Hettige	researcher			Professor Emeritus of Sociology, University of Colombo
Soojin Kim	researcher			Research Assistant at The University of Texas at Arlington

Sulzakimin Hj Mohamed	researcher			Professor at University Tun Hussein Onn Malaysia (UTHM)
Surya Gyawali	researcher			Associate Professor, Department of Architecture at The Institute of Engineering (IOE), Nepal
TGUP Perera	researcher			Senior Lecturer -University of Sri Jayewardenepura, Sri Lanka
Tharaka Gunawardena	researcher			Research Fellow of the University of Melbourne, Melbourne
Tracy Hatton	researcher			Principal Consultant and joint Managing Director with Resilient Organisations Ltd
Tracy Kijewski-Correa	expert	Haiti, Philippines, India, Mexico, Peru	Academic Researcher	Associate Professor in the Department of Civil Engineering at the University of Notre Dame
Vana Tsimopoulou	researcher			Associate Professor in Asset Management. Delft University of Technology. Netherlands
Walter Gillis Peacock	researcher			Professor at the Department of Landscape Architecture and Urban Planning, Texas A&M University
x	researcher			
Yasmina Wulandari	expert	Indonesia	NGO staff	Resilience Development Initiative -Dirección de correo
Yenny Rahmayati	researcher			Assistant Professor in Architectural Engineering, Prince Sultan University, Riyadh - Saudi Arabia
Yetta Gurtner	researcher			Lecturer and researcher with the Centre for Disaster Studies at James Cook University, Townsville, Australia

*Table 4 The Participants in Questionnaire 1*



## Statements count and percentage in questionnaire 1.

Componenet 1: Management decisions						
		Low	moderately low	not sure	moderately high	high
Q38	N	.	3	15	35	92
	%	.	2.1	10.3	24.1	63.4
Q16	N	1	12	15	42	75
	%	0.7	8.3	10.3	29	51.7
Q10	N	2	5	19	56	63
	%	1.4	3.4	13.1	38.6	43.4
Q37	N	5	8	17	48	67
	%	3.4	5.5	11.7	33.1	46.2
Q14	N	1	16	23	50	55
	%	0.7	11	15.9	34.5	37.9
Q15	N	6	14	16	53	56
	%	4.1	9.7	11	36.6	38.6
Q13	N	2	14	28	55	46
	%	1.4	9.7	19.3	37.9	31.7
Q34	N	3	14	28	53	47
	%	2.1	9.7	19.3	36.6	32.4
Q1	N	6	10	30	55	44
	%	4.1	6.9	20.7	37.9	30.3
Q12	N	4	14	31	52	44
	%	2.8	9.7	21.4	35.9	30.3
Q5	N	4	18	42	44	37
	%	2.8	12.4	29	30.3	25.5
Q6	N	6	23	31	45	40
	%	4.1	15.9	21.4	31	27.6
Componenet 2: Architectural identity						
		Low	moderately low	not sure	moderately high	high
Q21	N	1	8	9	39	88
	%	0.7	5.5	6.2	26.9	60.7
Q19	N	3	4	13	40	85
	%	2.1	2.8	9	27.6	58.6
Q22	N	1	6	14	48	76
	%					

	%	0.7	4.1	9.7	33.1	52.4
Q18	N	6	4	15	50	70
	%	4.1	2.8	10.3	34.5	48.3
Q20	N	3	6	16	54	66
	%	2.1	4.1	11	37.2	45.5
Q17	N	7	8	26	46	58
	%	4.8	5.5	17.9	31.7	40
<b>Componenet 3: (Providing needs):</b>						
		Low	moderately low	not sure	moderately high	high
Q32	N	1	2	9	41	92
	%	0.7	1.4	6.2	28.3	63.4
Q31	N	3	3	11	33	95
	%	2.1	2.1	7.6	22.8	65.5
Q28	N	1	3	13	42	86
	%	0.7	2.1	9	29	59.3
Q29	N	3	4	10	38	90
	%	2.1	2.8	6.9	26.2	62.1
Q30	N	4	3	10	37	91
	%	2.8	2.1	6.9	25.5	62.8
Q33	N	4	4	18	62	57
	%	2.8	2.8	12.4	42.8	39.3
Q44	N	4	13	25	53	50
	%	2.8	9	17.2	36.6	34.5
<b>Componenet 4: (Ensuring equity):</b>						
		Low	moderately low	not sure	moderately high	high
Q27	N	2	6	12	29	96
	%	1.4	4.1	8.3	20	66.2
Q25	N	3	3	13	34	92
	%	2.1	2.1	9	23.4	63.4
Q26	N	5	6	16	31	87
	%	3.4	4.1	11	21.4	60
Q23	N	5	1	18	43	78
	%	3.4	0.7	12.4	29.7	53.8
Q24	N	5	8	16	41	75
	%	3.4	5.5	11	28.3	51.7
Q27	N	2	6	12	29	96

	%	1.4	4.1	8.3	20	66.2
Q25	N	3	3	13	34	92
	%	2.1	2.1	9	23.4	63.4
Q26	N	5	6	16	31	87
	%	3.4	4.1	11	21.4	60
Q23	N	5	1	18	43	78
	%	3.4	0.7	12.4	29.7	53.8
Q24	N	5	8	16	41	75
	%	3.4	5.5	11	28.3	51.7
<b>Componenet 5: (Urban planning considerations):</b>						
		Low	moderately low	not sure	moderately high	high
Q39	N	3	5	23	61	53
	%	2.1	3.4	15.9	42.1	36.6
Q40	N	4	5	22	62	52
	%	2.8	3.4	15.2	42.8	35.9
Q36	N	5	11	35	48	46
	%	3.4	7.6	24.1	33.1	31.7
Q45	N	5	13	30	53	44
	%	3.4	9	20.7	36.6	30.3
Q41	N	6	19	35	41	44
	%	4.1	13.1	24.1	28.3	30.3
Q43	N	8	21	48	38	30
	%	5.5	14.5	33.1	26.2	20.7
Q42	N	9	21	47	43	25
	%	6.2	14.5	32.4	29.7	17.2
<b>Componenet 6: (Human resource):</b>						
		Low	moderately low	not sure	moderately high	high
Q11	N	.	6	8	36	95
	%	.	4.1	5.5	24.8	65.5
Q3	N	2	11	25	51	56
	%	1.4	7.6	17.2	35.2	38.6
Q4	N	2	12	26	59	46
	%	1.4	8.3	17.9	40.7	31.7
<b>Componenet 7: (Linking local context with planning):</b>						
		Low	moderately low	not sure	moderately high	high
Q7	N	1	2	6	23	113

	%	0.7	1.4	4.1	15.9	77.9
Q8	N	.	1	5	31	108
	%	.	0.7	3.4	21.4	74.5
Q2	N	2	4	8	46	85
	%	1.4	2.8	5.5	31.7	58.6
Q7	N	1	2	6	23	113
	%	0.7	1.4	4.1	15.9	77.9
Q8	N	.	1	5	31	108
	%	.	0.7	3.4	21.4	74.5
Q2	N	2	4	8	46	85
	%	1.4	2.8	5.5	31.7	58.6
<b>Componenet 8: (Providing policy support):</b>						
		Low	moderately low	not sure	moderately high	high
Q9	N	5	7	17	45	71
	%	3.4	4.8	11.7	31	49
Q35	N	6	19	26	50	44
	%	4.1	13.1	17.9	34.5	30.3

*Table 5Statements count and percentage in Questionnaire 1*

## Measuring reliability and validity of Questionnaire one

		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Co.1	Q1	43.8138	65.972	0.485	0.908
	Q5	44.0138	65.889	0.483	0.908
	Q6	44.0276	62.235	0.648	0.901
	Q10	43.4552	65.514	0.638	0.901
	Q12	43.8345	62.847	0.687	0.898
	Q13	43.7586	62.087	0.782	0.894
	Q14	43.6690	63.640	0.663	0.900
	Q15	43.6897	61.577	0.719	0.897
	Q16	43.4207	64.537	0.633	0.901
	Q34	43.7724	63.066	0.689	0.898
	Q37	43.5172	63.015	0.685	0.898
	Q38	43.1586	67.482	0.593	0.903

Co.2	Q17	21.5172	15.043	0.661	0.894
	Q18	21.2828	14.746	0.796	0.869
	Q19	21.1034	15.774	0.743	0.878
	Q20	21.2828	15.801	0.712	0.882
	Q21	21.0690	16.023	0.732	0.880
	Q22	21.1586	16.148	0.734	0.880
Co.3	Q28	25.9103	18.416	0.640	0.877
	Q29	25.9172	18.021	0.606	0.881
	Q30	25.9172	16.701	0.784	0.859
	Q31	25.8759	17.012	0.776	0.860
	Q32	25.8276	18.644	0.668	0.875
	Q33	26.2207	17.590	0.639	0.877
	Q44	26.4414	16.401	0.689	0.873
Co.4	Q23	17.3931	11.49	0.753	0.885
	Q24	17.4966	10.752	0.778	0.88
	Q25	17.2483	11.563	0.809	0.874
	Q26	17.3862	10.864	0.771	0.881
	Q27	17.2345	12.014	0.704	0.895
Co.5	Q36	22.4138	27.397	0.651	0.903
	Q39	22.1586	28.093	0.707	0.897
	Q40	22.1793	27.579	0.74	0.894
	Q41	22.5586	25.443	0.774	0.889
	Q42	22.8621	26.3	0.724	0.895
	Q43	22.8138	25.569	0.784	0.888
	Q45	22.4207	26.787	0.712	0.896
Co.6	Q3	8.4483	2.18	0.674	0.563
	Q4	8.5379	2.334	0.626	0.624
	Q3	8.4483	2.18	0.674	0.563
Co.7	Q2	9.3793	1.376	0.421	0.788
	Q7	9.1241	1.457	0.587	0.544
	Q8	9.1241	1.582	0.615	0.537
Co.8	Q9	3.7379	1.32	0.687	.
	Q35	4.1724	1.088	0.687	.

*Table 6The consistency of each of the component factors with the total component factors in questionnaire one*

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	181.7655	771.417	0.583	0.968
Q2	181.1655	780.959	0.548	0.968
Q3	181.5793	778.662	0.494	0.968
Q4	181.669	778.751	0.503	0.968
Q5	181.9655	782.672	0.386	0.969
Q6	181.9793	770.715	0.541	0.968
Q7	180.9103	788.471	0.475	0.968
Q8	180.9103	788.874	0.525	0.968
Q9	181.4276	772.288	0.582	0.968
Q10	181.4069	774.285	0.646	0.968
Q11	181.0828	785.132	0.488	0.968
Q12	181.7862	770.905	0.596	0.968
Q13	181.7103	770.499	0.637	0.968
Q14	181.6207	772.265	0.595	0.968
Q15	181.6414	766.134	0.639	0.968
Q16	181.3724	770.319	0.656	0.967
Q17	181.6345	767.553	0.621	0.968
Q18	181.4	769.825	0.642	0.968
Q19	181.2207	773.479	0.646	0.967
Q20	181.4	767.797	0.738	0.967
Q21	181.1862	776.722	0.6	0.968
Q22	181.2759	773.743	0.678	0.967
Q23	181.3034	772.227	0.638	0.968
Q24	181.4069	764.993	0.698	0.967
Q25	181.1586	768.968	0.752	0.967
Q26	181.2966	763.974	0.725	0.967
Q27	181.1448	773.639	0.644	0.968
Q28	181.1586	781.704	0.556	0.968
Q29	181.1655	774.042	0.648	0.967
Q30	181.1655	773.625	0.639	0.968
Q31	181.1241	776.151	0.614	0.968
Q32	181.0759	782.071	0.595	0.968
Q33	181.469	771.265	0.678	0.967
Q34	181.7241	765.146	0.711	0.967
Q35	181.8621	767.064	0.609	0.968

Q36	181.7793	766.798	0.661	0.967
Q37	181.469	766.32	0.684	0.967
Q38	181.1103	776.779	0.699	0.967
Q39	181.5241	770.946	0.691	0.967
Q40	181.5448	768.5	0.718	0.967
Q41	181.9241	760.543	0.707	0.967
Q42	182.2276	763.233	0.691	0.967
Q43	182.1793	761.37	0.711	0.967
Q44	181.6897	766.118	0.68	0.967
Q45	181.7862	763.253	0.72	0.967

*Table 7 Consistency of each phrase of questionnaire one with the total factors*

		Spearman's rho	P-value	N
Component1	Q1	0.547**	0.000	145
	Q5	0.642**	0.000	145
	Q6	0.714**	0.000	145
	Q10	0.653**	0.000	145
	Q12	0.732**	0.000	145
	Q13	0.818**	0.000	145
	Q14	0.708**	0.000	145
	Q15	0.765**	0.000	145
	Q16	0.666**	0.000	145
	Q34	0.701**	0.000	145
	Q37	0.689**	0.000	145
	Q38	0.575**	0.000	145
Component2	Q17	0.795**	0.000	145
	Q18	0.818**	0.000	145
	Q19	0.797**	0.000	145
	Q20	0.759**	0.000	145
	Q21	0.747**	0.000	145
	Q22	0.712**	0.000	145
Component3	Q28	0.711**	0.000	145
	Q29	0.680**	0.000	145

	Q30	0.763**	0.000	145
	Q31	0.713**	0.000	145
	Q32	0.674**	0.000	145
	Q33	0.740**	0.000	145
	Q44	0.753**	0.000	145
Component4	Q23	0.818**	0.000	145
	Q24	0.828**	0.000	145
	Q25	0.794**	0.000	145
	Q26	0.828**	0.000	145
	Q27	0.732**	0.000	145
Component5	Q36	0.726**	0.000	145
	Q39	0.751**	0.000	145
	Q40	0.746**	0.000	145
	Q41	0.827**	0.000	145
	Q42	0.788**	0.000	145
	Q43	0.847**	0.000	145
	Q45	0.759**	0.000	145
Component6	Q3	0.867**	0.000	145
	Q4	0.824**	0.000	145
	Q11	0.592**	0.000	145
Component7	Q2	0.839**	0.000	145
	Q7	0.701**	0.000	145
	Q8	0.734**	0.000	145
Component8	Q9	0.861**	0.000	145
	Q35	0.938**	0.000	145
**. Correlation is significant at the 0.01 level (2-tailed).				

*Table 8The relationship between each component in questionnaire one and its factors*



Component 1: Management decisions						
		N	Mean	SD	Mean Rank	P-value
Q1	Researcher	99	4.00	1.02	69.19	0.075
	participant	32	3.72	0.89	56.14	
Q5	Researcher	99	3.65	1.10	66.1	0.958
	participant	32	3.66	1.04	65.7	
Q6	Researcher	99	3.66	1.16	67.54	0.399
	participant	32	3.47	1.16	61.23	
Q10	Researcher	99	4.29	0.85	68.48	0.153
	participant	32	4.09	0.82	58.33	
Q12	Researcher	99	3.84	1.04	65.11	0.621
	participant	32	3.94	1.08	68.75	
Q13	Researcher	99	3.89	1.03	64.83	0.513
	participant	32	4.03	0.97	69.63	
Q14	Researcher	99	3.98	1.06	65.97	0.989
	participant	32	4.03	0.93	66.08	
Q15	Researcher	99	4.01	1.16	66.65	0.715
	participant	32	4.00	1.05	64	
Q16	Researcher	99	4.31	0.91	67.98	0.248
	participant	32	4.03	1.12	59.86	
Q34	Researcher	99	4.04	1.01	69.76	0.036*
	participant	32	3.69	0.90	54.36	
Q37	Researcher	99	4.18	0.98	65.4	0.730
	participant	32	4.22	1.01	67.86	
Q38	Researcher	99	4.56	0.75	68.24	0.159
	participant	32	4.41	0.71	59.06	
Component 1	Researcher	99	4.03	0.71	67.56	0.409
	participant	32	3.94	0.62	61.19	
Component 2: Architectural identity						
		N	Mean	SD	Mean Rank	P-value
Q17	Researcher	99	4.08	1.06	67.98	0.266
	participant	32	3.88	1.07	59.88	
Q18	Researcher	99	4.30	0.90	67.65	0.339
	participant	32	4.09	1.06	60.89	
Q19	Researcher	99	4.52	0.76	68.74	0.096

	participant	32	4.22	0.94	57.53	
Q20	Researcher	99	4.28	0.86	66.72	0.676
	participant	32	4.22	0.87	63.77	
Q21	Researcher	99	4.52	0.76	67.43	0.375
	participant	32	4.34	0.94	61.56	
Q22	Researcher	99	4.43	0.73	66.58	0.729
	participant	32	4.34	0.87	64.2	
Component 2	Researcher	99	4.36	0.67	68.55	0.173
	participant	32	4.18	0.72	58.13	
Component 3: Providing needs						
		N	Mean	SD	Mean Rank	P-value
Q28	Researcher	99	4.54	0.72	68.33	0.153
	participant	32	4.34	0.79	58.8	
Q29	Researcher	99	4.49	0.83	67.4	0.389
	participant	32	4.41	0.76	61.67	
Q30	Researcher	99	4.52	0.88	67.93	0.225
	participant	32	4.38	0.83	60.03	
Q31	Researcher	99	4.60	0.78	69.1	0.046*
	participant	32	4.34	0.83	56.41	
Q32	Researcher	99	4.63	0.65	68.98	0.059
	participant	32	4.38	0.75	56.78	
Q33	Researcher	99	4.23	0.87	67.11	0.523
	participant	32	4.19	0.74	62.56	
Q44	Researcher	99	4.09	0.90	68.56	0.152
	participant	32	3.72	1.20	58.09	
Component 3	Researcher	99	4.44	0.57	68.77	0.139
	participant	32	4.25	0.65	57.42	
Component 4: Ensuring equity						
		N	Mean	SD	Mean Rank	P-value
Q23	Researcher	99	4.48	0.77	70	0.017*
	participant	32	4.00	1.14	53.63	
Q24	Researcher	99	4.39	0.90	70.7	0.006*
	participant	32	3.84	1.14	51.45	
Q25	Researcher	99	4.60	0.73	70.15	0.009*
	participant	32	4.16	0.99	53.16	

Q26	Researcher	99	4.47	0.90	70.79	0.004*
	participant	32	3.97	1.09	51.19	
Q27	Researcher	99	4.62	0.71	69.65	0.020*
	participant	32	4.19	1.00	54.7	
Component 4	Researcher	99	4.51	0.64	72.07	0.001*
	participant	32	4.03	0.87	47.22	
Component 5: Urban planning considerations						
		N	Mean	SD	Mean Rank	P-value
Q36	Researcher	99	3.92	1.05	68.38	0.188
	participant	32	3.63	1.10	58.64	
Q39	Researcher	99	4.23	0.78	68.71	0.122
	participant	32	3.97	0.86	57.63	
Q40	Researcher	99	4.20	0.83	68.2	0.209
	participant	32	3.97	0.93	59.19	
Q41	Researcher	99	3.86	1.06	68.82	0.120
	participant	32	3.47	1.22	57.27	
Q42	Researcher	99	3.51	1.07	68.43	0.181
	participant	32	3.19	1.15	58.47	
Q43	Researcher	99	3.53	1.13	66.82	0.651
	participant	32	3.41	1.07	63.45	
Q45	Researcher	99	3.91	1.04	67.18	0.513
	participant	32	3.81	0.93	62.36	
Component 5	Researcher	99	3.88	0.79	68.64	0.160
	participant	32	3.63	0.77	57.83	
Component 6: Providing human resource						
		N	Mean	SD	Mean Rank	P-value
Q3	Researcher	99	4.09	0.99	66.61	0.732
	participant	32	4.03	1.00	64.13	
Q4	Researcher	99	3.98	0.98	66.08	0.964
	participant	32	4.00	0.88	65.75	
Q11	Researcher	99	4.62	0.65	67.92	0.218
	participant	32	4.34	1.00	60.06	
Component 6	Researcher	99	4.23	0.71	67.06	0.568
	participant	32	4.13	0.80	62.72	
component 7: Linking local context with planning						

		N	Mean	SD	Mean Rank	P-value
Q2	Researcher	99	4.46	0.75	65.27	0.657
	participant	32	4.50	0.84	68.25	
Q7	Researcher	99	4.78	0.51	68.29	0.093
	participant	32	4.50	0.84	58.91	
Q8	Researcher	99	4.79	0.41	67.32	0.338
	participant	32	4.66	0.60	61.92	
Component 7	Researcher	99	4.68	0.42	67.1	0.529
	participant	32	4.55	0.67	62.61	
Component 8: Providing political support						
		N	Mean	SD	Mean Rank	P-value
Q9	Researcher	99	4.26	0.95	67.86	0.283
	participant	32	4.03	1.09	60.23	
Q35	Researcher	99	3.81	1.15	66.94	0.602
	participant	32	3.75	1.02	63.08	
Component 8	Researcher	99	4.04	0.96	67.58	0.392
	participant	32	3.89	0.97	61.11	
Significant at the 0.05 level.						

*Table 9 The difference between participants and researchers in reconstruction projects in each component and its factors in questionnaire one*

## Annex 4

### Questionnaire 2 form

#### Challenges of Community Participation in Decision-making in the context of Post-disaster Reconstruction Projects.

The purpose of this questionnaire is to evaluate how much influence different challenges have on community participation in decision making, this will ultimately contribute to developing a framework for participatory decision-making process.

Your responses are voluntary and will be confidential. Responses will not be identified by the individual. All responses will be compiled together and analyzed as a group, this questionnaire will only be used as part of PhD thesis.

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1- Name of the participant:

2- Did you participate in Disaster recovery projects?

Yes, I participated in a reconstruction project. ☐

Yes, I did research in housing reconstruction ☐

No ☐

Both ☐

3- What type of locality the organization was involved in?

Urban ☐

Rural ☐

Both ☐

4- What had been your role in reconstruction projects?

5- Did one of the reconstruction projects you were involved with included community participation in planning?

Yes ☐

No ☐

6- How do you evaluate this experience? Was it effective and useful or obstructive and useless?

7- What was the main reason for not considering community participation in planning?

**Based on your experience in reconstruction projects, how much influence do the following constraints have on community participation in decision making**

**Please rate on scale of**

- 1- Low**
- 2- Moderately low**
- 3- Not sure**
- 4- Moderately high**
- 5- High**

how much influence do the following constraints have on community participation in decision making?	1	2	3	4	5
8- Lack of understanding of community participation in the decision-making process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9- Poor living conditions or livelihood for community in temporary accommodation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10- Lack of national regulations that support community participation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11- Lack of logistical means for conducting meetings, such as transportation, accommodations, and/or technological tools of communication.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12- Disproportionate representation of marginalized groups of community and the elite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13- Central decision-making system for micro-level projects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14- Inadequate coordination mechanism for linking community with central decision-making system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15- A fragmentary structural organization that complicates approval of community efforts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16- Inability to link decision making at the local level to the implementation bodies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17- Detachment of community organizational system from the institutional structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
18- Lack of collective sense of belonging	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19- Inability to adapt to the methods of communication of the locals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20- Lack of confidence in the ability of the community to make decisions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21- Discrimination of decision-makers against minority groups. (Ethnic, religious, racial)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22- Lack of organizational structure within the community with public and political support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23- Decreased participation due to a Prolonged planning process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24- The perceived urgency of reconstruction by decision-makers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25- Absence of a clear process for managing community participation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26- Lack of financial transparency or public information on the reconstruction process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27- Imposing preconceptions of what is best based on established principles by the experts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28- Conflicting priorities between the affected community and decision makers that aim for development.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29- No clear definition of decision types that the community will be involved with.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30- Isolating master land use planning from community level decision making.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

31- Are there any other constraints for community participation in decision making for post-disaster reconstruction projects? Can you share your experience?

**Thank you for your contribution.**

## Participants in Questionnaire 2

Name	Expert/Researcher /Project Staff	projects included community participation	The Role	Current Position
Abdallah Younous Adoum	Researcher and project staff in disaster recovery	yes	Expert member of the commission	RURAL DEVELOPMENT ENGINEER: WATERS AND FORESTS OPTION; Chad
Abdoulaye Hama	project staff in disaster response			Assistant for the Coordination of Education Projects and Programs at Japan International Cooperation Agency
Abdoulhamid Mohamed	project staff in a coordination role	yes	Coordinating the field management	National Coordinator of the project "Development of the Blue Economy in the Comoros (DEBC). Qatar Charity - QC - Director of Projects and Programs
ABDRAMANE OMBOTIMBE	project staff in disaster recovery projects	yes	I participated in the evaluation of the needs of disaster victims after a disaster.	Coordonnateur médical chez ALIMA - The Alliance for International Medical Action. Bamako, Mali
Ahmat Mahamat Issa Wari	project staff in disaster response			one of the managers of CADELAC
aitor zabalgogea zkoa	project staff in disaster response			DOCTORS WITHOUT BORDERS · EMERGENCY. Spain.
Albane Veuve	project staff in disaster recovery projects	yes	Project manager/field coordinator	Country Director. International NGO Safety Organization (INSO) School of Architecture of Paris-Val-de-Seine ..
Alessandro Guarino	project staff in disaster recovery projects	yes	Desk officer for INGO	helpcode. Program Director and Country Coordinator: Yemen
alexandre AKILI	project staff in disaster recovery projects	yes		Epidemiologist Topography World Health Organization. Democratic Republic of Congo
Alfredo Libombo Tomas	Researcher and project staff in disaster recovery	yes	Shelter/Relief Operations	Consultant at Self-employed Mozambique.
Ambroise KOMBO	project staff in disaster response			Humanitarian Affairs Officer at United Nations OCHA, Democratic Republic of the Congo
Amissi longane	project staff in disaster recovery projects	yes	staff member	PHYSICIAN at MINISANTE Rwanda
Ana Maria Pereira	project staff in disaster recovery projects			Information Management Officer United Nations Office for the Coordination of Humanitarian Affairs (OCHA)
ANDRINIAI NA	project staff in disaster recovery projects	yes	Monitoring and Evaluation	Responsible for evaluations and management of national



Ravahambola				databases. FAO in Madagascar
ANN FORTIN	project staff in disaster recovery projects	yes	Emergencies Incident Manager/ Medical Coordinator	Disaster Risk Management. Brazzaville, Brazzaville, República del Congo
Anna Chudovska	project staff in disaster response			Manager of social projects and community development, Psychologist Ukraine
Annette Hearn	project staff in disaster recovery projects			Deputy Head of Office, OCHA South Sudan at UNOCHA. Irlanda
anonymous	project staff in disaster recovery projects	yes	Project manager	
Anonymous	project staff in disaster response			
Arisoa Raharinjato	project staff in disaster recovery projects	yes	Supporting beneficiaries to rebuild houses, community assets, and livelihood	President at NGO FEMIVAZO. Madagascar
Aya Yagan	project staff in disaster recovery projects	yes	Helping Organizations learn & deliver quality programs	consultant with a demonstrated history of working in the research industry.
Ayham Esleem	project staff in disaster recovery projects	yes		trainer with POINT Organization. He has been the director of the establishment of many camps in Syria
Banza Katchelewa Rex	project staff in disaster recovery projects	no	Medical Consultant WHO, Emergency Coordinator	World Health Organization
Beral Zacharie	project staff in disaster recovery projects	yes	My role as Coordinator	Coordinateur de Projet chez Fédération Luthérienne Mondiale Base de Maro Estados Unidos
Bernard Brisse	project staff in disaster recovery projects	yes	Assistant chargé de projet	in charge of programs -AID - International NGO - health cluster CENTRAL AFRICAN REPUBLIC
Bhoj Khanal	project staff in disaster recovery projects	yes	Project Coordinator	Hub Coordinator (Asia & the Pacific) at Lutheran World Federation   World Service   Regional Emergency Response Hub Nepal
BRUNO KOKOU FUGAH	project staff in disaster recovery projects	yes	Designing the project/program and ensuring implementation	Niger (RhPF-WCA) Humanitarian Fund Head of Programme
Charel Becker	project staff in disaster recovery projects	yes	Coordination, M&E	Working with the Humanitarian Team of welthungerhilfe's Pakistan Country Office
Chika Charles Aniekwe	project staff in a coordination role			Head of RSS Stabilization Secretariat, UNDP Sub-Regional Center for West and Central Africa
Clovis Tougma	project staff in disaster recovery projects	yes		Resources Acquisition and Management Director at World Vision Senegal
Cuauhtémoc Abarca Chávez	Researcher and project staff in disaster recovery	yes	Social facilitator	Leader of the Tlatelolco Residents Front and the Tlatelolco Residents

				Coordinator, also of the CUD ( Single Coordinator of Victims.
David Pfrang	project staff in disaster recovery projects	no	Coordination expert and liaison officer	Data scientist at prognostic GmbH. prognostica GmbH Jacobs University Bremen. Wuerzburg, Bavaria, Germany.
Denis Codjo HOUNZAN GBE	project staff in disaster recovery projects	yes	Project Manager and Monitoring officer	Country Director at Jesuit Refugee Service
Didier Sashila	project staff in disaster response			public health specialist at Zone de Santé Tanganyika, Democratic Republic of the Congo.
Dieudonné Wade	project staff in disaster recovery projects	yes	Relèvement après désastre, dans la commune de la province du Logone Oriental par les l'assistance WASH	Project Coordinator at World Vision Chad
Djuma N'Tumba Caetano	Researcher and project staff in disaster recovery	yes		Country representative. /Project leader. COOIAP. National NGO.
Dmytro Drizhd	project staff in disaster recovery projects	yes	Head of the implementing organization	managing director of "New Way", arche noVa's eastern Ukrainian partner organization.
Donatien Bigiraneza	project staff in disaster recovery projects	yes	Program Director	Director Of Operations at World Vision Burundi
Eleonora Kirieieva	project staff in disaster response			Associate Professor of the Department of Economics · Vinnytsia National Agrarian University
Elli Xenou	project staff in disaster recovery projects	yes	Supervisor / Coordinator	Programmer Coordinator - MDM Greece
Farhad Abdollahyan	Researcher and project staff in disaster recovery	yes	Consultant and post-disaster reconstruction methodology instructor	UNOPS Office manager
Florence Apuri Auma	project staff in disaster recovery projects	yes	Community mobilization for behavioral change toward gender equality and respectful relationships	PSEA Coordinator Yuba, Ecuadoria Central, Sudán del Sur
Fousseni Kone	project staff in disaster recovery projects	yes	My organization's contribution was to community health. And we contributed to organizing moving clinics in rural areas.	Economist at Chamber of Commerce and Industry of Burkina Faso
Gaurab Pradhan	project staff in disaster response			Information Management Officer at UNHCR
Genot Luc	project staff in disaster recovery projects	yes	agricultural recovery and support livelihood	Deputy Representative FAO Niger
George Jend	project staff in disaster recovery projects	yes	Livelihoods Advisor	Co-Cluster Coordinator - Emergency Livelihoods Cluster Team

Georgia McPeak	project staff in disaster recovery projects	yes	Program Director	Author   Speaker   Vice President of Content at Growing Leaders Decatur, Georgia, Estados Unidos
Giuliano Stochino-Weiss	project staff in disaster recovery projects	yes	Response Director	Humanitarian and Humanitarian Rapid Response Coordinator Budapest – Support Centre for Ukrainian Refugees
giulio borgnolo	project staff in disaster recovery projects	no	supervisions in project activities	Health and pediatric consultant, eni foundation project manager Mozambique
Grenville Phillips	Researcher and project staff in disaster recovery	yes	Damage assessments, designs (new and strengthening)	Walbrent College Bridgetown, Saint Michael, Barbados
Guy Bungubets hi	project staff in disaster recovery projects	yes	Améliorer la sécurité alimentaire par la réduction des pertes post capture et la promotion de la pisciculture.	Consultant, agro-industry and agro-food, Technology, uses, and health safety of fish. Democratic Republic of Congo
Halidou ALIRA	project staff in disaster response			Head of Mission at Doctors Without Borders Burkina Faso
Hamidou Ahamadou	project staff in disaster recovery projects	yes	Coordination	Emergency Programs and Projects Officer at NGO APBE Niamey, Niger
Hanna Tsvihun	project staff in disaster recovery projects	yes	I am a project coordinator. I facilitate the cooperation of the organization with the local government, contractors etc	Local Project Director in Ukraine
HASINALIV OLA Lancia Aladine	project staff in disaster recovery projects	yes	MEAL OFFICER SENIOR	Socio-organizer assistant at IDEAL. Madagascar
Henintsoa NAMBININ ARINJAKA	project staff in disaster recovery projects	yes	multi-sectoral rapid assessment	Project Officer - Hygiene at WaterAid Madagascar
Hermann Nicolai	project staff in disaster recovery projects	yes	I supervised several projects which had a character of humanitarian-development nexus or stabilization	German Embassy - Ambassador
Houssoube Kakine	project staff in disaster recovery projects	yes	Coordination	Technical expert in strategic business diagnosis (CEMAC) Chad
Ibrahim Almohsine	project staff in disaster recovery projects	yes	Agent terrain	Program Assistant at NGO ADKOUL. Niger
Ieva Kalnina	project staff in disaster response			Member of a multi-tasking team cooperation programmed Estonia - Latvia - Russia
Innocent MUGABO	project staff in disaster recovery projects	yes	Coordinator	UNMISS -JUBA. Yuba, Ecuatoria Central, Sudan del Sur
James Bellamy	project staff in disaster recovery projects	yes	Program Manager	Operations Manager - IFRC Bulgaria, Operations Manager - Ukraine Response, Sofia, Bulgaria
Jamila Nawaz	project staff in disaster recovery projects	yes	Awareness raising, Distribution, Assessments, Monitoring	DRR Specialist Pakistan

Jean Damascene Hategekimana	project staff in disaster response			Lawyer and legal translator. Brussels Metropolitan Area
Jeremia RAZAFIHA RIMANANA	project staff in disaster recovery projects	yes	Responsible of the study department	Coordinator terrain BNGRC (Mananjary)
Jeremiah Kariuki	project staff in disaster recovery projects	yes	Operations Team Lead	Emergency Health Unit (EHU) in South Sudan, Kenya, and Madagascar
Jorge Salamanca	project staff in disaster recovery projects	yes	Technical Officer - Health, Undernutrition, and Food Security	WHO EMT Initiative consultant, Associated Teacher U.Complutense Madrid, ISGlobal
Josef Pfattner	project staff in disaster recovery projects	yes	Project Manager	Ukraine Response Coordinator. Switzerland
Karolina Brach	project staff in disaster recovery projects	yes	Project Manager, Project Coordinator	Shelter/NFI Sector Coordinator at IOM - UN Migration. Bangladesh
Kathie Klarreich	project staff in a coordination role			Founder and Executive Director of Exchange for Change, South Florida
Kazim Shuaib	project staff in disaster recovery projects	yes	coordinating upstream-level strategic planning and implementation as well as supervising the social mobilization component of the reconstruction phase	National Project Coordinator at International Labor Organization Pakistan
Khalid Nadeem	project staff in disaster recovery projects	yes	Managing Shelter projects using Cash and Voucher Modalities	Chief Operating Officer- Solar & EV Infra Business. Delhi, India
Kira Intrator	project staff in disaster response			Lead, Habitat Planning and Innovation. Switzerland
Kona Shen	Researcher and project staff in disaster recovery	yes	Director	GOALS - Founder and Director
Kouadio Armand N'dri	project staff in disaster recovery projects	yes	Data collection activities	Merged CCCM Cluster. Ascc Information Management, Chad
LA	project staff in disaster response			
Lalatiana Rahelisoa	project staff in disaster recovery projects	yes	I coordinated and supervised the responses to the WASH cluster	Wash Officer at UNICEF
Laurent Dufour	project staff in disaster response			LDC Manager - Digital Marketing
Lerisse sapine	project staff in disaster recovery projects	yes	Field engineer	Shelter field engineer at Wold Vision Haiti
LETIZIA VERO	project staff in disaster recovery projects	yes	More than reconstruction, response, and recovery. I covered different roles: head of operations, emergency	Grants and M and E Consultant at Norwegian Refugee Council. Operations Manager and

			advisor, program development and M&E specialist	Programmers IFRC.
Liisa Perkkio	project staff in disaster recovery projects	yes	Program manager	Welthungerhilfe - WHH - Directrice Pays
Luis Rolando Sánchez Valverth	Researcher and project staff in disaster recovery	yes		working with the UN, international NGOs, and private and public Sector organizations.
M. GRAZIA OMBROSI	project staff in disaster recovery projects	yes	Organization and coordination of psychological support groups	Health Coordinator. Iesi, Marcas, Italy
Madelène RABENIARY	Researcher and project staff in disaster recovery	yes	planification	Head of Sub office in the Great South of Madagascar- Public Health specialist - WHO
Mahamadu YATTARA	project staff in disaster recovery projects	yes	Project manager	MGP Program Manager. Niamey, Níger
Mahmoud H Abudraz	project staff in disaster recovery projects	yes		Emergency Program Manager at Secours Islamique France
Mamdouh Tello	Researcher and project staff in disaster recovery	yes		Business and Development Specialist, Chevening Scholar 2021,
Mamoudou Madougou	project staff in disaster response			National director of SOS Children's Villages Niger
Maria Tyshchenko	Researcher and project staff in disaster recovery	yes	needs assessment, accessibility, coordination of work	Founder of the non-governmental organization "Poruch",
Marie-Francoise Timmermans	project staff in disaster recovery projects	yes	Humanitarian protection	Comité International de la Croix Rouge (CICR)
Mariia Guliaieva	Researcher in disaster recovery			Destination coordinator- voluntary work at the Vostok SOS organization. Ukraine
Marilena	project staff in disaster response			
Mario Flores	project staff in disaster recovery projects	yes	Director of Operations	Habitat for Humanity
Mark	Researcher and project staff in disaster recovery	yes	Assessment and determination for ranges of damages in medical infrastructure	
Martin Hammer	project staff in disaster recovery projects	yes	Project architect, construction supervision	Consulting de restructuration et dans l'assainissement d'entreprises.
Martin Nkuna	project staff in disaster recovery projects	yes	Protection of children in recovery efforts	Child Protection Officer at UNICEF Malawi
Mastog Ngarmadji	project staff in disaster recovery projects	yes	The proper execution of the project as project manager of the activities:	ERD Coordinator at International Rescue Committee. Ouagadougou, Center Region, Burkina Faso

MATCHOK E Tchouafen e Vounki	project staff in disaster recovery projects	yes	Construire la résilience, mon rôle est en lien direct avec les données de la planification à la mise en oeuvre et évaluation du projet	Expert en Population, Développement, Autonomisation et Dividende Démographique Yamena, Chad
Mazin AL- Nkshbandi	project staff in disaster recovery projects	yes	Shelter and site planner	UNHCR
MBA KAMENI Christ Gaël	project staff in disaster recovery projects	yes	Je tiens le poste de chargé des programmes Santé Nutrition, EHA et suivi des mouvements de population au sein de mon organisation à Bangui	Program Officer - ARS ORGANIZATION - National NGO
Md. Ashek Mahmud	Researcher in disaster recovery			Software Developer at Stoneridge Estonia
Michaël N. Didama	Researcher in disaster recovery			the publishing director (DP) of the weekly Le Temps
Miguel Urquia	project staff in disaster recovery projects	yes	Different roles on different occasions: Team leader, implementer, evaluator	Interagency Coordinator UNHCR Senior Emergency Shelter Coordinator,. UNHCR Spain
Miquel SERRA SOLER	project staff in disaster response			WHO Operations Support and Logistics Lead in Cox's Bazar
Mireia Termes	project staff in disaster recovery projects	yes	Program Manager and Inter- agency coordination	World Food Programme (WFP) Cash Working Group co-lead
Misheck Mdambo	project staff in disaster recovery projects	yes	On 24 February 2022. We focused on child protection interventions	Ministry of Gender, Social Welfare Officer. Malawi
Mizuho Yokoi	project staff in disaster recovery projects	yes	Project Manager	Project Manager, ICRRP
Moayad Zarnaji	project staff in disaster recovery projects	yes	Quality Management	Quality Expert I Monitoring, Evaluation, Accountability Trainer. Italia
Mohamma d Soharab Hossen	project staff in disaster recovery projects	yes		Sector Co-Coordinator Bangladesh: Cox's Bazar
Mohamme d Chikhaoui	project staff in disaster response			Roving Country Director at International Rescue Committee Montreal, Quebec, Canada
Morena Zucchelli	project staff in disaster recovery projects	yes	assist mayors and national public institutions in the management and preparation of tools	Head of Mission - COOPI
moussa abdou kessaou	project staff in disaster recovery projects	yes	victim	Secrétaire chez Réseau de gestion deressources naturelles/décentralisation Niger
Muhamme d HAMMADY	project staff in disaster recovery projects	yes	Country Director	INGO Humanitarian Advisor - Yemen Türkiye

N/A	project staff in disaster recovery projects	yes	Supervisor	
Naéma Klouche	project staff in disaster recovery projects	yes	Donor and financial coordination	Project Manager   The Initiative - HIV/AIDS, TB & Malaria Paris, Ile-de-France, France
NAHAVITA TSARA Angelo	project staff in disaster recovery projects	yes	Project Coordination	Chef de Volet Habitat chez Croix-Rouge Malagasy. Madagascar
Natalia Gourjii	project staff in disaster response			"Rokada" Charity Fund
Nikolay RIEKHTIN	project staff in disaster recovery projects	yes	Mid-level project management. Coordination work	Aviation Officer (Field Operations), Air Transport Officer at World Food Programme. Sudán
Nirina Fanomezantsoa Andriamboloniaina	Researcher and project staff in disaster recovery	yes	Coordination Cluster	Program Officer   Water, Sanitation and Hygiene (WASH) - chez UNICEF-Madagascar
Noura Fatchima Djibrilla	project staff in a coordination role			Professeur d'histoire et géographie, et Présidente de ACFM Niger chez ACFM Niger
Olena Barchuk	project staff in disaster recovery projects	yes	Coordinator	Social Policy Officer, UNICEF Ucraina Rokada
Omer Kebiwou KALAMEU	project staff in disaster recovery projects	no	My role was to ensure that human rights principles of participation, accountability, leaving no one behind	Ph.D. Representative of the United Nations High Commissioner for Human Rights, Niger
Pamela Londono Salazar	project staff in disaster response			Psychologist, mental health and psychosocial support regional advisor. Cali, Valle del Cauca, Colombia
Papa Kysma Sylla	project staff in disaster recovery projects	no	My role was to design the response and lead it.	International UN Senior Civil Serving Ferney-Voltaire, Auvernia-Ródano-Alpes, France
Phillip Boterere	project staff in disaster recovery projects	yes	Project Manager	Pipeline Officer (Supply Chain Management Shelter/NFI and WASH) Sudán del Sur
PP	project staff in disaster response			
Rabiou Hassan Arzika	project staff in disaster recovery projects	yes	Planification des réponses	Head of the Department: Humanitarian, Resilience, Prevention, and Conflict Management at ONG ADKOUL. Niamey, Niger
Rahat	project staff in disaster recovery projects	yes	Leading implementation of projects	
ramjaha	Researcher and project staff in disaster recovery	yes	Evaluation. Program design. M&E. Fundraising	

RANDIMBI ARISON Jacky Roland	project staff in disaster recovery projects	yes	Planning and Monitoring; impact evaluation	(DRR Program Emergency Specialist) - (Field Office Supervisor) UNICEF coordination
Randrianat oandro Tahina	project staff in disaster response			WASH Emergency Officer at UNICEF. Madagascar
Rassem Edmond	Researcher and project staff in disaster recovery	yes	Site planner, concepteur et contrôleur des infrastructures	WASH Coordinator at International Health Support Center (CSSI) chad
Ratovohery Jimmy Abraham	project staff in disaster recovery projects	no	Coordination	Chef d'antenne de l'Organisation des Nations unies pour l'alimentation et l'agriculture (FAO)
Ravakinion y Andrianjak a	project staff in disaster response			United Nations Office for the Coordination of Humanitarian Affairs (OCHA). IM consultant
Raymond Shady	project staff in disaster recovery projects	yes		Aviation Officer
Rebecca Nakawesi	project staff in disaster recovery projects	yes	Health Manager	Mental Health & Psychosocial Support (MHPSS) Specialist Kampala, Central Region, Uganda
Rene John Dierkx	project staff in disaster recovery projects	yes	Program Manager, Project Manager, Design Lead	Durable Solutions in Planning Sustainable, Resilient, Inclusive, Child-Friendly Cities and Communities. Baghdad Governorate, Iraq
Richard Sennoga	project staff in disaster response			Humanitarian Trends Analyst. Kampala, Central Region, Uganda
Rindra Rakotoaris oa	project staff in disaster recovery projects	yes	I oversaw the coordination of the communication team with several members	CBT Officer at World Food Programme Antananarivo, Région de Analamanga, Madagascar
Ruedi Felber	project staff in disaster response			Gestion des sols et cultures avec des couvertures végétales permanentes. Premières expériences du centre FAFIALA.
Saikat Biswas	project staff in disaster recovery projects	yes	Providing humanitarian assistance and rebuilding their villages, drinking water facilities	National Humanitarian Access Coordinator – ISCG Secretariat. Office of the UN Resident Coordinator (UNRCO)
Sana Dharani	Researcher and project staff in disaster recovery	yes	Design and post-occupancy evaluation	Head of Department - Habitat Improvement. Mumbai, Maharashtra, India
Sandra DURzo	project staff in disaster recovery projects	yes	technical and strategy adviser on recovery and reconstruction of shelter	Senior Urban Shelter and Disaster Risk Management Officer,
Sarah Chisanje	project staff in disaster recovery projects	yes	My role was more in gender and protection mainstreaming	Gender Programme Officer- Malawi
Sehenolala o Anjarasoa	project staff in disaster recovery projects	no	Coordonner la mise en oeuvre des activités de riposte après la crise et les urgences	National Professional Officer- Family and Reproductive Health - WCO Madagascar



ANDRIANA SOLO				
Seraphine Wakana	project staff in a coordination role			UN Resident Coordinator for the Republic of The Gambia
Serhii Slyvka	Researcher in disaster recovery			CEO - Bontoy Ucraina
Shagufta Hayat	project staff in disaster recovery projects	yes	To prepare policy recommendations	Project Management -Islamabad Pakistán
Shahida Perveen	project staff in disaster recovery projects	yes	Project Designing and technical support	Assistance Professor of Physics, Shaheed Benzair Bhutto Women University Peshawar
Shehryar Khan	Researcher and project staff in disaster recovery	yes	Recovery Manager	DM Manager. Pakistan Red Crescent FATA
Sher Shah	project staff in disaster recovery projects	yes	Community-Based Disaster Risk Management Facilitator/Disaster	Lecturer at University of Swat Pakistán
Simon Deprez	project staff in disaster recovery projects	yes	architect, project manager, technical advisor, evaluator	Project manager supporting local authorities at Pays de la Loire International Cooperation Nantes, Pays del Loira, France
Sk. Sabbir Hossain	project staff in disaster recovery projects	yes	Information management	Information Management Officer at IOM - UN Migration Bangladesh
Sony Belizaire	project staff in disaster recovery projects	yes	Digitalize MEAL tools and train surveyor	Haiti Flying Labs Coordinator
Step Haiselden	project staff in disaster recovery projects	yes	Shelter provision for emergency and early recovery phases	Global Emergency Shelter Team Leader at CARE International UK . Reino Unido
Stephen Kinioch Pichat	project staff in disaster recovery projects	yes	post-disaster assessment, leadership in crisis response, and reconstruction	UNDP Deputy Resident Representative in Bosnia and Herzegovina
Sultan Mehmood	project staff in disaster recovery projects	yes	Managing the team	Ph.D., Professor in Development Economics at the Russian School of Economics (NES). Paris
Syed Irtiq Mazhar	project staff in disaster recovery projects	yes	Monitoring of the project being implemented by the NGO	Associate ODM Officer at UNHCR, the UN Refugee Agency Yuba, Ecuatoria Central, Sudán del Sur
Syed Md Taffim	project staff in disaster recovery projects	no	Coordination and Communication	National Communications and Public Information Office - ISCG Secretariat at IOM - UN Migration Bangladesh
sylvie debomy	project staff in disaster recovery projects	yes	Project manager international financing institution	Practice Manager Urban, Disaster Risk Mgt, and Land, AFR Washington, Estados Unidos
Tahiry RADANIEL INA	project staff in disaster recovery projects			Ministère de l'Education Nationale Madagascar - Concepteur
Tatiana DASY	project staff in disaster recovery projects	yes	Designing the project and monitoring of its implementation	Country Director of Save the Children in Madagascar.

Teiggy BIRHULA MONGANE	Researcher and project staff in disaster recovery	yes	Program Manager	Program Manager -Kalemie, Tanganica, República Democrática del Congo
Telesphor Adjeoda	project staff in disaster recovery projects	yes	Je suis le chef projet sur la gestion des risques et catastrophes	Program Manager at Micro Recyc Coopération. Niger
TIEMOGO Harouna	project staff in disaster recovery projects	yes	Notre rôle a consisté à sensibiliser les Partenaires qui interviennent auprès de ces communautés sur l'implication effective des bénéficiaires dans la reconstruction	ONG INTERNATIONALE - Chargé de Programme 2018- maintenant BIO BUSINESS CENTER NIGER - MANAGER 2015-2019
Tobijo Denis Sokiri Moses	Researcher and project staff in disaster recovery	yes	Health resilience-Health education/promotion, peacebuilding, protection mainstreaming	Technical Advisor at The Rescue Initiative-South Sudan (TRI-SS)
Tymur Levchuk	project staff in disaster response			Diversity and inclusion, SDGs and human rights, and LGBTQI-activist. Ukraine
Virginia Moncrieff	project staff in disaster recovery projects	yes	AAP / community engagement	NORCAP surge. Chisinau, Moldavia
Watsala Jayamanna	project staff in disaster recovery projects			Programme Officer (Emergency Response & Resilience) at UNICEF Sri Lanka
Wideline SERRAND	project staff in disaster response			Information Management Analyst at United Nations OCHA
Willem van Burgsteden	project staff in disaster recovery projects	yes	Project Coordinator	Project coordinator educational projects at ETC/Technical Training. Leusden, Utrecht, Netherlands
Yasir Riaz	Researcher and project staff in disaster recovery	yes	I was part of a multi-sector Recovery Needs Assessment and sector lead for "Food Security and Livelihood". In addition to the strategy and proposal development team.	Ph.D. proposal in "Structural Equation Modelling
Younous Abdoulaye	project staff in disaster recovery projects	yes	National consultant	Consultant / Safety net, food security and Social Protection Specialist - FAO Chad
Yuliia Sybirianska	project staff in disaster recovery projects	yes	Coordination of financial and legal aspects of building/reconstruction of housing units in municipalities	Social Policy Officer, UNICEF Ucraina
Yves RASOLOF OHERY	project staff in a coordination role			WASH LEAD at Adra Madagascar
YVETTE KASONGO	Researcher in disaster recovery			Technicienne juridique chez Fortier, D'Amour, Goyette S.E.N.C.R.L. Montreal, Quebec, Canada

## Statements count and percentage in Questionnaire 2

Component 1: Social Conditions						
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Q20	N	9	19	36	64	48
	%	5.1	10.8	20.5	36.4	27.3
Q18	N	7	27	25	83	34
	%	4	15.3	14.2	47.2	19.3
Q10	N	7	21	49	70	29
	%	4	11.9	27.8	39.8	16.5
Q21	N	11	30	32	63	40
	%	6.3	17	18.2	35.8	22.7
Q15	N	8	31	43	63	31
	%	4.5	17.6	24.4	35.8	17.6
Q17	N	9	33	41	69	24
	%	5.1	18.8	23.3	39.2	13.6
Q13	N	12	42	38	57	27
	%	6.8	23.9	21.6	32.4	15.3
Q12	N	15	43	31	59	28
	%	8.5	24.4	17.6	33.5	15.9
Q14	N	29	28	35	47	37
	%	16.5	15.9	19.9	26.7	21
Q11	N	17	42	38	48	31
	%	9.7	23.9	21.6	27.3	17.6
Component 2: Organizational Conditions						
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Q7	N	3	16	22	84	51
	%	1.7	9.1	12.5	47.7	29
Q6	N	4	24	42	66	40
	%	2.3	13.6	23.9	37.5	22.7
Q5	N	10	22	36	66	42
	%	5.7	12.5	20.5	37.5	23.9
Q9	N	6	25	43	63	39
	%	3.4	14.2	24.4	35.8	22.2

Q1	N	14	27	28	69	38
	%	8	15.3	15.9	39.2	21.6
Q8	N	6	28	47	60	35
	%	3.4	15.9	26.7	34.1	19.9
<b>Component 3: Planning challenges</b>						
		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
Q19	N	11	25	30	60	50
	%	6.3	14.2	17	34.1	28.4
Q22	N	7	34	36	65	34
	%	4	19.3	20.5	36.9	19.3
Q23	N	8	32	59	50	27
	%	4.5	18.2	33.5	28.4	15.3
Q16	N	9	43	42	64	18
	%	5.1	24.4	23.9	36.4	10.2
<b>Component 4: Enabling Conditions</b>						
		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
Q2	N	8	28	37	67	36
	%	4.5	15.9	21	38.1	20.5
Q3	N	13	36	35	57	35
	%	7.4	20.5	19.9	32.4	19.9
Q4	N	14	35	41	60	26
	%	8	19.9	23.3	34.1	14.8

*Table 10 Statements count and percentage in Questionnaire 2*

## Measuring reliability and validity of Questionnaire one

		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Component1	Q10	30.5455	50.089	0.564	0.84
	Q11	30.8807	48.62	0.525	0.843
	Q12	30.8352	46.641	0.669	0.83
	Q13	30.8182	47.612	0.637	0.833
	Q14	30.875	46.35	0.593	0.837
	Q15	30.6307	50.063	0.514	0.844
	Q17	30.6989	54.612	0.221	0.866
	Q18	30.4489	47.757	0.698	0.829
	Q20	30.375	49.276	0.553	0.841
	Q21	30.5568	47.7	0.621	0.834
Component2	Q1	18.2955	14.621	0.521	0.763
	Q5	18.1932	15.38	0.472	0.774
	Q6	18.1591	15.483	0.528	0.759
	Q7	17.875	15.55	0.585	0.748
	Q8	18.2955	14.998	0.566	0.75
	Q9	18.2159	14.879	0.582	0.746
	Q1	18.2955	14.621	0.521	0.763
Component3	Q16	10.4432	7.837	0.432	0.753
	Q19	10.0227	6.399	0.617	0.653
	Q22	10.1818	6.767	0.615	0.655
	Q23	10.3466	7.359	0.532	0.702
Component4	Q2	6.6477	4.195	0.33	0.631
	Q3	6.8182	3.327	0.482	0.416
	Q4	6.9091	3.569	0.454	0.461

*Table 11 Consistency of each variable of the component with the total component variables in questionnaire two*

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	76.2216	211.442	0.458	0.906
Q2	76.1932	220.374	0.224	0.91
Q3	76.3636	215.033	0.35	0.908
Q4	76.4545	212.604	0.441	0.906
Q5	76.1193	211.157	0.499	0.905
Q6	76.0852	212.936	0.492	0.905
Q7	75.8011	211.475	0.594	0.903
Q8	76.2216	209.053	0.601	0.903
Q9	76.142	208.545	0.617	0.902
Q10	76.2045	209.009	0.638	0.902
Q11	76.5398	208.833	0.515	0.904
Q12	76.4943	205.326	0.632	0.902
Q13	76.4773	206.914	0.612	0.902
Q14	76.5341	204.502	0.576	0.903
Q15	76.2898	212.07	0.488	0.905
Q16	76.5114	213.154	0.465	0.905
Q17	76.358	220.94	0.214	0.91
Q18	76.108	205.594	0.718	0.9
Q19	76.0909	205.775	0.629	0.902
Q20	76.0341	209.485	0.558	0.903
Q21	76.2159	206.822	0.606	0.902
Q22	76.25	207.96	0.611	0.902
Q23	76.4148	211.741	0.514	0.904

*Table 12 Consistency of each phrase of questionnaire two with the total questionnaire.*

Component 1: Social challenges								
		N	Mean	SD	Mean Rank	P-value	Mann-Whitney Test	
							I – J	P-value
Q10	Both	93	3.6022	1.06465	70.98	0.263 <sup>b</sup>		
	Rural	33	3.3030	1.01504	59.92			
	Urban	8	3.1250	1.55265	58.25			
Q11	Both	93	3.2688	1.27807	70.07	0.483 <sup>b</sup>		
	Rural	33	3.0000	1.29904	62.36			
	Urban	8	2.8750	1.35620	58.81			
Q12	Both	93	3.2473	1.27395	67.90	0.953 <sup>b</sup>		
	Rural	33	3.2121	1.05349	65.88			
	Urban	8	3.2500	1.66905	69.50			
Q13	Both	93	3.2366	1.21044	67.12	0.963 <sup>b</sup>		
	Rural	33	3.2727	1.15306	67.74			
	Urban	8	3.3750	1.30247	70.88			
Q14	Both	93	3.3011	1.45800	69.81	0.462 <sup>b</sup>		
	Rural	33	3.1212	1.34065	64.11			
	Urban	8	2.7500	1.58114	54.69			
Q15	Both	93	3.5161	1.07958	70.26	0.424 <sup>b</sup>		
	Rural	33	3.2727	1.03901	60.53			
	Urban	8	3.2500	1.66905	64.13			
Q17	1. Both	93	3.6129	1.04291	73.51	0.014 <sup>b*</sup>	1 – 2	0.018*
	2. Rural	33	3.1212	0.99240	55.89		1 – 3	0.045*
	3. Urban	8	2.7500	1.16496	45.56		2 – 3	0.407
Q18	Both	93	3.6667	1.08681	69.10	0.732 <sup>b</sup>		
	Rural	33	3.5455	1.00284	63.35			
	Urban	8	3.5000	1.41421	66.00			

Q20	Both	93	3.6774	1.17178	68.59	0.840 <sup>b</sup>	
	Rural	33	3.6061	1.14399	65.88		
	Urban	8	3.5000	1.19523	61.50		
Q21	Both	93	3.4946	1.26511	68.24	0.929 <sup>b</sup>	
	Rural	33	3.5152	0.97215	66.29		
	Urban	8	3.3750	1.30247	63.88		
Social challenges	Both	93	3.4624	0.76085	-	0.398 <sup>a</sup>	
	Rural	33	3.2970	0.74812	-		
	Urban	8	3.1750	1.03889	-		
Component 2: Organizational challenges							
		N	Mean	SD	Mean Rank	P-value	
Q1	Both	93	3.6667	1.28818	72.09	0.099 <sup>b</sup>	
	Rural	33	3.2121	1.24392	57.08		
	Urban	8	3.3750	0.91613	57.19		
Q5	Both	93	3.6667	1.24528	70.50	0.226 <sup>b</sup>	
	Rural	33	3.5152	1.09320	63.61		
	Urban	8	3.0000	1.19523	48.69		
Q6	Both	93	3.7097	1.10906	69.65	0.504 <sup>b</sup>	
	Rural	33	3.4848	1.03444	60.89		
	Urban	8	3.7500	1.03510	69.75		
Q7	Both	93	4.0538	0.97094	71.84	0.116 <sup>b</sup>	
	Rural	33	3.6667	1.08012	57.92		
	Urban	8	3.6250	1.18773	56.56		
Q8	Both	93	3.6129	1.10367	72.02	0.093 <sup>b</sup>	
	Rural	33	3.2121	1.11124	58.91		
	Urban	8	3.0000	0.92582	50.38		
Q9	Both	93	3.6559	1.13726	71.02	0.220 <sup>b</sup>	
	Rural	33	3.2727	1.12563	57.79		
	Urban	8	3.5000	1.30931	66.63		
Organizational challenges	Both	93	3.7276	0.79695	-	0.078 <sup>a</sup>	
	Rural	33	3.3939	0.76922	-		
	Urban	8	3.3750	0.79057	-		



Component 3: Planning challenges							
		N	Mean	SD	Mean Rank	P-value	
Q16	Both	93	3.2366	1.14586	69.28	0.339 <sup>b</sup>	
	Rural	33	2.9697	1.01504	59.98		
	Urban	8	3.5000	1.30931	77.81		
Q19	Both	93	3.6989	1.18675	69.40	0.631 <sup>b</sup>	
	Rural	33	3.4848	1.17583	62.14		
	Urban	8	3.5000	1.60357	67.50		
Q22	Both	93	3.4839	1.16668	70.13	0.436 <sup>b</sup>	
	Rural	33	3.2121	1.05349	60.38		
	Urban	8	3.3750	1.30247	66.25		
Q23	Both	93	3.3548	1.10969	68.83	0.117 <sup>b</sup>	
	Rural	33	3.1212	1.08275	59.41		
	Urban	8	3.8750	1.12599	85.38		
Planning	Both	93	3.4435	0.88475	-	0.318 <sup>a</sup>	
	Rural	33	3.1970	0.76485	-		
	Urban	8	3.5625	1.04155	-		

Component 4: Enabling conditions							
		N	Mean	SD	Mean Rank	P-value	
Q2	Both	93	3.5376	1.11861	68.28	0.339 <sup>b</sup>	
	Rural	33	3.4545	1.12057	64.44		
	Urban	8	3.6250	1.18773	71.00		
Q3	Both	93	3.3871	1.16126	69.97	0.631 <sup>b</sup>	
	Rural	33	3.0909	1.30776	61.12		
	Urban	8	3.2500	1.16496	65.06		
Q4	Both	93	3.1828	1.16046	67.04	0.436 <sup>b</sup>	
	Rural	33	3.2727	1.15306	70.32		
	Urban	8	3.0000	1.51186	61.25		
Enabling Conditions	Both	93	3.3692	0.82307	69.10	0.759 <sup>b</sup>	
	Rural	33	3.2727	0.89928	64.38		
	Urban	8	3.2917	0.95015	61.81		

a. One Way ANOVA, b. Kruskal-Wallis Test  
\*. significant at the 0.05 level.

Table 13 Shows the difference between the participants in reconstruction projects within rural, urban, or both

		Spearman's rho	P-value	N
Component1	Q10	0.644**	0.000	176
	Q11	0.634**	0.000	176
	Q12	0.749**	0.000	176
	Q13	0.723**	0.000	176
	Q14	0.719**	0.000	176
	Q15	0.602**	0.000	176
	Q17	0.320**	0.000	176
	Q18	0.751**	0.000	176
	Q20	0.636**	0.000	176
	Q21	0.709**	0.000	176
Component2	Q1	0.711**	0.000	176
	Q5	0.661**	0.000	176
	Q6	0.689**	0.000	176
	Q7	0.646**	0.000	176
	Q8	0.703**	0.000	176
	Q9	0.721**	0.000	176
Component3	Q16	0.661**	0.000	176
	Q19	0.806**	0.000	176
	Q22	0.797**	0.000	176
	Q23	0.726**	0.000	176
Component4	Q2	0.631**	0.000	176
	Q3	0.799**	0.000	176
	Q4	0.773**	0.000	176
**. Correlation is significant at the 0.01 level (2-tailed).				

*Table 14 The relationship between each component in questionnaire two and its variables*

## Annex 5

### participants in the open questions

code	Role of participants included in open questions analysis
P1	Researcher and project staff in disaster recovery
P 2	project staff in disaster recovery projects
P 3	Researcher and project staff in disaster recovery
P 4	project staff in disaster recovery projects
P 5	project staff in disaster recovery projects
P 8	head of operations, emergency advisor, program development and M&E specialist
P 9	preparing policy recommendations
P 12	raising awareness community participation
P 14	coordinating upstream level strategic planning and implementation- supervising social mobilization component of the reconstruction phase
P 15	Coordinator
P 17	Providing humanitarian assistance and rebuilding their villages, drinking water facilities
P 18	Program Manager
P 19	Awareness raising, Distribution, Assessments, Monitoring
P 20	AAP / community engagement
P 21	Project manager
P 22	project staff in disaster response
P 24	coordination
P 25	Evaluation of the needs of disaster victims after a disaster.
P 27	Information management
P 28	staff member
P 30	Coordination financial and legal aspects of building/reconstruction of housing units
P 32	Coordinate the implementation of response activities after the crisis and emergencies
P 33	linking planning to project implementation and evaluation
P 35	child protection interventions
P 36	planning the project and monitoring of its implementation
P 37	Project Coordination
P 38	Shelter/Relief Operations
P 39	project staff in disaster response
P 40	Medical Consultant WHO, Emergency Coordinator, Co-lead of the Health Cluster
P 41	Project architect, construction supervision
P 42	multi-sectoral rapid assessment
P 43	Program Manager
P 45	project staff in coordination role
P 46	Planning and Monitoring; impact evaluation
P 47	assist national public institutions in the management and preparation of tools
P 52	Assessment and determination for ranges of damages in medical infrastructure
P 54	Donor and financial coordination
P 56	project staff in disaster response
P 57	Health Manager
P 59	Coordinating the field management
P 60	project staff in disaster response
P 61	Program Manager and Inter-agency coordination
P 62	Coordination, M&E
P 63	Response Director
P 67	Supervisor / Coordinator
P 68	Desk officer for INGO

P 69	Health resilience-Health education/promotion, peace building, protection mainstreaming
P 70	ensuring that human rights principles of participation and accountability,
P 71	Team leader, implementer, evaluator
P 72	Supervisor
P 73	Program manager
P 75	Project Manager and Monitoring officer
P 79	Social facilitator
P 81	MEAL OFFICER SENIOR
P 82	Damage assessments, designs and inspections.
P 83	Program Director
P 84	project staff in disaster response
P 85	Leading implementation of projects
P 88	Project Manager
P 93	Shelter and site planner
P 94	coordinated and supervised the responses to the WASH cluster
P 97	Monitoring of the project being implemented by the NGO
P 98	Operations Team Lead
P 99	architect, project manager, technical advisor, evaluator
P 100	Project manager / field coordinator
P 101	Program Manager, Project Manager, Design Lead
P 103	Project manager international financing institution
P 104	Project Manager, Project coordinator
P 105	Supporting beneficiaries to rebuild houses, community assets and livelihood
P 106	Monitoring and Evaluation
P 107	Data collection activities
P 108	Quality Management
P 109	project staff in coordination role
P 111	Managing Shelter projects using Cash and Voucher Modalities
P 113	Designing the project/program and ensuring implementation
P 116	part of a multi-sector Recovery Needs Assessment
P 117	Project manager assistant
P 118	Gender and protection mainstreaming
P 119	designer and controller of water, sanitation, hygiene, shelter and infrastructure works
P 122	Humanitarian protection
P 123	project staff in disaster response
P 124	Managing the team
P 125	Improve food security by reducing post-harvest losses and promoting fish farming.
P 126	Community mobilization for behavioral change towards gender equality and respectful relationships
P 127	Coordination and Communication
P 129	Project Manager
P 130	project staff in disaster recovery projects
P 131	project coordinator.
P 132	monitoring
P 133	project staff in recovery project
P 134	Director of Operations
P 135	Coordination
P 136	post disaster assessment, leadership in crisis response and reconstruction
P 137	managing several projects which had a character of humanitarian - development nexus or stabilization

*Table 15participants in the open questions*

## Annex 6

### open questions entries

#### 1- Benefits of community participation

Increased ownership			
Role of participant		Entry	Condensed view
P133	Staff in Recovery project	<p>"L'implication et la participation communautaire ont été utile, car ceci a permis de ressortir réellement les problèmes que la communauté est affectée. Cette implication garantie la pérennisation et l'acceptation des projets."</p> <p>English translation</p> <p>"Community involvement and participation has been helpful, because it has really brought out the problems that the community is affected. This commitment guarantees the sustainability and acceptance of projects."</p>	Increase ownership, therefore increase commitment, sustainability and acceptance of projects.'
P2	Staff in Recovery project	Community participation is a crucial issue in different project management cycle including planning. Ownership of decisions by local communities makes the implementation of these decisions smooth and acceptable by them.	Improving ownership therefor improving acceptance of results
P54	Coordination role	Rather effective to guarantee long-term impacts and continuous involvement	Increases chances for continuous involvement
P116	Assessment role	<p>As per my evaluation, the projects in which I was engaged were. well received by the community with the sense of ownership , Community participation increased the sustainability of initiative, as community had sense of ownership and continued the work even after the closure of formal activities.</p> <p>Overall, I found it productive and useful to engage communities in program designing and implementation of post disaster recovery projects</p>	Increase sense of ownership , which increase sustainability of initiative to long term development
P15	Coordination role	Very useful for the full engagement and ownership of community beneficiaries	Increased ownership
P59	Coordination role	If the participation of the beneficiaries is effective the success of the project is more important to them	increase responsibility and commitment for achieving successful results
P75	Manager	"It was very rewarding. The communities, as long as upstream, we take the time to explain to them and that the reconstruction is directly vital to them, you cannot imagine the enthusiasm they put into it. For my experience, it is a project which during execution was imposed the rehabilitation of the road, on which there was a bridge, completely destroyed by a storm."	Increase ownership of the reconstruction process.

P132	Monitoring role	"This approach was effective, because the beneficiaries felt involved in the construction of the infrastructure and took ownership."	Increases sense of ownership
P69	Staff in Response projects	"Effective and useful, for example, taking responsibility in delivering services while promoting peaceful coexistence"	taking responsibility in delivering services , promoting peaceful coexistence
P100	Manager	"This was a very positive experience, allowing beneficiaries to take ownership of their homes.	Increased ownership of beneficiary's homes.
P118	Staff in Response projects	It was useful in terms of community inclusion in the project cycle as well as for ownership purposes	Increase sense of ownership
P137	Manager	"It took longer, but was very effective because it assured ownership by the community.	Increase ownership.
P71	Manager	Community participation is essential. Not only to ensure that the response meets the needs of the affected population but also to ensure their ownership of the process.	ensures their ownership of the process.
<b>Relevance to the needs of the community</b>			
P134	Manager	Effective in [...] establishing priorities/managing expectations.	establishing priorities/managing expectations
P98	Manager	"The experience is good and useful to some extent. Communities provide the inputs in to how they would want to see the reconstruction.	Giving input on community expectations
P137	Manager	"It took longer, but was very effective because it [...] guaranteed that the real needs were met or prioritized "	Provide input on needs and priorities
P54	Coordination role	Rather effective to guarantee [...] responding to local needs.	Effective in responding to local needs.
P93	Planning role	it was very useful to understand the people of concern needs and try to construct shelters that can meet there minimum expectations.	understanding their needs
P71	Manager	Community participation is essential. Not only to ensure that the response meets the needs of the affected population but also to ensure their ownership of the process.	ensure that the response meets the needs of the affected population
P36	Planning role	Needs assessment is effective so you can respond to the real need of the community	Important in determining the needs of community
P107	Assessment role	"My role as an information manager was to design a questionnaire and assess the shelters in which vulnerable and displaced people live as a result of armed conflict and lack of resources due to climate hazards.	Meeting their needs
P25	Staff in response projects	"It has been a great experience. The community is involved in the assessment of their needs, in the choice of the reconstruction sites and in the contribution to the reconstruction of the buildings"	assessment of their needs, and choosing the reconstruction sites
P12	Coordination role	"Dans toutes nos interventions auprès des communautés nous adoptons l'approche Do No Harm. Les communautés endogène sont les mieux placés peu importe notre expertise à savoir ce qui est mieux pour eux, ce qu'elles veulent et ce qu'elles gèreront avec plaisir après la reconstruction. <u>English translation</u>	It is important for determining their needs, and what works best for their living environment

		"In all our interventions with communities we take the Do No Harm approach. Indigenous communities are in the best position to know what is best for them, what they want, and what they will happily manage after reconstruction."	
P19	Assessment role	"It was challenging but worth trying and proved helpful in customizing our activities as per needs of the communities."	Helpful in customizing activities according to the needs
P3	Staff in Recovery project	"it was so effective, the community participation is important in designing the projects based on their views, needs and expectation."	Designing according to needs
P63	Staff in response projects	"We always organize "town-hall"" events, involving local community stakeholders creating a localized grass-roots response. We connected our standards to their needs and understanding."	Helps in connecting standards to the community needs
P73	Manager	" it's a necessary process that can prevent some mistakes and ensure better relevance and usefulness of the final results."	ensure better relevance and usefulness of the final results."
<b>Long term success</b>			
P73	Manager	" it's a necessary process that can prevent some mistakes and ensure better relevance and usefulness of the final results."	usefulness of the final results
P12	Coordination role	Les impliquer a toujours été un facteur de réussite de nos projets et surtout d'une bonne prise en main des œuvres après le Projet." English translation Involving them has always been a factor for the success of our projects and especially for a good handling of the works after the Project."	Provide long term success of the implemented project.
P54	Coordination role	Rather effective to guarantee long-term impacts	Important for long-term development
P3	Staff in Recovery project	it's important to keep the relation open with the communities to develop the program, evaluate and lessons learned to secure the accountability and sustainability"	Increase accountability and sustainability
<b>Increased satisfaction</b>			
P100	Manager	In the Philippines, for example, following Typhoon Yolanda, beneficiaries could choose their walling, and when walking through the village, it was hard to recognize the houses rebuilt by the program. On the other hand, on another project in CAR, the beneficiary could choose the number of square meters but the choice of materials, for budgetary reasons was fixed by the organization, and it was more complicated to get the project accepted by the communities."	It effects architectural identity.  Increased satisfaction
P43	Manager	"I believe the owner-driven process [...] provides homes that people are satisfied with."	increase satisfaction.
P30	Coordination role	"Challenging, but useful. By including communities into the process of planning is important as it helps better understand situation and needs on the ground, adjust project to the needs of targeted community which, at the end of the day, will help to avoid unnecessary complains and conflicts with stakeholders on different stages of project implementation. "	Helps in adjusting projects according to the needs if community important in better understanding of the local context

			Important for avoiding unnecessary complains with stakeholders on different stages of project implementation.
<b>Provide information</b>			
P134	Manager	Effective in informing program design	(providing input for planning)
P97	Monitoring role	"It was very nice to hear from the community what they want and what is required of the community as per the geographical location of the project, as they know better than us the location the environment, and their daily usage of community infrastructure. We came up with a joint unanimous Shelter plan that was required by the community and we also have to meet our budget requirements. "	Increase understanding for the environment of a given location , Understanding the daily usage of community infrastructure.
P133	Staff in Recovery project	"L'implication et la participation communautaire ont été utile, car ceci a permis de ressortir réellement les problèmes que la communauté est affectée. English translation 'Community involvement and participation has been helpful, because it has really brought out the problems that the community is affected.	Provide information about issues of reconstruction
<b>Cost efficient</b>			
P119	Planning role	the experience was very effective and reduce the coast of the budget	Reducing the cost of budgets.
P43	Manager	"I believe the owner-driven process is the most cost efficient method	cost efficient
<b>Other benefits</b>			
P116	Assessment role	"I was part of a multi-sector Recovery Needs Assessment and sector lead for ""Food Security and Livelihood"" Sector. In addition, I was part of strategy and proposal development team. " . Community was helpful in identifying the potential risks related to the project	identifying the potential risks related to the project
P116	Assessment role	Community was helpful in identifying the right modality of implementation	identifying the adequate implementation strategies
P1	Staff in Recovery project	"The experienced included all the international standards as the Shpere Manual for example, where the community has to participate in all stages of the emergency. I understand that is challenging to not only dictate what to do based on what we think we have to do, but the participation gives more than just the response to the people, it gives them part of their resilience strength, as well as give us the humanitarian and response workers the ethic part of doing our job as it has to be taken what it takes."	resilience strength , ethic part for workers
P3	Staff in Recovery project	the project should meet their needs and reduce the shocks.	Reducing shock
P9	Planning role	Yes it was very effective and useful because the community output and suggestions were basically very practical and realistic.	Community was able to suggest practical and realistic output



P21	Manager	"Community participation is crucial to rehabilitate commune areas and buildings as if it was not used, it can cause another conflict. "	"Community participation is crucial to rehabilitate commune areas and buildings as if it was not used, it can cause another conflict. "
P27	Assessment role	"It made it simpler to decide how the building will help the neighborhood's residents. I'll offer you an example of handpump installation: when Bangladesh had a refugee inflow, the newcomers started assimilating with the locals. Water shortage therefore worsened as a result of a combination of rising demand and a low water table. It would be quite challenging and time-consuming to do the technical evaluation to establish whether the water table is suitable for a borehole. However, during the focus group discussion with the host communities addressing the issue, we had some prompt responses to the plan. such as where the water table should be adequate, how to get water from a hilly terrain, how to store water, etc. After all, the answers or concepts already existed; they only required assistance in implementation. As a result, it is clear that consulting the local populace is the greatest way to understand their hopes for the future and to inform them about impending changes that will benefit both sides."	Community can offer solutions to problems, such as offering solutions for infrastructure issues, , therefore, community have a role in planning, especially in outlining concepts, then outside aid Can be in form of technical assistance, assistance in implementation, or offering needed resources for implementation.
P63	Staff in response projects	"We always organize ""town-hall"" events, involving local community stakeholders creating a localized grass-roots response. We connected our standards to their needs and understanding."	Helps in formulating standards to the format that the community understand better.
P124	Manager	It was an effective in kind of awareness and facilitated the targeted communities on early recovery and overcome there loses during disaster	Increases awareness, Facilitate early recovery
P131	Coordination role	"The involvement of community is essential. The community coordinates the organizations activity, assesses the needs and pushes organization in th right direction "	coordinates the organizations activity, and pushes organization in the right direction "

*Table 16Benefits of community participation*

## 2- challenges of community participation in recovery projects

Difficult and slow to implement			
Role of participant		Entry	Condensed view
P97	Monitoring role	Community leaders and the community should be involved from day 1st when a construction or reconstruction project is being started in that area so they can better guide us on challenges and other activities that have been planned. Also coordination among humanitarian organizations to launch projects jointly to save cost and deliver extra at the same time.	Not Involving community from the start of reconstruction
P111	Manager	"Community involvement should be integral from project inception to completion, "	Community involvement not integrated throughout project stages
P122	Staff in response projects	Useful but difficult to put in place and difficult to sustain	difficult to implement and sustain
P99	Manager	"I had several experiences on this topic, not a simple question to answer ... post disaster reconstruction programs and participatory approaches are most of the time useful and impact full, but can and must always be evaluated. My experiences as an architect, advisor and evaluator convince me that participatory approaches are useful on many aspect (including beside design matters) but are not easy nor fast to implement,	Difficult and slow to implement,
P41	Planning role	Modestly effective. Did not scale or self-perpetuate as hoped.	It is difficult to conduct on big scale, also difficult to sustain for long periods of time.
P54	Coordination role	"Problem of ""soft activities"" which impact can be delayed cause community participation needs time and trust : hard impacts only visible after a period of commune trust construction. This phenomenon can have an impact on further funding as donors don't see results on the field. "	Projects usually need time and trust to see tangible results
P21	Manager	"Short-result oriented thinking v.s. long-term result oriented thinking. When people are desperate, it is hard for them to consider future."	Short-result oriented thinking
P32	Coordination role	Les réponses aux urgences et crises demandent une action et prise de décision rapide alors la planification se fait surtout à haut niveau English Responses to emergencies and crises require rapid action and decision-making, so planning is mainly done at a high level.	It needs time
P127	Coordination role	Because of time-bounded quick recovery project	time-bounded quick recovery project
P135	Coordination role	Period according to the donor implementation was not sufficient to real separate and distinguish the intervention between the early recovery and the reconstruction starting	time-bounded quick recovery project
P85	Manager	"It was very difficult to ensure effective participation of communities at the planning stage, as effective participation of communities requires time, patience, and flexibility on part of the organizations planning such projects. I have felt that community participation in a number of cases has remained superficial. "	effective participation of communities requires time, patience, and flexibility on part of the organizations planning

P43	Manager	Main challenges include; time required, training, monitoring,	time, training, and monitoring required
P73	Manager	"The community participation takes time and effort.	takes time and effort.
Social and cultural norms			
Role of participant		Entry	Condensed view
P15	Coordination role	"social and culture structures which do not always allow some groups to participate. For example in Niger, with their cultural values, women were not allowed to discuss in public with men or leaders or authorities. But with our different interventions and contributions, they actually participate and are involved in all community affairs at local and national level."	Social and cultural norms
P117	Manager	les contraintes liées à la culture locale et les expériences passées English constraints related to local culture and past experiences	constraints related to local culture and past experiences
P125	Manager	Le niveau d'instruction des membres influents de la communauté touchée et aussi la situation de résidents permanents ou de déplacés font la différence. English The level of education of influential members of the affected community and also the situation of permanent residents or displaced people make the difference	The level of education of influential members of the affected community
P136	Assessment role	lack of understanding of cultural consideration that may influence the beneficiaries' perspective and understanding of their needs	lack of understanding of cultural consideration
P14	Coordination role	"The outreach was good but there were social, cultural, bureaucratic and local political challenges"	social, cultural, bureaucratic and local political challenges.
P37	Coordination role	"1-Différence between local culture of construction and the standard that project wants to bring. 2- valorisation of local / empirique knowledge 3- Représentativité of local community mobilized"	Project standards different from local culture, Lack of valuing local knowledge
P5	Staff in Recovery project	"The customs and traditions established in the community"	
P67	Coordination role	"Social norms and political issues."	
P45	Coordination role	"There was a total disregard for the culture of the population, a respect for the grassroots organizing, a meaningful structure to include the population in the decision making in addition to all of the variables you've already asked about, and a language barrier."	Disregard of cultural norms
Representation of groups			
Role of participant		Entry	Condensed view
P47	Manager	"The lack of women's participation in the decision-making process and the failure to take into account the needs of women for reconstruction"	lack of women's participation
P70	Staff in Recovery project	"Lack of knowledge and awareness about human rights and gender principles"	awareness on human rights

P61	Manager	"the engagement of women could be challenging, so sometimes we build committees with only women. As positive, we worked with community committees based on a community action plan agreed by them"	engagement of women
P98	Manager	"Consideration of factors like inclusion (people with disabilities, gender, age - vulnerable and unaccompanied or separated minors) or of whom may be a minority silent voice, but necessary to be part of the decision-making."	Exclusion of minorities
P14	Coordination role	"At the face of the planning, although time consuming, however, realistic plans were developed on rapid basis but the true compliance was a biggest issue, along with capacity, outreach, no-sufficient audits, weak grievance and redressal mechanism. "	outreach
P73	Manager	"The ""representatives"" of the community don't always represent the views of the majority. "	Representation issues
P4	Staff in Recovery project	"In rural setting, community participation is one of the essential standards organization must follow. In practice, this means engaging with a sample of community members at different levels (authorities, local leaders, IDPs, host community members). Participation took the forms of surveys, interviews and focus groups discussions. However, we always faced issues achieving meaningful participation. There has been always issues with the selected sample, as some times it is not representative and female engagement is not optimal."	Selecting representatives
P124	Manager	"When there is some group have personal approaches may differ scenario in implementation level and target the most vulnerable communities by disasters. community must be engaged in larger groups and ensure the participation of each segment of the society and groups"	Representation of vulnerable groups
P45	Coordination role	"There was a total disregard for the culture of the population, a respect for the grassroots organizing, a meaningful structure to include the population in the decision making in addition to all of the variable you've already asked about, and a language barrier."	Representation issues
<b>Influence from other groups</b>			
<b>Role of participant</b>		<b>Entry</b>	<b>Condensed view</b>
P101	Manager	"Community (and even professionals and authorities) perception towards novel ways of decision making, towards novel choices of technology & choice of materials palette (bio-climatic appropriate, and climate resilient choices of technology & materials such as use of rammed earth, adobe, compressed earth block are seen as a step backward as ""poor"" despite its superior thermal properties over ""conventional materials"" such as sand-cement block, concrete, fires brick etc. "	Perception of unconventional solutions by decision makers
P129	Manager	"There is so much influence from political figures and that hinders the decision making process or even freedom of participation by the community."	influence from political figures
P17	Staff in Recovery project	"its useful for the affected people. but obstruction used come form the vested influential groups who has power , money and mussel."	There was obstruction from influential groups

P38	Staff in Recovery project	"Effective but at the beginning we had a kind of political interference as disasters happened in area politically controversial. It's has a opposition influence and the ruling party wanted to control the operations."	Political interference can hinder effective community participation,
P40	Staff in response projects	"La politisation de la gestion des situations de crise et des catastrophes" English translation The politicization of the management of crisis situations and disasters	Political influence on reconstruction projects
P40	Staff in response projects	"Le paternalisme à outrance des preneurs des décisions, une attitude qui pousse les communautés à l'incapacité à s'auto prendre en charge, à travailler voire à se reloger correctement." English translation The excessive paternalism of decision-makers, an attitude that pushes communities to the inability to take care of themselves, to work or even to relocate properly	The excessive paternalism of decision-makers,
P5	Staff in Recovery project	"The nature of the authorities in control of the reconstruction area" "The security situation within society and freedom of expression "	
P98	Manager	"over influence by political or community leaders"	
P61	Manager	"In my opinion, community participation should be always part of our projects, as we are supporting communities, thus they should be the core of our interventions. It is important to define from the beginning how the community will participate, what would be their role, limitations, etc. In my experience, one of the challenges was that local authorities wanted to be part of community committees, which are usually a neutral body."	local authorities wanted to be part of community committees ,which may not be neutral to community decisions
P67	Coordination role	Elitism.	
<b>Limited decision-making power</b>			
Role of participant		Entry	Condensed view
P123	Staff in response projects	Language / Cultural obstacles (some communities do not allow certain members of their community to have the right to ""express"" an opinion in name of the community, often based on social standing in the community, sex, age, or race."	some communities do not allow certain members of their community to have the right to ""express"" an opinion in name of the community,
P25	Staff in response projects	"Most often after a disaster, the displaced come to another village that is not their own. So the host community sometimes imposes their laws on the displaced, who become very limited in their decision-making power."	Host community limiting the displaced 's decision-making power."
P39	Staff in response projects	"For instance, a community will say that they want something (say, a bore hole, or a place to water their cattle) and based on what the donors think is good for them, they might get something totally different, even though what they need the most is an accessible water source."	Decision maker expecting they know what is best
P84	Staff in response projects	"The ability for community concepts to be implemented. In sum, scope and financing has to be pre-determined to ensure that community-based decisions are implemented (e.g., if it's post-disaster housing design that our agency undertook in a village in India the community understood that their design inputs would be translated into architectural changes and features). Similarly, in the case of natural disaster impacts on IDPs	No decision making power for the community

		- this group/community needs to have the decision making power to make change to their location/village design/housing design. Without this decision-making power community engagement is not as powerful a tool and is rendered a check-list item to be completed by NGOs."	
P106	Monitoring role	"The high rate of illiteracy and the social structure are the main constraints of community involvement namely in rural areas"	The high rate of illiteracy and the social structure
P5	Staff in Recovery project	"The educational level of the community members"	
P73	Manager	" they may not always be able to clearly express their views during the planning "	they may not always be able to clearly express their views during the planning
P124	Manager	"can contribute well. Refined & matured community based CBO, or organizations can give you proper clue to work on communal level and targeted the most vulnerable groups of the community. "	When there is lack of ability of community to make decisions, organizations can then take initiatives
<b>Corruption</b>			
<b>Role of participant</b>		<b>Entry</b>	<b>Condensed view</b>
P8	Planning role	"High corruption of the governments with the complicity of the donors (especially world bank and IMF"	Corruption
P18	Manager	"The big challenge is the community participation, also in my country some Leader who went to have money.Also, it is a acceptance of community coming from another community to wok with a community."	Corruption
P123	Staff in response projects	"Corruption and weak or self-intersted leadership (community leaders might express views in their own interest."	Corruption and weak or self-intersted leadership
P33	Manager	"My experience has been such that it is clear that the organizations in charge of the reconstruction make it a business to the point where it can be said that the management of the projects will not allow an effective intervention. Everything is done as if we wish that the problems persist"	Organizations prioritizing profit
P45	Coordination role	"A total disaster where funds were allocated to the NGOs and not the projects, where training was repeated over and over with the high rate of turnover,	Mishandeling funds,
<b>Lack of clear process</b>			
<b>Role of participant</b>		<b>Entry</b>	<b>Condensed view</b>
P1	Staff in Recovery project	"Clear vision and methodology to do quick assessments with the community to know more about it, leaders, needs, etc., that will give the big picture for the next step that will be to make them participate in every step of the process of reconstruction."	Clear methodology
P62	Coordination role	"Of course, community involvement in planning is an invaluable addition to projects, as it permits the project concept to be checked against actual needs. Unfortunately, this is rarely done in a formalised process but rather takes place on an ad-hoc basis."	rarely done in a formalized process, rather takes place on an ad-hoc basis.
P5	Staff in Recovery project	"Good project planning, including community participation plans by organizations"	

P104	Manager	"Common standards for the community participation approach should be available for each response- adopted to the context not generic."	Lack of standards for the community participation
P85	Manager	" Organizations want to ensure participation but lack time and patience to ensure meaningful participation by communities. They generally rely on the finding of one-time focus group discussions and other PRA techniques which are often flawed. I have noticed, that findings documented in the initial focus group discussion are often less reliable. They do not give you well thought analysis of problems and solution alternatives in the initial meetings. Communities often come up with much-improved perspectives about the same thing in the second or third meeting. The effectiveness of their participation in decision-making improves after they reflect for a few days, on the viewpoints that they shared in the initial meetings/FGDs "	Relying on one focus group discussion which is often flawed
P67	Coordination role	"Inadequate project planning"	
P45	Coordination role	"a lack of a cohesive plan that included those affected and resources spent on the wellbeing of the ngos, not the population. "	lack of a cohesive plan
<b>Capacity constraints</b>			
<b>Role of participant</b>		<b>Entry</b>	<b>Condensed view</b>
P22	Staff in response projects	"you have to have the necessary means"	Capacity
P98	Manager	"high expectations than the resources available."	Community usually have expectations higher than the resources available
P14	Coordination role	"At the face of the planning, although time consuming, however, realistic plans were developed on rapid basis but the true compliance was a biggest issue, along with capacity, outreach, no-sufficient audits, weak grievance and redressal mechanism. "	capacity,
P4	Staff in Recovery project	"Capacity-wise (financial, logistic and administrative) has been always an issue in meeting communities expectations. Particularly after conflict, people expected to receive advanced reparation/modifications to their houses which in many cases was beyond the project scope."	Issues achieving expectations because of lack of capacity (financial, logistic and administrative
P24	Staff in response projects	"lack of financial means for the upper community "	Financial capacity
P46	Planning role	"Pauverty"	Financial constrains
P62	Coordination role	"For example donor constraints"	donor constraints
P105	Staff in Recovery project	"lack of funding that in the main issue in developping country. Shock-affected people cannot recover proprely from shocks and remain more and more vulnerable"	lack of funding
P54	Coordination role	"Financial constrains - projects should include adequate funding to be able to implement the process."	Financial constrains

Little understanding of community participation			
Role of participant		Entry	Condensed view
P57	Manager	"understanding the weakness and strength of the community before and during the disaster before proceeding into the post - disaster, has a high impact "	Not understanding weaknesses and strength of the Community
P113	Planning role	"Lack of skills and know how on Community participation"	Little understanding of Community participation
P126	Staff in Recovery project	"Lack of conceptual clarity on community participation. No decision for us without us! There are different levels of community participation - with the highest level being community owned design - designed by communities and owned by communities with involvement of others. Rarely do we get such level of participations. Experts can facilitate the process, but the original idea, design and final decision on the most feasible design should be decided by community themselves"	Lack of conceptual clarity on community participation.
P5	Staff in Recovery project	"Experience of project implementers in ways and methods of community participation"	
P104	Manager	" Donors not putting enough attention to community participation approach in the organization's proposals. If donors know more abt it, they would emphasize it in the call for proposals and organizations would have to plan for it."	Lack of awareness from donors to community participation
Lack of community initiative			
Role of participant		Entry	Condensed view
P40	Staff in response projects	"contexte qui renforce le manque d'initiative Communautaire" "La gratuité des interventions utilisée comme sous bassement principal, au point de maintenir les communautés dans l'irresponsabilité." <b>English translation</b> a context which reinforces the lack of community initiative.	Lack of community initiative Depending on free aid to the community which decrease their responsibility
P98	Manager	" it is always meant with a number of challenges. Limited participation by a number of community members especially in the urban set up"	Limited participation especially in the urban set up;
P35	Staff in response projects	"What we discovered was that community members were felt that Government will do everything for them. Its later when they saw that the Government was not adequately supporting its when they started to do some piece works."	Lack of initiative from expecting the government to implement recovery project fully
P14	Coordination role	"At the face of the planning, although time consuming, however, realistic plans were developed on rapid basis but the true compliance was a biggest issue, along with capacity, outreach, no-sufficient audits, weak grievance and redressal mechanism. "	true compliance,
P60	Staff in response projects	"I have the impression that the community has formed the impression that organizations have huge budgets and salaries, but we are a small organization and we do not have the first or the second. In our team, people spend 50% of their time working in the private sector to have enough money to live. At the same time, when we do public discussions of our strategy, needs assessment, people do not actively participate in both types of activities.	Lack of motivation to participate in public discussion by the community



		Therefore, when us called not transparent, it demotivates us. I spent a lot of time to involve the community in decision-making in the organization, but nothing came of it."	
Coordination issues			
Role of participant		Entry	Condensed view
P56	Staff in response projects	"Poor coordination not only of humanitarian actors but also the government which is not a well structured policy in the management of disasters, so the humanitarian organizations do what they want and no conclusive results"	Poor coordination between government and ngo
P28	Staff in Recovery project	"The project was very useful. however the Lack of communication between the local administration, project manager team and the community as wee as lack of good assessment before project implementation where the big challenger on project implementation."	Lack of communication between the local administration, project manager team and the community
P133	Staff in Recovery project	"Insuffisance de coordination entre les acteurs"	Lack of coordination between actors"
P79	Coordination role	"Coordination between gouvernement and NGO"	
Communication issues			
Role of participant		Entry	Condensed view
P72	Monitoring role	"Communication matters only. The language spoken by the Project Team and the community has been something challenging despite the presence of the interpreters."	Communication issues
P42	Assessment role	"Limited on the exchange because of the communication route"	communication route
P45	Coordination role	"There was a total disregard for the culture of the population, a respect for the grassroots organizing, a meaningful structure to include the population in the decision making in addition to all of the variable you've already asked about, and a language barrier."	Language barrier
Poor living conditions			
Role of participant		Entry	Condensed view
P82	Assessment role	"There is much confusion following a disaster. Persons are trying to attend to food, shelter and other essentials. Community planning of reconstruction projects is a low-priority item for those trying to find food for their families. It is better to engage the national or regional organisations/associations in construction, eg: engineers, architects, planners, land surveyors, quantity surveyors, estate agents, contractors, artisans, home-owners', chamber of commerce, and financiers."	Lack of livelihood means
P94	Coordination role	"la manque de nourriture est le facteur de blocage le plus observe. Apres le catastrophe, la recherche de nourriture et la reconstruction de leurs maisons sont les top priorities de la population et tant que cela ne sont pas regles, elle ne veut pas trop avancer. Leur prise de decsion en depend egalement car ils font la balance sur le gain du pain quotidien et le fait de reconstruire eux meme leur maison. " <b>English</b>	Poor living conditions

		"The lack of food is the most observed blocking factor. After the disaster, the search for food and the reconstruction of their homes are the top priorities of the population and as long as this is not resolved, they do not want to progress too much Their decision-making also depends on it because they weigh the balance between earning daily bread and rebuilding their homes themselves."	
P5	Staff in Recovery project	"material condition of society"	
<b>Lack of confidence towards decision makers</b>			
<b>Role of participant</b>		<b>Entry</b>	<b>Condensed view</b>
P123	Staff in response projects	"Lack of trust towards the central government, (inter)national organisations or outsiders in general"	Lack of trust towards the central government,
P130	Staff in Recovery project	"It was effective but intermittently there were agitations from sections of the community It required reassurances"	Community losing confidence in reconstruction
P85	Manager	"Generally organizations want to ensure community participation within certain parameters that suit them. Ideas behind these frontiers are considered irrelevant."	No confidence in decisions made by the community
<b>one size fits all projects</b>			
<b>Role of participant</b>		<b>Entry</b>	<b>Condensed view</b>
P63	Staff in response projects	"NGOs and the UN exporting one size fits all projects, needs more involvement and understanding, it's getting there but still slow"	NGOs and the UN exporting one size fits all projects
P109	Coordination role	"Experiences from humanitarian and development infrastructure development interventions elsewhere may not necessarily apply to other contexts. For instance, the architectural and design decisions made in view of climatic conditions in the Middle East (Iraq, Syria, Afghanistan, oPt) could not necessarily be appropriate for the South Sudan context"	Applying 'One size fits all'. Intervention despite different contexts
<b>Other challenges</b>			
<b>Role of participant</b>		<b>Entry</b>	<b>Condensed view</b>
P133	Staff in Recovery project	"Manque de plan de réponse urgence, Pas de preparation a l'avance"	Lack of emergency response plan
P75	Manager	"The other end, after the relevance and usefulness of the reconstruction for the community, is post-project maintenance and the ability to take charge of itself in the event of future occurrences of the risk.It is essential, during the reconstruction process, to prepare for the monitoring, maintenance or reconstruction of the damage whose treatment is within the reach of the communities. I had several experiences: construction of dykes, roads, restoration of fields at the foot of the hills, etc..."	Sustainability and resilience of the reconstructed buildings
P81	Staff in response projects	"Following the previous question, it is difficult for the local hierarchy to take a decision, who is really the first responsible, then their beneficiary contribution always have problems. All this so that they have a sense of belonging and ownership"	Community structure

P130	Staff in Recovery project	"Sections of the community sometimes oppose best practices and planned projects. Resources available are planned for efficient utilisation which sections of the community insiste must be given to them to manage. This has the propensity for mismanagement and poor accountability."	mismanagement of funds and poor accountability by the community
P137	Manager	"so called false communities which are defined as community from the outside but have no sense of belonging together, no identity as a group"	no sense of belonging or identity as a group
P40	Staff in response projects	"La participation communautaire a certes été sollicitée par l'Inter Cluster au nom du Cluster Habitat. Sans culture de la participation au départ, les communautés sinistrées n'ont apporté que ce qu'elle pouvait, disons-le, l'expérience démontre que la population pauvre au départ s'est vue dangereusement enfoncée. Elle a quand même réussi à rebâtir des logements à l'identique de ceux qui avaient été détruits par les cyclones ou les inondations." English "Community participation was certainly requested by the Inter Cluster on behalf of the Habitat Cluster. Without a culture of participation at the start, the affected communities only brought what they could, let's face it, experience shows that the poor population at first found themselves dangerously pushed in. They nevertheless managed to rebuild housing identical to that which had been destroyed by the cyclones or the floods."	Community usually rebuild based on the experience they have, regardless of the flaws of their methods.
P20	Staff in Recovery project	"If done better it could have been effective but there is a problem still with the humanitarian system."	Issues within the humanitarian system still hinders the effectiveness of community participation
P14	Coordination role	"At the face of the planning, although time consuming, however, realistic plans were developed on rapid basis but the true compliance was a biggest issue, along with capacity, outreach, no-sufficient audits, weak grievance and redressal mechanism. "	no-sufficient audits, and weak grievance and redressal mechanism. "
P133	Staff in Recovery project	"Retard d'assistance"	"-Assistance delay
P109	Coordination role	"Inability of actors to adopt to the fundamentals of accountability to the affected populations"	Inability of actors to adopt to the fundamentals of accountability to the affected populations.
P104	Manager	"Government restrictions"	
P79	Coordination role	"safety issues, weather problems, health conditions"	
P67	Coordination role	"Security related problems"	
P73	Manager	"different views come up during the implementation or when the reconstruction is completed." "It is not easy as community is not always unanimous in their views and expectations."	community is not always unanimous in their views and expectations.

*Table 17 challenges of community participation in recovery projects*

### 3- Measures for effective community participation in recovery projects

Role of participant		Entry	Condensed view
P99	Manager	can be instrumentalized, and are not always consistent with humanitarian responses tools and usual practices."	Searching for measures to align or adapt community participation with humanitarian responses tools and usual practices."
P107	Assessment role	My experience of responding to the needs of vulnerable people is to involve them in all the different stages of the response, so that the real needs of these people are met effectively. "	Involving community in all the different stages of the response,
P43	Manager	<p>"1. You can lose the trust and commitment of community members through extended and detailed planning without any ""concrete"" actions that people can see and react to (positive or negative)are seen by community members</p> <p>2. Planning is important but small ""quick win"" projects should be implemented quickly. This may include Solar powered lights in locations already used by the community, simple shade structures etc. These can be permanent or temporary, but i believe community leaders need to be able to show progress so that trust can be built (even if installed structures, lighting etc are replaced in the future based upon more detailed planning decisions.</p> <p>3. Through an approach that leads with planning but provides the community access to small projects in a relatively fast way helps build relationships, helps to understand the dynamics of the communities and the project team, and helps each community to better understand what expectation the organization has (female participation, quality of work, engagement of people etc.)</p> <p>4. Timelines need to be realistic &amp; rational - both the organization and community should be aware from the outset of what the timeline will be (and always under promise &amp; over deliver!)"</p>	Decreased commitment due to prolonged process so it's better to implement short small projects to gain trust
P52	Assessment role	Middle effective (needed external coordination)	Needs external coordination
P68	Staff in Recovery project	"effective, though a careful plan to avoid to slow the implementation process had to be done"	Needs careful planning to avoid slowing the implementation process
P61	Manager	"In my opinion, community participation should be always part of our projects, as we are supporting communities, thus they should be the core of our interventions. It is important to define from the beginning how the community will participate, what would be their role, limitations, etc. In my experience, one of the challenges was that local authorities wanted to be part of community committees, which are usually a neutral body. Also, the engagement of women could be challenging, so sometimes we build committees with only women. As positive, we	It is important to define from the beginning how the community will participate, what would be their role, limitations, etc.

		worked with community committees based on a community action plan agreed by them"	
P8	Planning role	"Some were useful others less useful. I had a very positive experience with Concern WW. As they really open the operation (office, team etc) in the field and remote locations so all the team (national and international staff was based there). I believe that this is the only way you can implement community participation. If the team is based too far from the community you will never understand the context and dynamics. But I guess this depends also on the context. There are a lot of variables to take into consideration (level of skilled HR; communication at community/district/provincial level; knowledge and presence of NGO in that specific context; will of the local government and community leaders to participate etc)."	variables to take into consideration Planning community participation in close approximately from the field, for there will be difficulties in understanding the context and dynamics if the national or international staff is based remotely level of skilled HR; communication at community/district/provincial level; knowledge and presence of NGO in that specific context; will of the local government and community leaders to participate .
P3	Staff in Recovery project	"it was so effective, the community participation is important in designing the projects based on their views, needs and expectation. the project should meet their needs and reduce the shocks. then it's important to keep the relation open with the communities to develop the program, evaluate and lessons learned to secure the accountability and sustainability"	keep the relation open with the communities to develop the program evaluate and lessons learned to secure the accountability and sustainability"
P103	Manager	timing is of essence. early involvement but swift reaction/action and frequent feedback. Important to involve the young people in decision and action. are often overlooked or not taken seriously but are key to make things happen	early involvement but swift reaction/action and frequent feedback. Important to involve the young people in decision and action.
P83	Manager	"The urgency of moving people out of PauP to Coraile (because of the threat of a hurricane, cholera, and thyphoid outbreaks) was understandable but there was nothing in Coraile to keep them there - the lack of infrasturtcure and the sheer desolation of the place made it incredibly undeserable to live there. The alternative was the storm, choleara, and thyphoid. We never had good choices. The best thing we did was pay people to clear rubble. This was tremendously successful. The city was cleared of rubble within a year - quite a remarkable feat. "	Owner driven approach) paying the community to do work)
P70	Staff in Recovery project	"Lack of humility on the part of the decision makers . Community participation is a right and it is essential in ensuring ownership, accountability and sustainability of the post-disaster reconstruction projects. I strongly believe that a human rights-based approach to post-disaster reconstruction projects is indispensable. "	human rights-based approach to post-disaster reconstruction projects is indispensable
P116	Assessment role	"Productive participation of community from designing to the implementation phases of any project is essential for project success.	participation of community from designing to the implementation phases of any project is essential

P43	Manager	Main challenges include; time required, training, monitoring, establish systems that are both robust to ensure quality but flexible enough to allow homeowners to correct mistakes. "	establish systems that are both robust to ensure quality but flexible enough to allow homeowners to correct mistakes. "
P4	Staff in Recovery project	" the current community participation practices in rural setting need to be revised, enhanced, and a clearer framework that is also participatory should be designed, and participation must remain an ongoing process and at all times consider all community segments. "	<p>There is often issues in achieving meaningful participation</p> <p>Participation took the forms of surveys, interviews and focus groups discussions.</p> <p>There is a need for clearer framework for community participation</p> <p>Participation should be designed as an ongoing process</p>

*Table 18 Measures for effective community participation in recovery projects*

## Annex 7

### Determining the optimized time for community participation in the reconstruction process using the AHP method

The purpose of this questionnaire is to assess the importance of community participation as input in reconstruction activities, this will ultimately contribute to developing a framework for community participation in reconstruction process after disaster

**Your responses are voluntary and will be confidential. Responses will not be identified by the individual. All responses will be compiled together and analyzed as a group, this questionnaire will only be used as part of PhD thesis.**

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1- Name of the participant:

2- Years of experience in reconstruction projects after disasters

1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ +20 ☐

2- Did you participate in Disaster recovery projects?

Yes, I participated in a reconstruction project ☐

Yes, I did research in housing reconstruction ☐

Both ☐

3- Level of education

Bachelor's degree ☐

Diploma degree ☐

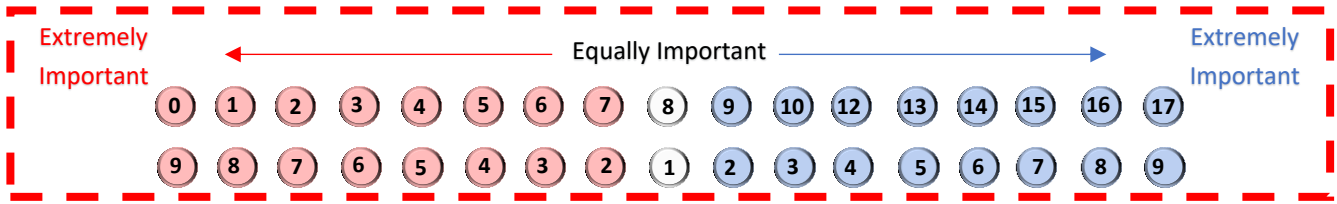
Master's degree ☐

Ph.D. degree ☐

Other ☐

4- Name of organization you currently work with

Please compare each of the following pairs and mark the place along the segment, you can refer to the explanation of each term in the pdf document attached with the invitation email under the name of “term explanation”



**1 – Both options are Equally Important**

2 – The preferred option is Equally to Moderately Important

**3 - The preferred option is Moderately Important**

4 - The preferred option is Moderately to Strongly Important

**5 - The preferred option is Strongly Important**

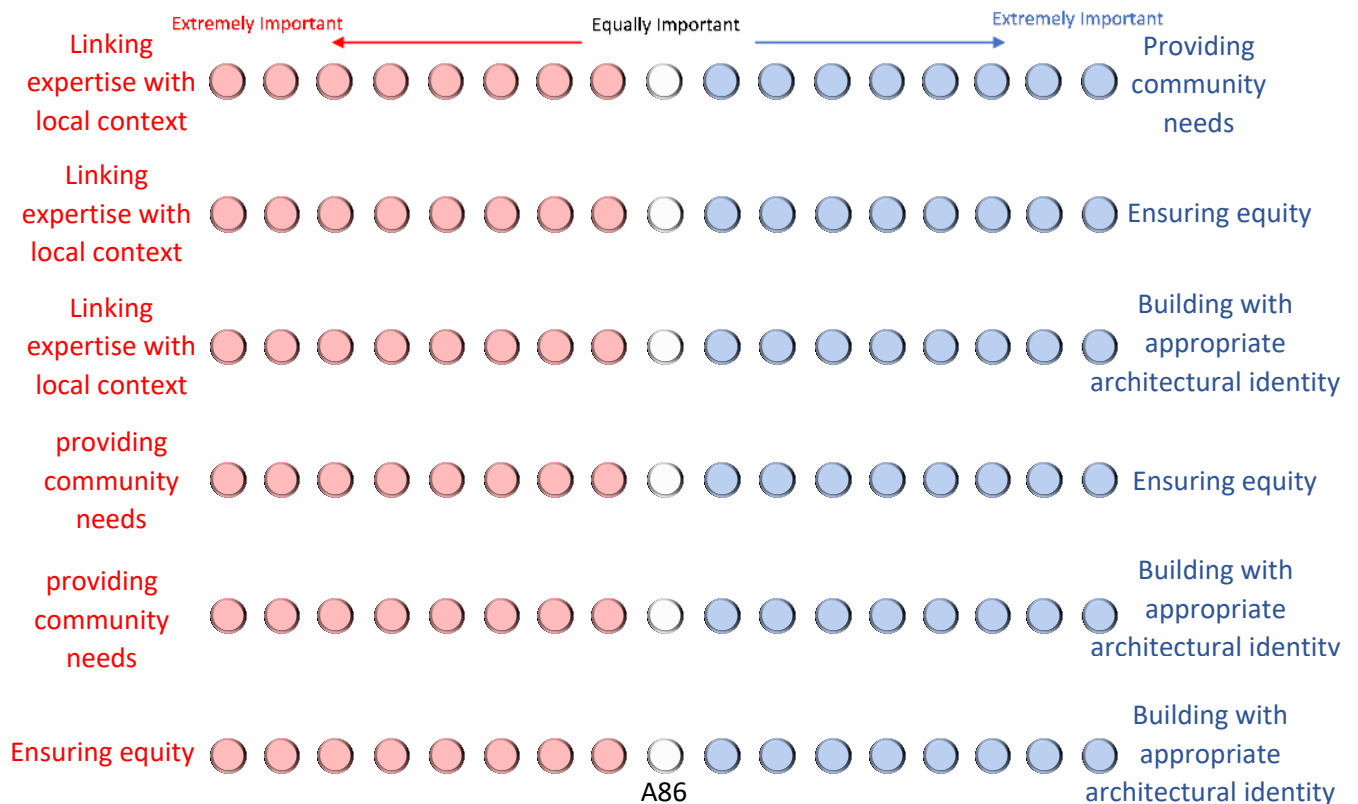
6 - The preferred option is Strongly to Very Strongly Important

**7 - The preferred option is Very Strongly Important**

8 - The preferred option is Very Strongly to Extremely Important

**9 - The preferred option is Extremely Important**

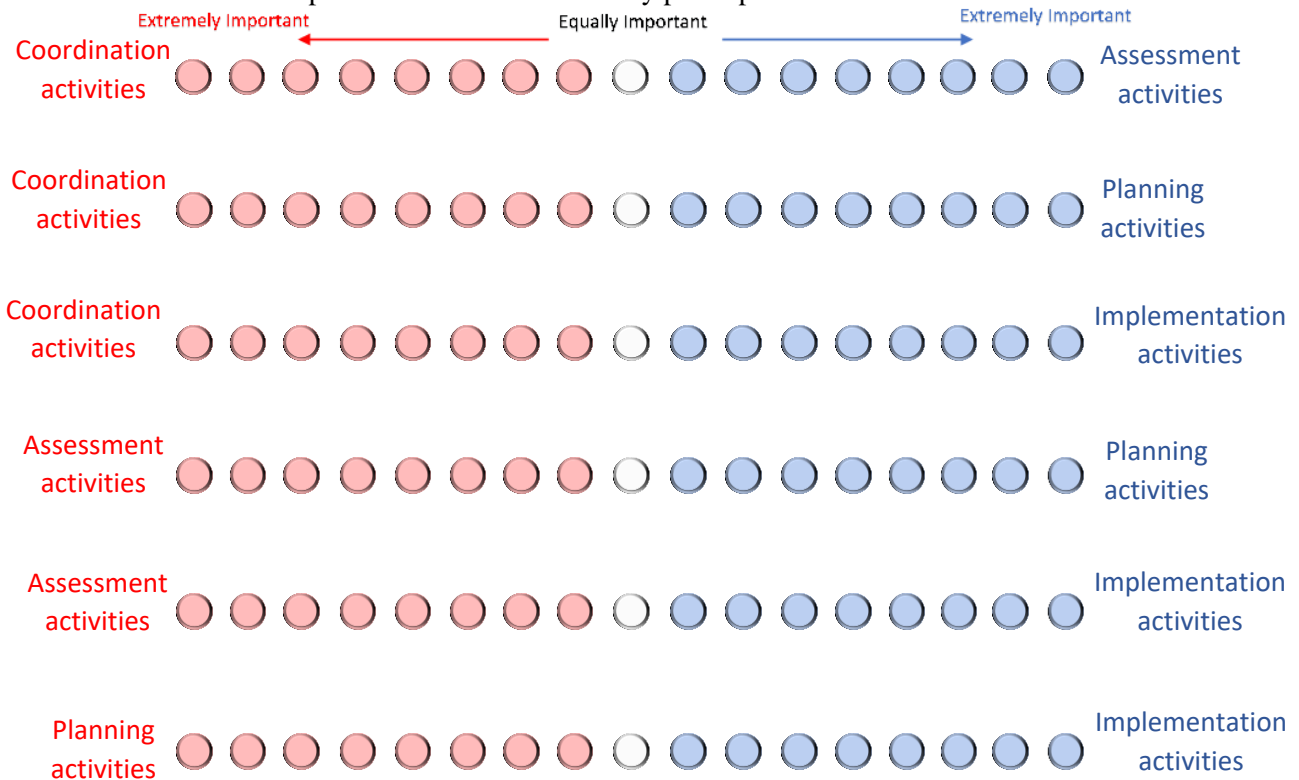
When making decisions related to reconstruction projects after disasters, which is more important to include community participation in?





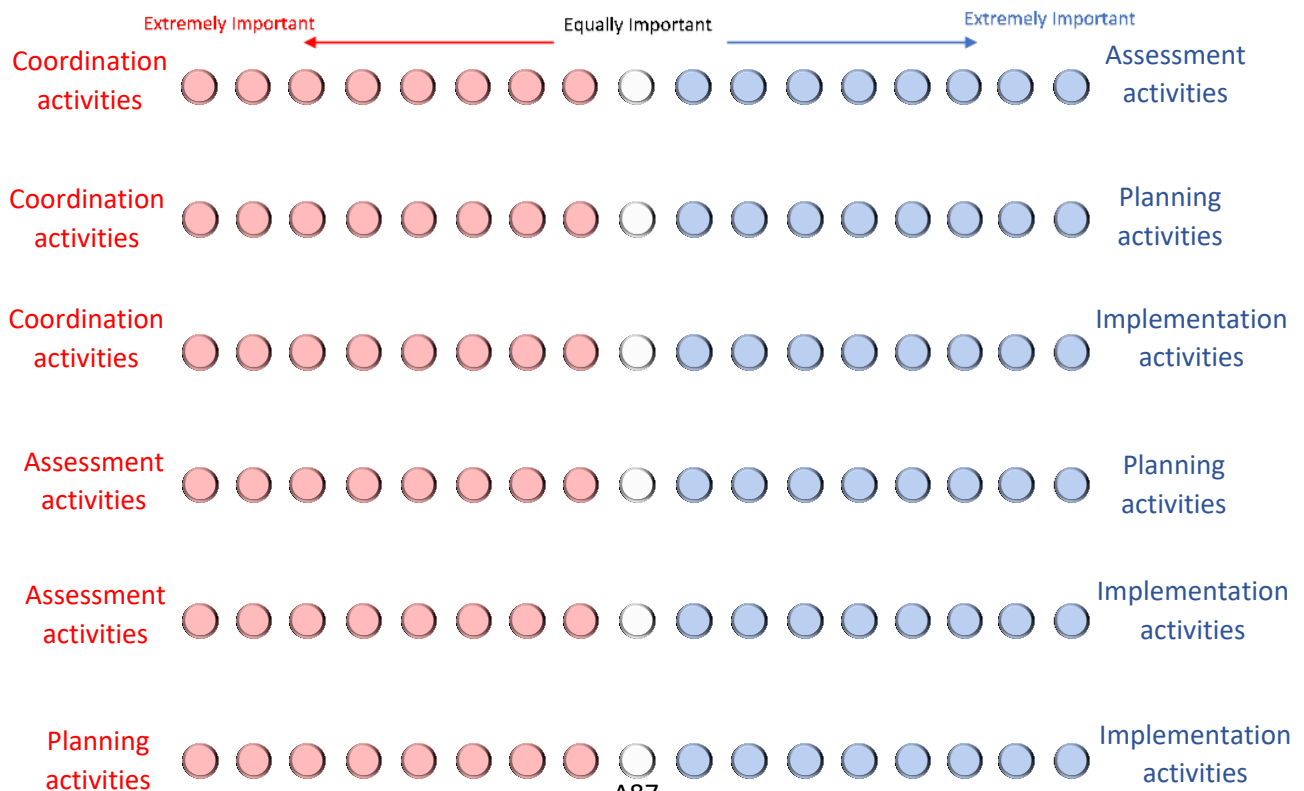
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When making decisions related to **linking expertise with local context**, which reconstruction activities are more important to include community participation in?



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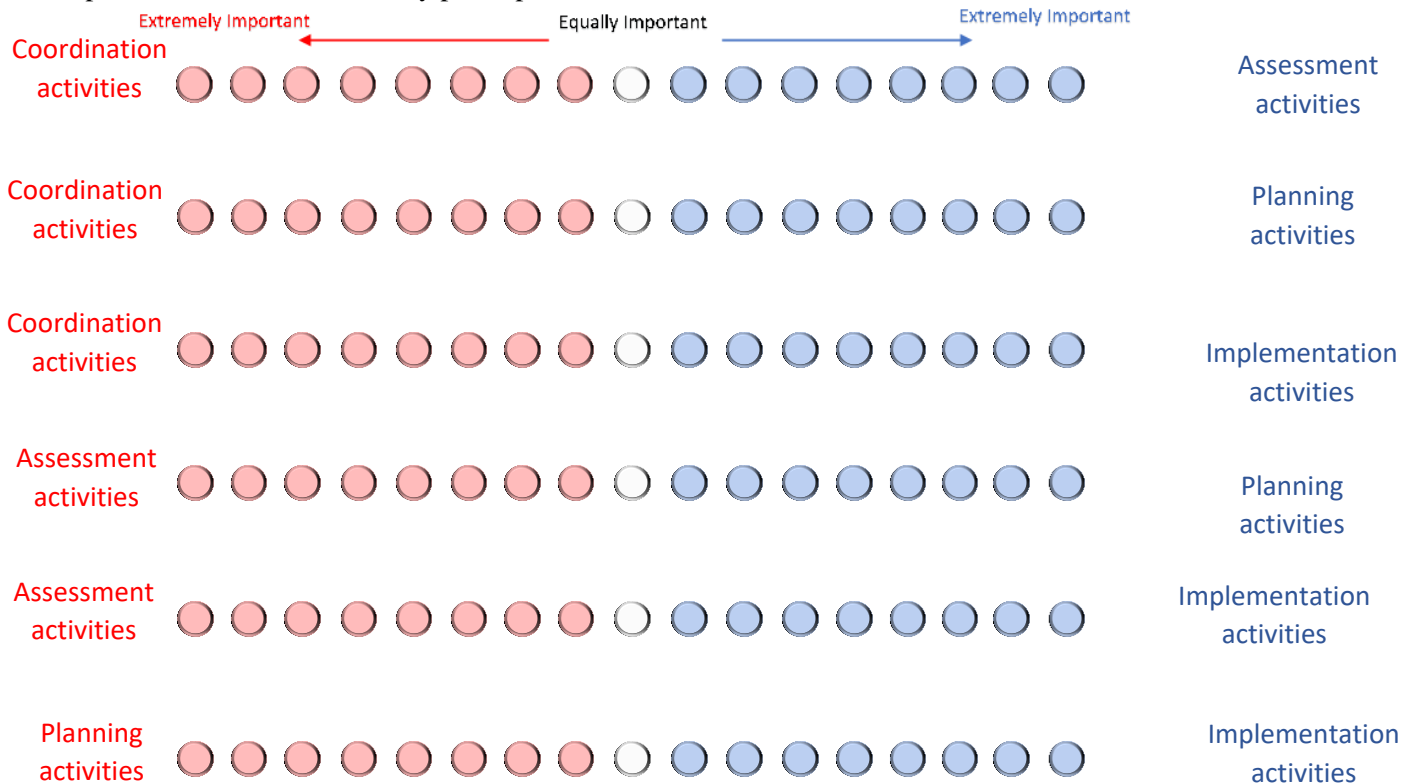
When making decisions related to **providing community needs**, which reconstruction activities are more important to include community participation in?



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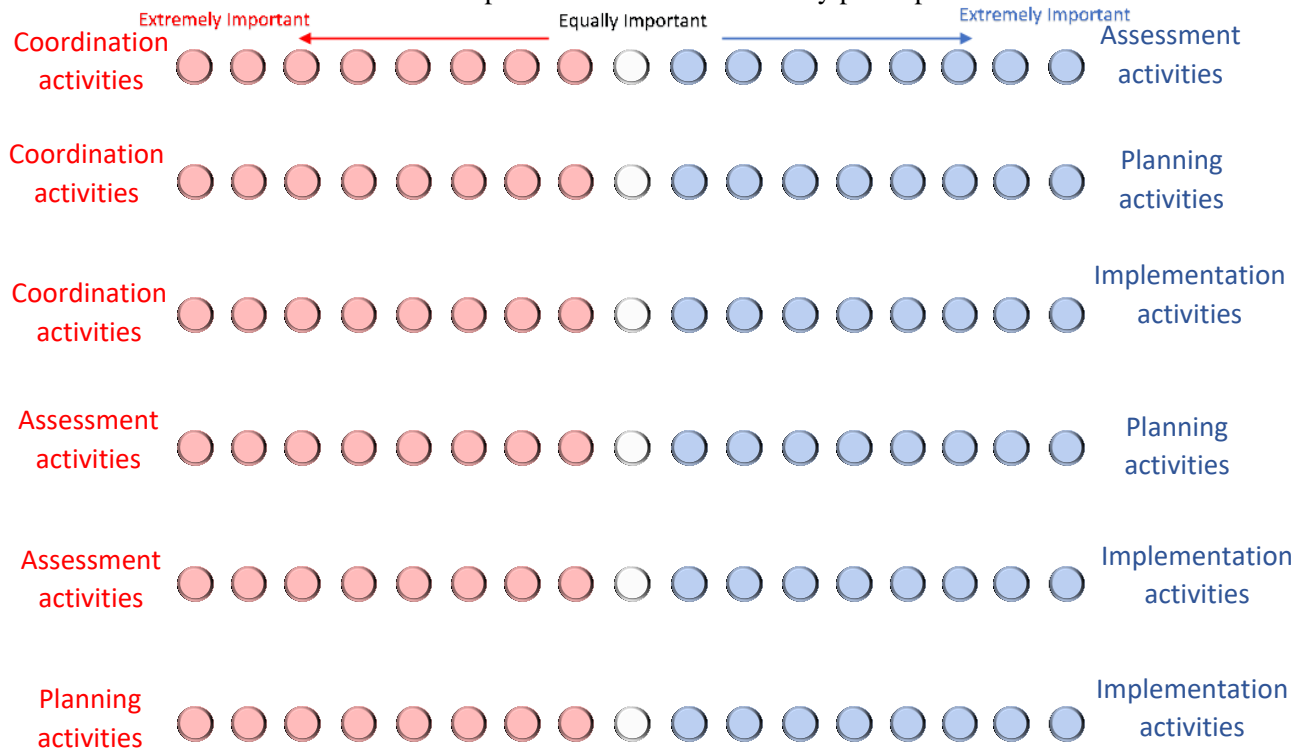
When making decisions related to **ensuring equity**, which reconstruction activities are more important to include community participation in?



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When making decisions related to **building with appropriate architectural identity**, which reconstruction activities are more important to include community participation in?



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Thank you for your contribution.

# Terms explanation for AHP questionnaire

## Decisions related to linking expertise with local context

Providing information on built environment context before the disaster:

- Land nature (climate, hard to reach areas, high investment area, high risk area, topographic nature,)
- Characteristics of inhabitant: Urban/rural/ Slums/ Heritage
- mixed-use environment dynamics
- Property value
- Land use properties that reflect dynamics of inhabitant (irregular or narrow streets, location and number of open spaces)
- Housing types that reflect the lifestyle of inhabitant
- Infrastructure and public service strength and weaknesses
- Informing on cultural diversity and customs.
- built environment Characteristics that relate to different channel of income for the inhabitant

## Decisions related to providing community needs

- Considering family structure during housing design.
- Considering lifestyle of community during housing design.
- Providing spaces and facilities to increase social interaction.
- Linking livelihood to housing.
- Adapting to future changes and requirements.
- Planning services according to priority of needs.
- Compatibility between characteristics of old settlement with the new one.

## Decisions related to ensuring equity

- Ensuring equity in distributing houses.
- Avoiding disparities among society layers.
- Ensuring public transparency during the decision-making process.
- Protecting the interests of vulnerable groups from the impact of gentrification.
- Supporting strategy for the vulnerable when relocation is unavoidable.

## Building with appropriate architectural identity

- Enhancing sense of place.
- Considering cultural diversity characteristics during planning.
- Considering a relevance to the historical architectural identity.
- Considering spatial belonging effects during planning.
- Linking master plan to current architectural identity.
- Adaptation of previous mixed-use environment to new conditions.

### **Coordination activities in the reconstruction process after disaster**

- Setting and implementing participation plan.
- Establishing a governance system.
- Defining responsibilities and roles of stakeholders.
- Developing coordination mechanism and structure.
- Developing mechanisms for information and communication management.
- Set up an assessment institutional arrangement to carry out assessment work.
- Define roles of participants in assessment.
- Coordinate with stakeholders to carry out planning procedures.
- Update coordination structure according to agreed plans.
- Engage locals in developing standards that balance their needs with the capacity and technical requirements.
- Make institutional arrangements for implementation.
- Coordinate implementation issues.

### **Assessment activities in the reconstruction process after disaster**

- Conduction initial assessment.
- Conducting detailed assessment.
- Conclude assessment by reviewing for gaps in assessment or needs, cross checking, reporting and sharing recommendations.
- Assess shelter policies.
- Assess the strategic objectives, according to local capacity, needs, and local context.
- Conduct Local capacity assessment during the implementation stage.
- Monitor resources prices and market changes.
- Assess the resources used based on standards developed.
- Conduct health and safety assessments.
- Assess completion of objectives after evaluating indicator.

### **Planning activities in the reconstruction process after disaster**

- Developing initial strategy.
- Identify objectives, scope, coverage area, timeline and resources.
- Develop resource mobilization strategy.
- Data analysis from all sources.
- Define local context that will impact reconstruction.
- Define needs of affected community.
- Define priorities after consultations with the locals.
- Define capacities.
- Set beneficiaries criteria.
- Develop Objectives
- Decide on strategies and approaches
- Define standards and codes.
- Develop standards and codes in detail

- Set standards for housing designs.
- Develop land use plans.
- Scenario building
- Develop resourcing plans.
- Develop programs to resolve land issues
- Listing funding requirements for the implementation stage.
- Define timeframe and budget
- Set the following actions
- Develop implementation plans.

#### **Implementation activities in the reconstruction process after disaster**

- Making the institutional arrangements
- Identifying beneficiaries
- Collect resources
- Implement programs aiming to resolve disputes related to eligibility to assistance, land issues, and other legal issues.
- Monitor construction
- Execute handovers

## Annex 8

### Responses for the model for assessing the effectiveness of community participation.

		Respondents	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13
N	WI	Country	Afghanistan	Australia	Bangladesh	India	Indonesia	Iran	Iraq						
1	0.16	The coordination mechanism for linking the community with the central decision-making system	4	2	3	3	4	2	2	4	1	3	5	4	4
2	0.146	The level of imposing preconceptions of what is best by the experts	3	4	4	2	4	4	4	3	3	3	3	3	4
3	0.094	The central decision-making for micro-level projects	3	4	3	3	2	3	2	3	3	3	4	4	2
4	0.082	The financial transparency in the reconstruction process	4	1	2	3	3	2	1	3	3	2	3	3	4
5	0.07	Defining the process for managing community participation	2	1	2	1	3	1	3	4	3	1	2	3	4
6	0.061	Disproportionate representation of marginalized groups of community and the elite	3	4	5	4	4	3	2	3	3	4	5	3	4
7	0.053	Linking decision making at the local level to the implementation bodies	3	1	3	3	3	1	2	4	3	2	1	4	4
8	0.048	The living conditions or livelihood for the community in temporary accommodation	4	2	3	5	3	3	2	4	3	2	2	4	4
9	0.042	Linking community organizational system to the institutional structure	4	1	2	3	3	2	2	3	2	3	1	3	4
10	0.039	Conflicted priorities between the affected community and decision makers that aim for development	2	4	2	2	4	4	3	4	4	2	4	3	3
11	0.034	The understanding of community participation	3	2	2	1	2	2	2	3	2	2	1	3	5
12	0.03	The structural organization that facilitates approval of community efforts	4	2	2	4	5	2	2	3	1	3	4	4	4

13	0.027	Defining decision areas that the community was involved	3	0.081	1	2	0.041	1	0.027	3	1	0.054	3	3	3	0.081	2	2	3	0.063	4	0.108
14	0.023	The organizational structure within the community with public and political support	3	0.069	1	2	0.0345	2	0.046	4	2	0.069	2	3	3	0.063	2	5	4	0.083	4	0.092
15	0.02	The level of urgency for housing reconstruction	5	0.1	4	3	0.07	5	0.1	3	4	0.07	3	5	5	0.087	4	3	4	0.073	2	0.04
16	0.017	The national regulations that support community participation	4	0.068	2	3	0.043	2	0.034	5	3	0.068	1	3	2	0.034	3	5	4	0.068	5	0.085
17	0.015	community participation in master planning	4	0.06	1	3	0.03	1	0.015	3	2	0.038	2	3	2	0.035	2	4	3	0.045	5	0.075
18	0.012	The logistical means for conducting meetings, such as transportation, accommodations, and/or technological tools of communication	4	0.048	2	2	0.024	3	0.036	3	2	0.03	3	4	3	0.04	1	1	4	0.024	3	0.036
19	0.01	The level of confidence in the ability of the community to make decisions was	3	0.03	2	3	0.025	1	0.01	3	3	0.03	3	4	2	0.03	2	2	4	0.026	4	0.04
20	0.008	The ability to adapt to the methods of communication of the locals	3	0.024	2	2	0.016	1	0.008	3	1	0.016	4	4	3	0.029	2	1	3	0.016	4	0.032
21	0.005	The planning time	3	0.015	1	3	0.01	3	0.015	3	1	0.01	3	3	2	0.013	1	3	2	0.01	3	0.015
22	0.003	The level of discrimination of decision-makers against minority groups. (Ethnic, religious, racial)	3	0.009	4	3	0.0105	2	0.006	3	2	0.007	4	2	1	0.007	1	5	3	0.009	4	0.012
23	0.001	Collective sense of belonging for the community	3	0.003	1	2	0.002	2	0.002	2	1	0.002	1	2	1	0.001	1	1	2	0.001	3	0.003
<b><math>P = \sum w_j * u_j</math></b>			3.337		2.654			2.67		2.935			2.800			3.1				3.781		

Table 19 Responses for the model for assessing the effectiveness of community participation (part 1)

		Respondents	X14		X15		X16	X17		X18		X19		X20	X21		X22	X23	X24	X25	X26	
Z	WI	Country	Italy		Japan		Malaysia			Nepal		Nigeria		Türkiye			United States					
1	0.16	The coordination mechanism for linking the community with the central decision-making system	4	0.64	1	0.16	2	2	0.32	4	0.64	3	0.48	5	2	0.56	4	2	5	4	4	0.608
2	0.146	The level of imposing preconceptions of what is best by the experts	4	0.584	3	0.438	3	5	0.584	4	0.584	3	0.438	2	4	0.438	3	3	4	2	3	0.438
3	0.094	The central decision-making for micro-level projects	3	0.282	2	0.188	4	4	0.376	2	0.188	4	0.376	3	5	0.376	4	3	2	3	3	0.282
4	0.082	The financial transparency in the reconstruction process	2	0.164	2	0.164	2	3	0.205	2	0.164	4	0.328	3	1	0.164	2	2	5	3	5	0.279
5	0.07	Defining the process for managing community participation	4	0.28	3	0.21	2	2	0.14	4	0.28	3	0.21	5	1	0.21	3	3	5	4	4	0.266
6	0.061	Disproportionate representation of marginalized groups of community and the elite	3	0.183	3	0.183	4	4	0.244	3	0.183	3	0.183	3	3	0.183	2	3	5	3	4	0.207
7	0.053	Linking decision making at the local level to the implementation bodies	4	0.212	3	0.159	2	3	0.1325	2	0.106	4	0.212	4	1	0.132	3	3	5	3	3	0.180
8	0.048	The living conditions or livelihood for the community in temporary accommodation	5	0.24	2	0.096	3	2	0.12	5	0.24	5	0.24	3	1	0.096	1	1	4	4	4	0.1344
9	0.042	Linking community organizational system to the institutional structure	4	0.168	3	0.126	2	2	0.084	3	0.126	4	0.168	3	1	0.084	3	3	5	4	4	0.159
10	0.039	Conflicted priorities between the affected community and decision makers that aim for development	3	0.117	2	0.078	4	4	0.156	3	0.117	2	0.078	3	3	0.117	4	2	5	2	4	0.1326
11	0.034	The understanding of community participation	5	0.17	2	0.068	2	2	0.068	2	0.068	1	0.034	4	1	0.085	2	2	4	2	4	0.095
12	0.03	The structural organization that facilitates approval of community efforts	4	0.12	2	0.06	2	1	0.045	3	0.09	3	0.09	5	2	0.105	4	2	5	4	5	0.12
13	0.027	Defining decision areas that the community was involved	4	0.108	2	0.054	2	1	0.041	3	0.081	2	0.054	4	1	0.068	2	2	5	3	3	0.081
14	0.023	The organizational structure within the community with public and political support	4	0.092	3	0.069	2	1	0.034	5	0.115	4	0.092	4	1	0.057	3	2	4	4	4	0.078



15	0.02	The level of urgency for housing reconstruction	5	0.1	4	0.08	4	4	0.08	4	0.08	2	0.04	5	5	0.1	3	4	1	3	4	0.06
16	0.017	The national regulations that support community participation	2	0.034	2	0.034	2	2	0.034	2	0.034	3	0.051	5	2	0.06	3	2	4	4	4	0.058
17	0.015	community participation in master planning	4	0.06	4	0.06	2	2	0.03	2	0.03	2	0.03	4	3	0.053	4	3	5	3	4	0.057
18	0.012	The logistical means for conducting meetings, such as transportation, accommodations, and/or technological tools of communication	4	0.048	4	0.048	2	2	0.024	5	0.06	3	0.036	5	1	0.036	2	1	3	4	4	0.0336
19	0.01	The level of confidence in the ability of the community to make decisions was	4	0.04	2	0.02	2	2	0.02	4	0.04	4	0.04	4	1	0.025	2	3	5	4	4	0.036
20	0.008	The ability to adapt to the methods of communication of the locals	4	0.032	2	0.016	3	2	0.02	2	0.016	3	0.024	4	1	0.02	3	2	5	4	3	0.027
21	0.005	The planning time	1	0.005	5	0.025	2	2	0.01	2	0.01	4	0.02	2	2	0.01	4	2	5	2	4	0.017
22	0.003	The level of discrimination of decision-makers against minority groups. (Ethnic, religious, racial)	3	0.009	2	0.006	4	4	0.012	1	0.003	2	0.006	1	1	0.003	3	1	5	3	3	0.009
23	0.001	Collective sense of belonging for the community	5	0.005	3	0.003	2	1	0.002	3	0.003	2	0.002	4	2	0.003	2	2	3	4	3	0.003
		<b><math>P = \sum w_j * u_j</math></b>	3.693		2.345		2.781		3.258		3.232		2.984								3.361	

Table 20 Responses for the model for assessing the effectiveness of community participation (part 2)

# Responses for the model for assessing the optimum use of community participation.

N	WI		country	Bangladesh			Pakistan		Syria Turkey					Iraq		Chad					
			Respondents	X1	X2		X25		X29	X30	X31	X32		X12		X4	X5	X6	X7	X8	
1	0.61	Linking local context with planning	Linking expertise with the local context.	1	1	0.61	1	0.61	1	2	1	1	0.76	1	0.61	2	1	1	2	1	0.85
2	0.28		Linking expertise with priority of needs.	1	1	0.28	1	0.28	1	1	1	1	0.28	1	0.28	1	1	2	2	3	0.5
3	0.11		Providing reliable information for planning	1	1	0.11	1	0.11	1	2	1	2	0.17	1	0.11	2	1	3	2	3	0.24
						1		1					1.21		1						1.6
1	0.45	Providing needs	Providing spaces and facilities to increase social interaction.	1	2	0.68	2	0.9	3	4	2	1	1.13	2	0.9	2	1	2	3	1	0.81
2	0.26		Considering the lifestyle of the community during housing design.	1	2	0.39	1	0.26	2	2	1	2	0.46	1	0.26	2	2	1	2	2	0.47
3	0.16		Linking livelihood to housing.	2	2	0.32	1	0.16	2	2	1	2	0.28	1	0.16	3	2	2	1	1	0.29
4	0.09		Planning services according to the priority of needs.	1	1	0.09	1	0.09	2	3	2	1	0.18	1	0.09	1	1	2	2	1	0.13
5	0.04		Considering family structure during housing design	1	2	0.06	1	0.04	2	3	2	2	0.09	1	0.04	1	2	2	1	2	0.06
						1.54		1.45					2.13		1.45						1.76
1	0.61	Management decisions	Increasing the community's ability to respond to possible disasters.	1	1	0.61	1	0.61	2	3	2	1	1.22	2	1.22	1	1	2	1	1	0.73
2	0.28		Developing coordination mechanisms between government, NGOs, and community.	1	1	0.28	1	0.28	1	1	2	2	0.42	1	0.28	1	1	1	2	3	0.45

3	0.11		Planning adequate implementation arrangements.	2	1	0.17	1	0.11	1	3	2	1	0.19	2	0.22	1	1	2	3	2	0.2
						1.06		1					1.83		1.72						1.38
1	0.52	Ensuring equity	Ensuring public transparency during the decision-making process.	1	1	0.52	2	1.04	1	1	1	2	0.65	1	0.52	4	1	1	1	4	1.14
2	0.27		Supporting strategy for the vulnerable when relocation is unavoidable.	1	1	0.27	1	0.27	2	2	1	1	0.41	1	0.27	1	1	2	3	2	0.49
3	0.15		Protecting the interests of vulnerable groups from the impact of gentrification.	1	2	0.23	1	0.15	2	4	3	2	0.41	3	0.45	1	1	1	1	2	0.18
4	0.06		Ensuring equity in distributing houses.	1	2	0.09	1	0.06	1	2	1	1	0.08	1	0.06	3	1	1	2	1	0.1
						1.11		1.52					1.54		1.3						1.91
1	0.45	Architectural identity	Enhancing the sense of place.	1	2	0.68	1	0.45	2	4	2	2	1.13	3	1.35	3	1	3	3	1	0.99
2	0.26		Considering cultural diversity characteristics during planning.	1	2	0.39	1	0.26	2	2	1	1	0.39	2	0.62	1	1	1	1	1	0.26
3	0.16		Considering spatial-belonging effects during planning.	3	3	0.48	1	0.16	2	5	2	1	0.4	3	0.48	2	1	2	2	3	0.32
4	0.09		Considering a relevance to the historical architectural identity.	3	3	0.27	2	0.18	3	4	2	2	0.25	4	0.36	4	2	2	1	2	0.2
5	0.04		Adaptation of previous mixed-use environment to new conditions.	3	3	0.12	2	0.08	2	3	2	3	0.1	3	0.12	2	2	3	2	2	0.09
						1.94		1.13					2.26		3.1						1.86

Responses for the model for assessing the optimum use of community participation. 21 Table

