

Article

Improving Post-Disaster Housing Reconstruction Outcomes in the Global South: A Framework for Achieving Greater Beneficiary Satisfaction through Effective Community Consultation

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Abstract: The purpose of this paper was to examine the community consultation practices carried out by implementing agencies when managing post-disaster housing reconstruction (PDHR) projects, identify the obstacles they face, and evaluate the effect these obstacles have on the quality of information obtained in relation to achieving a high level of beneficiary satisfaction. The aim was to develop a framework for community consultation in PDHR, which ensures that the needs of beneficiaries are more accurately reflected in the housing produced. A qualitative research methodology was adopted with data first being obtained through a literature review of relevant publications and implementing agency reports as a means of establishing common themes among community consultation practices and identifying indicators that influence beneficiary satisfaction. This was followed by a case study analysis to further an understanding of how these indicators were affected by the community consultation practices undertaken in a real-world context. The results of the research indicate that community consultation often forms a central role in the planning and delivery of PDHR projects, however, despite the implementing agencies' best intentions, there are often obstacles that prevent the process from achieving the desired result. The community consultation framework proposed here has been developed to address the identified obstacles with the aim of ensuring that beneficiary requirements are included in housing design as a means of improving the level of beneficiary satisfaction in the housing provided.

Keywords: post-disaster reconstruction; community consultation; beneficiary satisfaction; housing; Global South



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1. Introduction

As the scale, frequency, and severity of disasters continue to increase, there is a real need to improve the process by which housing is delivered to disaster-affected communities [1,2]. Nowhere is this more evident than the continent of Asia [3], which often bears the brunt of the world's disasters due largely to its size, geographical features, and high population density in areas facing disaster risks, the effects of which are often exacerbated by the vulnerable conditions in which a large proportion of the population lives. Rapid economic development and urbanization in many Asian countries as well as demographic and societal change due to migration contribute to the vulnerability. This paper therefore focuses on the community consultation practices carried out in post-disaster housing reconstruction (PDHR) projects in the continent of Asia. A key question regarding the gap between the outcomes of PDHR projects and the expectations of beneficiaries is explored through a set of objectives that are fulfilled through data drawn from an extensive literature review, followed by an analysis of four case studies. The findings presented here have been determined as a result of fundamental cultural and economic conditions specific to Asia, however, the framework developed as a result of this research could offer valuable lessons

for the practical application of community consultation in all regions of the world when adapted to suit PDHR in a similar context.

As the impacts of disasters continue to increase, the need for an effective means of delivering PDHR projects becomes ever more apparent [1,2]. Between the years 2000 and 2019, the world experienced 7348 disasters, claiming around 1.23 million lives and affecting more than 4 billion people [4]. Asia, the continent with the highest population and where the majority are Global South countries, experiences the most severe impacts resulting from disasters. Recently in 2019, almost 75% of the people affected by disasters were in Asia; 45% of the deaths caused by disasters globally occurred in Asia [5]. These disasters are accompanied by the loss of housing with an estimated average of 14 million people annually being displaced [6]. Recent advances in disaster preparedness including the development of early warning systems and the implementation of evacuation procedures has seen an increase in the survival rate, however, the devastation caused to the built environment results in many survivors losing their homes and becoming displaced and in need of housing. However, despite these alarming figures, literature in the field of PDHR often highlights instances of housing being produced that lacks consideration for the cultural, environmental, or socio-economic requirements of the community. This can lead to inconsistencies between the housing delivered and the requirements of beneficiaries, which can often be attributed to ineffective community consultation practices [2,7–9].

Traditional project management practices have historically been applied in the PDHR context, however, characteristics such as the focus on a single project lifecycle and inflexibility in terms of establishing a predetermined project duration have proven unsuitable for the complexities experienced in a post-disaster environment [10,11]. This approach often results in the provision of housing with a focus on the speed of delivery at the expense of the cultural and socio-economic needs of beneficiaries with little consideration for the individual requirements of families. The inclusion of provisions for the continuation of livelihoods are often overlooked, which in some cases, results in settlements being left uninhabited as communities return to their original settlement, leaving them vulnerable to future hazards [12,13].

In recent years, implementing agencies have come to recognize the benefits of including beneficiaries as stakeholders when applying a multi-stakeholder approach to PDHR with community consultation being placed at the forefront of housing design [2,9]. This provides an opportunity for community specific needs, which would otherwise be overlooked, to be included in house design [14]. Literature in the field of PDHR consistently highlights the benefits of ongoing community consultation as a means of achieving a high level of beneficiary satisfaction in PDHR projects. However, despite the widespread endorsement of community consultation by implementing agencies as essential to achieving a high level of beneficiary satisfaction [15], there are few examples of where the lessons learned from this research have been successfully adopted in practical application.

2. Overview of Related Literature

As a result of an extensive review of literature including books, journal articles, and industry reports on the topic of PDHR in Asia, the following themes were identified to have considerable influence on the level of beneficiary satisfaction.

2.1. Prevalence of a Project Management Approach

Historically, a traditional project management approach has been applied in the management of PDHR projects [10]. The Project Management Institute [16] (p. 1) defines a project as “a temporary endeavor undertaken to create a unique product, service or result”, consisting of a clearly defined scope, resource allocation, and start and finish date in which to achieve the project goal. However, it has been argued that characteristics that form the basis of this approach such as the focus on a single project lifecycle, inflexibility in terms of project duration, and a need to complete the project within a predetermined timeframe fail to address the complexities of the post-disaster environ-

ment [2,10,11]. Crawford et al. [10] discuss how traditionally, the application of established project management practices tended to focus on the reconstruction of physical assets often at the expense of the socio-economic requirements of the community. This can be attributed to the absence of beneficiary representation in the stakeholder group, often resulting in poor consideration for community requirements in project planning and design. The result of which has often been a low level of beneficiary satisfaction and a missed opportunity to increase community resilience [11].

2.2. Role of Stakeholders and Barriers to Collaboration

A definition of community consultation has been provided by [17] (p. 2): “Effective community consultation is a participatory process that underpins genuine community development. It enables communities to articulate their own concerns, and identify the appropriate responses and solutions to problems that affect them.” This idea of people at the center of their own development has been espoused widely and in various forms in different disciplines such as ‘public interest design’ in architecture [18] and ‘participatory development’ in social sciences [19]. Some of the key early advocates of such a participatory approach include Chambers [20], Freire [21] and Rahman [22]. It has also been advocated in the post-disaster recovery and reconstruction field, for example, in the form of “people-centered” [23] or “community engagement” [24] approaches. In recent years, post-disaster reconstruction practitioners have come to realize the benefits of community consultation and the inclusion of beneficiaries in the stakeholder group with effective community consultation often highlighted throughout the literature on the topic of post-disaster housing reconstruction as the key to achieving successful project delivery [2,8,9,11,25]. Crawford et al. [10] (p. 321) states that “Stakeholders are generally accepted as persons, groups, or organizations with varying degrees of responsibility and authority that are affected by or can affect the success of a project in a positive or negative way”. Understanding each stakeholder’s involvement in the project and their influence on the decisions being made is fundamental to the successful management of a PDHR project [10]. However, despite the affected community being widely recognized as a key stakeholder in PDHR projects, the complexities experienced in a large-scale post-disaster environment along with insufficient planning in the early stages of reconstruction due to the urgency placed on providing housing for the affected community has historically resulted in low levels of beneficiary satisfaction [7,8,11].

Vahanvati and Mulligan [2] emphasize the benefits of allocating more time to the planning phase of PDHR projects along with implementing programs beyond the completion of the reconstruction phase aimed at building community trust and resilience. In order to achieve this, they propose replacing the traditional closed loop project lifecycle approach with a “spiral” project lifecycle approach. The spiral approach allocates additional time in the planning phase of the project to develop a better understanding of the beneficiaries’ requirements through community consultation. This provides the opportunity to develop the project plan over multiple revisions, ensuring any design issues are identified and resolved before construction commences. This model provides ongoing support through a process of community engagement, skills training, and capacity building as a means of building trust and enhancing community resilience.

Rehman et al. [26] discuss the need for a shift toward a more holistic approach with the application of systems thinking as a means of addressing the issue as a whole, rather than focusing on a singular aspect of the problem. They recognize the value of community engagement in collaboration with government, public and private sector organizations to ensure the cultural and socio-economic needs of the community are met while incorporating future disaster risk reduction (DRR) measures to reduce community vulnerability. However, more research is required in this area to determine the extent of which the results of community consultation eventually influence the decisions of implementing agencies.

The management of a PDHR project is a complex undertaking requiring input from various stakeholders operating across multiple sectors. These can include government representatives at all levels, international and local non-governmental organizations (NGOs), financial institutions, built environment professionals, and the affected community [1]. The multi-stakeholder approach promotes the exchange of information between external stakeholders and beneficiaries ensuring community priorities, which often differ from those of external stakeholders, are communicated to the stakeholder group [14]. This process helps build and diversify knowledge through collaboration across multiple disciplines, which in turn strengthens capacity, resulting in a more resilient and self-sufficient community [12,14]. It is widely viewed that multi-stakeholder collaboration is essential to reducing disaster risk in vulnerable communities as it provides a forum for stakeholders from various disciplines and backgrounds to share knowledge with the aim of working collectively toward a common goal [12,14]. Amaratunga et al. [1] discuss the importance of interdisciplinary collaboration and the unique skill set required to collaborate within a multi-disciplinary team as a means of ensuring successful project delivery. They highlight the importance of adopting a multi-stakeholder approach as a means of building trust, social capital, and empowering the community through inclusion. This concept is reinforced by Vahanvati and Mulligan [2], who discuss the necessity of collaboration with beneficiaries to reduce community vulnerability through improved housing resilience. However, neither Amaratunga et al. [1] nor Vahanvati and Mulligan [2] discuss how applying a multi-stakeholder approach can improve the quality of information obtained from beneficiaries, resulting in housing that more adequately addresses their needs. Desportes et al. [14] further discuss the introduction of a ‘safe space for engagement’ as a means of facilitating effective stakeholder collaboration, suggesting that it provides an opportunity for dialogue in a politically neutral space perceived by stakeholders to be less biased, promoting the sharing of knowledge between community representatives and those from different sectors of the government. Furthermore, this is believed to provide an opportunity for stakeholders to formalize clear lines of communication, clarify information regarding social leadership structure, and determine stakeholder roles and responsibilities as a means of establishing a system for monitoring accountability [14].

Despite the general acceptance of community consultation as an essential requirement to attaining a high level of beneficiary satisfaction in PDHR, achieving genuine collaboration can be a challenging and often complex in practice. The task of assembling a team of stakeholders from various cultural backgrounds, industries, and government agencies with the purpose of working collaboratively toward a common goal is difficult in itself. Add to this the complex circumstances experienced in a post-disaster context and the task becomes ever more difficult to achieve. There are several barriers that tend to complicate the process and often result in the omission of information crucial to achieving a successful project outcome [14]. Table 1 outlines the key barriers and their effect on the process of collaboration in a post-disaster context.

Table 1. Barriers to collaboration.

Barriers	Effect on Collaboration
Resources	<ul style="list-style-type: none"> • Shortage of local skilled labor. • Beneficiaries lacking the capacity to effectively carry out construction tasks.
Institutional and regulatory	<ul style="list-style-type: none"> • A lack of relevant laws and formal structures which can adequately address the unique requirements of a post-disaster context. • ‘Red tape’ associated with local approvals. • A silo-based reporting structure preventing collaboration and the sharing of knowledge within organizations.

Table 1. Cont.

Barriers	Effect on Collaboration
Cultural and behavioral	<ul style="list-style-type: none"> • Disputes over social hierarchy and community conflict. • Internal politics which can breed corruption and misinformation resulting in an imbalance of beneficiary requirements being presented to the stakeholder group. • Institutional or practitioner bias towards integrating local knowledge or expertise. • Long established community frustration and distrust in government policy as a result of perceived corruption among government employees. • Structural inequalities relating to issues of ethnicity, class, caste and gender.
Participation and engagement	<ul style="list-style-type: none"> • A reluctance of the community to participate in the project. • The inability of residents and government to engage constructively with each other due to bias and mistrust. • The absence of a pre-existing relationship with the local community may affect participation levels due to trust issues.
Communication and information	<ul style="list-style-type: none"> • Information being misinterpreted or inappropriately communicated as a result of poorly established communication channels. • Language barriers. • The lack of or an unclear societal leadership structure within the community (e.g., clearly defining roles and responsibilities). • War and internal conflict.
The desperate need for permanent housing	<ul style="list-style-type: none"> • The speed at which housing is often required to be provided and pressure of delivering results within a limited timeframe often results in consultation being hastily conducted or simply overlooked.

Adapted from [13,14,27,28].

2.3. Reconstruction Approach

In line with the terminology provided by the United Nations [29], the term ‘reconstruction’ applies to rebuilding of the physical environment including housing and is part of the larger ‘recovery’ process that also includes the restoration of social, economic, and psychological aspects. Therefore, while the focus in this paper is on housing reconstruction, it is understood that it is part of a post-disaster recovery effort. As housing reconstruction is part of recovery, in instances where the overall recovery has been effective, there is a strong likelihood that reconstruction was also effective. This is evident from the case studies discussed below in Section 4.

Approaches to PDHR can vary greatly depending on factors such as the scale of the disaster, the capacity of the community, and the source of available funding [30]. The selected approach will determine the role of community members in the reconstruction process ranging from owner-driven reconstruction (ODR) where beneficiaries drive the project based on community interests to agency-driven reconstruction (ADR), which provides limited scope for community input [31]. Amaratunga et al. [1] address the topic of building resilience in disaster-affected communities and how it can be applied to individuals, households, and across the wider community. This concept forms the basis of the ODR approach, which sees beneficiaries rebuilding their own homes with training, technical support, and supervision being provided by implementing agencies [8,31]. Beneficiaries are given control over the construction of their own home based on a core design developed in consultation with the community. This approach provides beneficiaries with the flexibility to alter the approved design to suit their individual needs, provided the changes do not compromise construction quality [12]. This not only provides a greater opportunity for the

inclusion of community requirements in house design, but also allows for the introduction of more resilient building materials and construction practices, improving the resilience of both the built environment and the affected community [2]. Implementing an ODR approach also provides beneficiaries with a much-needed form of income in the wake of disaster where opportunities are limited due to the effect of the disaster on the local economy. In this case, funding is provided to and is managed by beneficiaries for use in the construction and management of their own house as opposed to funding external contractors. This not only helps to lift community morale, but also helps to inject much-needed funds into the local economy [27]. Research tends to associate the ODR approach with high levels of beneficiary satisfaction [2,12,31], however, poor consultation practices coupled with inadequate agency supervision can lead to dissatisfaction among beneficiaries due to issues including a failure to address cultural requirements or poor housing quality. More research is required to determine where the process falls over and how best to prevent it reoccurring.

The importance of ongoing community consultation to the success of PDHR projects is a topic repeatedly highlighted throughout research in this field. It provides the opportunity for cultural and socioeconomic requirements to be included in the design and planning decisions, often leading to increased beneficiary satisfaction [7,15,28]. The chance of success largely increases where agencies have carried out work in a region and developed longstanding relationships with local communities, organizations, and authorities [8]. Vahavati and Mulligan [2] reinforce the benefits of this pre-existing relationship as agencies have a better understanding of the challenges faced by communities and how they can be incorporated in planning in order to build resilience in both the community and the built environment.

2.4. Community Consultation

Inadequate community consultation has historically resulted in the provision of standardized housing packages with little consideration for the individual needs of beneficiaries relating to key design requirements concerning size, layout, and location, the result of which can have a direct impact on the socio-cultural requirements of beneficiaries and the re-establishment of livelihoods [13]. This is reinforced by Dias et al. [11], who discuss the importance of community consultation in maintaining culturally appropriate spatial and architectural features in housing design as a means of restoring social capital when re-establishing the community. Such is the case where a lack of consultation has led to housing being completed prior to the construction of essential infrastructure with no consideration for spatial planning, resulting in the need for these essential services to be retrofitted to suit already completed housing [25].

Mulligan and Nadarajah [9] discuss the benefits of establishing a community-based advocacy group as a means of ensuring community requirements are clearly defined and communicated to the implementing agency through a single point of contact. It also provides an opportunity for community members to contribute to the decisions made regarding the equitable distribution of financial aid, reducing the risk of political interference on the basis of ethnicity or religious beliefs. However, Ahmed [8] describes how the quality of information gathered during the consultation process may come into question as participation levels are often low where communities are still dealing with the impact of a disaster including displacement and the loss of family members. This issue is often exacerbated where prominent members of the community lose their lives as a result of the disaster, leaving communities without the leadership required to mobilize and contribute to the consultation process [25]. In some cases, communities feel over-consulted and become frustrated with a process they find to be excessively time-consuming when their priority is the need for immediate housing [25]. This may also be the case where beneficiaries presented with the opportunity to collaborate on housing design are reluctant to request changes or provide negative feedback for fear of being refused a house.

This often leads to future, less resilient modifications being added, leaving beneficiaries vulnerable to future hazards [9,32].

Despite the volume of research on PDHR endorsing the benefits of community consultation, there is little information addressing how the process can be better managed to ensure that the information gathered more accurately reflects the needs of the community, resulting in more favorable project outcomes to the benefit of both beneficiaries and implementing agencies.

2.5. Relocation versus In Situ Reconstruction

Resettlement is widely viewed throughout the literature as an opportunity to build resilience in vulnerable communities through the implementation of disaster risk reduction measures, however, there are many examples where relocation programs have been poorly planned, resulting in housing being altered, abandoned, or left uninhabited as a result of quality or design failings [9,15,25]. The decision of whether to rebuild in situ or relocate can have a major impact on affected communities in terms of connection to cultural heritage and livelihood, however, it is often made without their input [11]. Mulligan and Nadarajah [9] highlight the importance of relocating as close as possible to the original settlement in order to retain social networks and ensure communities remain intact. This is reinforced by Dias et al. [11] who discuss how poorly planned site selection can lead to communities being isolated from social infrastructure such as schools, hospitals, and places of worship and feeling disconnected in the face of unfamiliar hardship when resuming day-to-day activities. In some cases, relocation may be unavoidable due to ongoing safety concerns or government legislation, which often results in communities being resettled far from their original settlements with little consideration for cultural and socio-economic requirements, often creating more problems than solutions [13,24,31]. This was the case in Sri Lanka following the 2004 Tsunami where fishing communities who relied solely on the ocean for their income were relocated inland due to the introduction of a no-build coastal 'buffer zone' by the government. Poor planning left communities with no means of continuing their livelihood, leaving survivors feeling anxious at the uncertainty of future income prospects [9]. Literature in this field highlights the need for agencies to include community requirements in the site selection process [11,12,24], however, more research needs to be conducted to determine the extent of which community consultation is carried out, the role community requirements play in determining a relocation site, and why these requirements often continue to be overlooked.

2.6. Long-Term Beneficiary Satisfaction

Community consultation in the early planning stages of PDHR is critical to the long-term sustainability of a resettled community [33]. It ensures that the cultural and socio-economic needs of beneficiaries are considered in conjunction with built environment requirements as part of housing design [11,33]. Khasalamwa [13] discusses the need for post-disaster recovery efforts to not only address the needs created by natural hazards, but also the pre-existing challenges such as wealth imbalance and socio-economic status as a means of increasing resilience and providing communities with the tools to better cope with future disasters. Furthermore, Dias et al. [11] discuss the importance of addressing the psychological and emotional requirements of the community as a means of providing housing that feels like "home", rather than just a physical structure in which to live. As is the view of Perera et al. [34], who believe that providing beneficiaries with the opportunity to take part in the design of their home can lead to a sense of ownership, which proves vital to the long-term success of resettled communities. In addition, there is substantial research that indicates that community consultation in town planning requirements in conjunction with house design can help restore livelihoods and maintain pre-existing social relationships, further ensuring the long-term satisfaction of beneficiaries [9,11,32,34].

Community consultation not only provides a forum for beneficiaries to provide input in housing design, but also an opportunity for implementing agencies to discuss the

integration of resilient building materials into traditional housing construction [7]. This collaborative process ensures that aspects of traditional design vulnerable to natural hazards are addressed at the design stage of the project as a means of increasing beneficiary satisfaction through community buy-in. The end result of which is to produce a house design that meets both the cultural and socio-economic requirements of the community while incorporating critical disaster risk reduction measures through the use of resilient building materials [13]. However, more research is required to determine how the needs of beneficiaries are established by implementing agencies during consultation, and to what extent this information is incorporated into housing design as a means of improving long-term beneficiary satisfaction.

Despite the volume of research documenting the widespread rhetoric and endorsement of community consultation as the way forward for achieving successful project outcomes, there is little discussion around the extent of consultation carried out and why the information gathered in practice often falls short of beneficiary expectations. For example, despite each implementing agency having their own internal procedures for community consultation, there is no single established set of internationally accepted guidelines for implementing community consultation in PDHR on which each agency could develop a project-specific operational procedure. This lack of an established set of guidelines is often reflected in the number of projects that fall short of beneficiary expectations despite the good intentions of the implementing agencies delivering the project. This is illustrated later through case studies in Section 4.

3. Research Methodology

Based on the above literature review, a key question emerged: Why is there often still a significant gap between the outcomes of PDHR projects and the expectations of beneficiaries despite the endorsement of community consultation as standard practice among implementing agencies? The question is addressed in this paper through the aim of developing a framework for community consultation in PDHR to ensure that the needs of beneficiaries are more accurately reflected in the housing produced, through the following objectives to:

- Determine why the information gathered during the consultation process is often not reflected in the housing produced.
- Identify the obstacles faced by agencies when conducting community consultation in a post-disaster context.
- Evaluate the effect these obstacles have on the quality of information provided
- Establish a list of indicators which influence beneficiary satisfaction.
- Identify the community consultation practices which contribute to a high level of beneficiary satisfaction.
- Develop a framework for carrying out community consultation practices to improve levels of beneficiary satisfaction.

The research method undertaken for this paper is of a qualitative nature with data being obtained through the application of two methods, conducted as a means of first establishing an understanding of the current knowledge on the topic, and to thereby determine the community consultation practices commonly utilized in PDHR projects. The first method being in the form of an extensive literature review, is presented above in Section 2, which was conducted as a means of establishing what is already known on the subject, listing common themes throughout the literature, and identifying indicators that influence beneficiary satisfaction [35]. The second method is in the form of a case study approach in order to further develop the information obtained in the literature review.

Four case studies relating to PDHR in Asia were studied with the view of understanding how the indicators identified in the literature review were affected by the community consultation practices undertaken [35]. The subject case studies were selected because they provide examples of different reconstruction approaches in response to various hazards affecting four distinct regions of Asia. Each example faced its own unique challenges with

implementing agencies conducting different levels of community consultation, resulting in various degrees of beneficiary satisfaction. The practices identified as having a positive influence on the project outcome were then used to form the basis of a community consultation framework for PDHR with the aim of providing housing, which more adequately addresses the requirements of beneficiaries.

4. Case Studies of Post-Disaster Housing Reconstruction (PDHR)

The following case studies were selected to identify the common community consultation practices implemented as part of PDHR projects and to determine their influence on the level of beneficiary satisfaction in the project outcome. They provide examples of projects carried out under varying circumstances each with different levels of beneficiary satisfaction in order to first, determine whether beneficiary satisfaction can be linked to successful consultation practices, and second, identify the consultation practices that tend to positively influence beneficiary satisfaction. The case studies have been drawn from Global South countries in Asia in line with the scope of the paper discussed above in Section 1.

Case studies 1 and 2 below are drawn from the research of one of the authors, which included field-based investigations. This research work has been published in various forms [12,36,37], and these publications were reviewed in this paper and informed the case studies. The other two, case studies 3 and 4, have been drawn entirely from secondary sources. Thus, a literature review was the principal research method followed in this paper including in the case studies.

4.1. Case Study 1: Housing Reconstruction in the Maldives

The 2004 Indian Ocean Tsunami reached the Republic of Maldives in the form of one–four meters waves that inundated the country, killing 82, injuring more than 1300, and displacing nearly 12,000 people. As the waves swept across the island nation, more than 2500 homes were destroyed, 3500 severely damaged, and a further 1500 were left requiring repair [36]. This was evident on Kandholhudhoo, a densely populated island in the Raa Atoll, which consisted of approximately 11 hectares of land and was home to more than 3600 people. The tsunami destroyed the majority of homes and contaminated the freshwater lens with seawater, rendering the island uninhabitable [36,38].

In response to the devastation, the government through its ‘safe islands program’ resettled the affected community on the island of Dhuvaafaru, a project implemented by the International Federation of Red Cross and Red Crescent Societies (IFRC) in conjunction with the National Disaster Management Center (NDMC). After the tsunami, the residents of Kandholhudhoo were relocated to temporary accommodation on five separate islands, which along with the absence of IFRC staff suitably qualified to manage consultation and a community known to be ‘demanding and proud’, made implementing effective consultation challenging and largely impractical [36,39]. The reluctance of the community to take ownership saw the project take the form of agency-driven reconstruction, which served to further reduce the opportunity for meaningful community consultation and participation. This lack of consultation resulted in the application of a one-size-fits-all house design with no regard for individual family requirements, which subsequently led to modifications and extensions as the household profiles changed over time [36] (see Figure 1). As is common in such projects, these modifications were often built to a lesser standard than the original structure, leaving residents vulnerable to future hazards [9,32]. The new homes were designed to accommodate no more than eight people, resulting in extended families being allocated separate housing. However, without prior registration, they were unable to register the property in their name, leaving them with a sense of uncertainty for the future. Homes were allocated by way of a lottery leaving large families, who wanted to be placed close to each other, unable to select their preferred location, which often led to disputes among the community [36,40].



Figure 1. Houses in Dhuvaafaru with extensions and modifications; the house on the left was extended into a 2-storey structure (source: Iftekhar Ahmed, University of Newcastle, Australia).

Limited consultation did result in the inclusion of some community requirements such as the construction of wells and fish processing facilities required to maintain both cultural and livelihood practices [36,39]. However, requests for the allocation of larger land plots, better suited to maintaining fishing livelihoods, were ignored much to the community's dissatisfaction [36]. Despite the problems experienced by the community, which can be attributed to the lack of consultation, the outcome in terms of beneficiary satisfaction was good, as conditions in Dhuvaafaru were largely considered an improvement to those experienced on the overcrowded island of Kandholhudhoo. Although consultation was limited, it did result in the construction of critical infrastructure, which supported the continuation of livelihoods and contributed to the positive level of beneficiary satisfaction. However, issues such as property allocation, the application of a standard house design and uncertain property rights have resulted in the community becoming fragmented.

The inadequate level of community consultation could be seen as the cause of the majority of issues and it can be argued that if consultation had been properly implemented, these issues could have been avoided. Stronger leadership in terms of commitment to community consultation may have inspired the community to participate in and even take a lead role in the project, further improving beneficiary satisfaction.

4.2. Case Study 2: Housing Reconstruction in Sri Lanka

The village of Seenigama is located in the district of Galle on the southwestern coast of Sri Lanka. The area sustained extensive damage as a result of the 2004 Indian Ocean Tsunami with most buildings within 100 meters of the coast being destroyed and damage evident up to 300 meters inland [9,12,41]. The Foundation of Goodness (FoG), a locally based NGO, undertook a number of resettlement projects in Seenigama, the largest of which was the Victoria Gardens project. This was a 'donor-driven' reconstruction project with housing being built largely within the vicinity of existing villages to minimize the risk of problems experienced in other resettlement projects [9,13,24,42].

Beneficiaries were selected by a 'government-appointed village administrator' who carried out assessments of tsunami survivors residing in temporary shelters as a means of compiling a list of beneficiaries for submission to local officials. However, bribery and corruption within the local political system ultimately prolonged the process, stifling the initial community consultation [42]. The FoG carried out extensive community consultation for the Victoria Gardens project built at a later stage as part of the house design process with the final design being a two-storey duplex (see Figure 2) consisting of an indoor kitchen, living space, and separate bathroom on the ground floor and two bedrooms on the upper floor. As this type of construction was unfamiliar to the community, the FoG had a

model house built to allow beneficiaries to inspect the layout and provide feedback prior to construction moving forward [9,12].

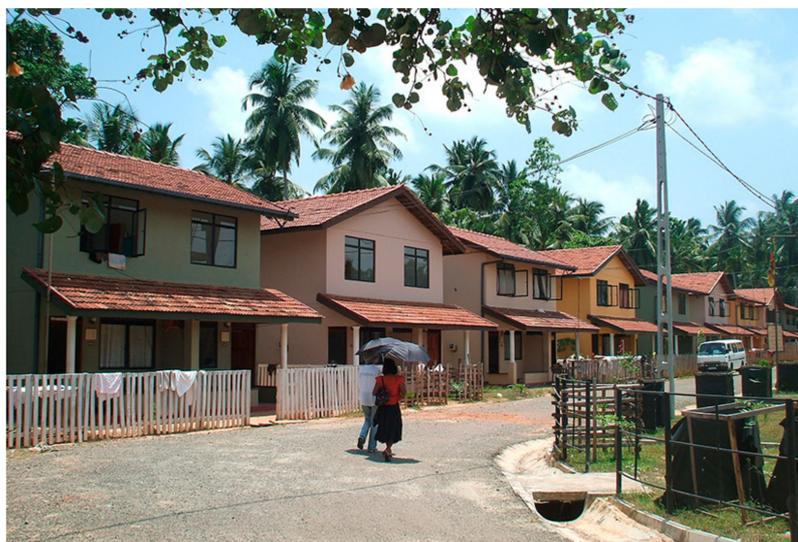


Figure 2. Two-storey duplexes in the Victoria Gardens project, Seenigama (source: Iftekhhar Ahmed, University of Newcastle, Australia).

The design was well-received with the upper storey being viewed as protection from future tsunamis, however, there were a number of issues that were not identified until the homes were occupied, which include: (a) Insufficient ventilation in kitchens for the use of biofuel resulting in makeshift external kitchens being constructed; (b) The site plan left some houses oriented to the west and thus unable to take advantage of the passive cooling effects of the prevailing southerly breeze; in addition, they were exposed to the full effects of the afternoon sun resulting in significant heating; and (c) The stairs are difficult for the elderly to manage, often resulting in the living space being used for sleeping arrangements [12]. Some beneficiaries have since advised that they had reservations over the selected design, however, they were reluctant to voice their opinions for fear of being excluded from the program. Land plots in Seenigama were relatively small and left little room for activities such as food production, work activities and socializing, which traditionally took place in the open areas around the house.

Despite these issues, there was generally a reasonable level of satisfaction among beneficiaries as the design allowed for the duplexes to be placed at varying orientations with the allowance for multiple color schemes and a variety of roof shapes giving the settlement the feeling of a village, often absent from the barracks-type layout experienced in other resettlement projects [12,37,42]. The FoG maintained a presence in Seenigama long after the completion of Victoria Gardens, providing assistance with housing repairs and maintenance while promoting the upkeep of communal facilities by means of community participation, providing a sense of community pride [9,37,42,43]. The Victoria Gardens project is a unique example of a donor-driven resettlement program led by an implementing agency that was both locally based and controlled, providing an opportunity for community interests to drive decision-making.

The FoG implemented extensive community consultation in the development of the house design, however, issues outlined above may have been avoided had more direction been provided by agency staff and built environment professionals. Nonetheless, the level of satisfaction among beneficiaries was generally high as the community was able to remain close to their original location, allowing socio-cultural and livelihood ties to be maintained.

4.3. Case Study 3: Housing Reconstruction in Myanmar

Cyclone Nargis struck Myanmar in May 2008, with torrential rains and winds of up to 200 kilometers/hour, carrying with it a storm surge up to four meters high. This was the worst disaster to impact Myanmar in the country's history, leaving over 140,000 people dead or unaccounted for and affecting approximately 2.4 million people with over 450,000 homes destroyed and 350,000 severely damaged [44–47].

The Myanmar Red Cross Society (MRCS) supported by the IFRC carried out the 'Household Shelter Project', providing support to 16,264 households. The fundamental principle behind the reconstruction project was to 'build back safer', ensuring the housing constructed was able to withstand future extreme weather conditions [48–50]. An ODR approach was adopted, however, rather than simply providing cash grants, beneficiaries were given the opportunity to select their preferred construction materials up to a predetermined value. This provided them with the opportunity to reuse salvaged materials and harvest materials locally available. Additional cash support was provided to cover labor and hardware costs [49]. The MRCS helped establish a Village Tract Recovery Committee (VTRC) in each tract as a means of establishing clear lines of communication with the beneficiaries and implementing effective community consultation practices. At least two members of each committee were required to be women, however, this was often exceeded as equal gender representation was encouraged [49,51,52]. Beneficiaries were selected based on criteria designed to ensure only those legally entitled to housing from villages severely damaged or completely destroyed would receive housing assistance. Preference was given to families considered vulnerable by the community including households with female heads, the elderly, widows, and persons with a disability [49,51]. The VTRC were tasked with a range of activities, most notably nominating beneficiaries for support, providing information on community needs and communicating all aspects of the recovery process via community meetings. This consultation on a community level was crucial to the effectiveness of the project as it provided a structured means for MRCS to communicate directly with the affected community while allowing beneficiaries to take ownership over their own recovery [52,53].

The MRCS built twenty demonstration houses as a means of training construction technicians and field assistants in best practice building techniques while identifying the capacity of local carpenters, traditional house designs, and the suitability of locally sourced materials [51,53]. MRCS staff members attended community meetings and provided VTRC and beneficiaries with training and technical knowledge to assist in the construction and future maintenance of their houses. Further training in cyclone-resistant construction techniques was provided to local carpenters with the aim to "build back safer", which in turn improved community capacity, providing the opportunity for future homes to be built in the same resilient manner [49–51].

A bill of quantities was provided to beneficiaries, which they were required to complete to procure the materials to build their own home. Materials were procured locally rather than by the usual central process, providing an opportunity to stimulate the local economy. A cash-for-work program was implemented to provide immediate livelihood support to the most vulnerable members of the community, followed by an asset recovery program aimed at providing resources to re-establish traditional livelihoods.

Beneficiaries were given the freedom to build homes to suit their individual requirements and the community's local traditions (see Figure 3), however, they were expected to include a latrine, rainwater harvesting facilities, and adhere to best practices techniques, ensuring that the homes could withstand the storms and flooding experienced in the area [49,50]. The quality of homes produced varied depending on factors such as each beneficiary's capacity to contribute to the construction costs, logistics, locally available building materials, beneficiary capacity, and availability of beneficiaries to participate in the construction. As some were unable to provide labor due to livelihood commitments, their costs were higher, which was reflected in the outcome [49].



Figure 3. Beneficiaries of the Myanmar Red Cross Society (MRCS) project were able to customize the house design to suit their needs and preferences (source: Daw San San Maw, Myanmar Red Cross Society, Myanmar).

Allowing beneficiaries the freedom to design their own house proved to be a key contributor to beneficiary satisfaction, resulting in various house designs being constructed, leaving new settlements with the feeling of a village rather than a group of identical houses. Provisions for rainwater harvesting improved freshwater security while the latrine added convenience to beneficiaries and an opportunity for improved hygiene. The majority of beneficiaries surveyed stated that their new houses were a higher standard and quality than those previously and that they felt safer now when faced with the prospect of future storms. There was, however, some dissatisfaction relating to the durability of houses with some respondents expecting their houses to need replacing in less than three years. This was generally associated with the use of perishable materials such as thatched roofing and bamboo wall matting [50,53]. The quality of project delivery varied depending on the capacity of VTRC members and their level of participation in processes such as quality control over materials and workmanship. As a result, the quality of homes varied, which often reflected the level of VTRC participation in project delivery.

Restrictions due to funding, geographical, and accessibility conditions meant that constructing homes that were fully resistant to cyclones and storm surge was not considered possible, however, the inclusion of best practice construction techniques resulted in a level of risk reduction to future hazards.

4.4. Case Study 4: Housing Reconstruction in Nepal

On 25 April 2015, Nepal was hit by a M7.8 earthquake followed by a series of after-shocks, the largest of which a M7.3 occurred on 12 May 2015. The devastation caused by the disaster resulted in the death of 8,857 people, left a further 22,300 injured, and directly affected around eight million people. In total, more than 800,000 homes were destroyed and over 60,000 left in need of repair [54,55].

In response to the disaster, the Government of Nepal established the National Reconstruction Authority (NRA) to oversee reconstruction activities implementing an ODR approach enabling affected communities to rebuild their own homes with staged funding provided in the form of cash grants [54,56]. Shelter and local partner staff obtained NRA-approved beneficiary lists that were verified in consultation with community leaders. Habitat for Humanity Nepal (HFHN) was engaged to undertake reconstruction activities in the districts of Kavrepalanchok, Lalitpur, and Nuwakot as part of the recovery efforts [57]. Coordination was managed by local partner organizations with support provided by

HFHN. Shelter monitoring committees were established, consisting of beneficiaries and community members tasked with assisting beneficiaries and facilitating quality assurance. Meetings were conducted in Nepali with community and local stakeholders involved in all decisions relating to project implementation, which served to promote participation and a sense of ownership through community engagement [54,56,57].

The government provided house designs for the project; however, alternative designs were produced as a means of reducing costs and incorporating local architecture. Beneficiaries were able to select their home design with procurement and material quality control training provided along with assistance in areas including financial management, site location selection, and building orientation to ensure the best quality outcome [55–58]. HFHN constructed demonstration homes as a means of training local community members in earthquake-resistant masonry construction techniques enabling them to utilize locally sourced materials to build disaster-resilient housing (see Figure 4), tube wells, and latrines [55,57]. Government-appointed engineers provided technical assistance and certified work at each stage of construction, ensuring compliance with the National Building Code. Certification was required prior to the release of each stage of funding [55,57].



Figure 4. Houses built with Habitat for Humanity Nepal (HFHN) support allowed local designs with earthquake-resilient construction; note the horizontal ties in the walls (source: Sujit Maharjan, Habitat for Humanity, Nepal).

The ODR approach followed in Nepal saw a significant increase in the capacity of local communities through training provided to both local masons and community members alike. This provided additional livelihood opportunities while reducing beneficiary vulnerability and building long-term community resilience through the construction of “safer settlements”. The projects faced a number of challenges including labor shortages due to employment migration, material shortages as a result of political unrest and communication difficulties faced by INGOs due to budget limitations that impacted translation services. However, community engagement in all aspects of project decision-making resulted in the community taking ownership of their own recovery, resulting in a high level of beneficiary satisfaction.

5. Results: Key Lessons from the Case Studies

The information obtained from the above case studies further reinforces the importance of including beneficiary requirements in house design through effective community consultation in order to achieve a high level of beneficiary satisfaction. They highlight the need for additional time to be spent on design and planning in order to identify and address any potential issues that may have a negative impact on the project outcome.

As was the case in the Maldives, a lack of beneficiary input in design decisions often leads to crucial requirements being overlooked, resulting in the creation of preventable

issues such as the reintroduction of sub-standard construction techniques or a lack of provisions for the continuation of livelihoods.

Providing beneficiaries with the opportunity to participate in the design process not only ensures local cultural and religious requirements, key to beneficiary satisfaction, are considered but also allows for the inclusion of local architecture in the final design. This helps provide the new settlement with the feel of a village rather than the barracks-type layout associated with traditional standardized housing design.

Community consultation not only provides a forum for beneficiaries to take part in design decisions fundamental to their own recovery, but also provides an opportunity for the community to receive invaluable training that serves to increase community capacity and build long-term community resilience.

Insufficient community consultation often results in community requirements being overlooked in housing design, resulting in low levels of beneficiary satisfaction whereas when beneficiaries are included in this process, they feel empowered, often taking ownership and driving the project to a positive outcome.

6. Framework for Effective Community Consultation

The research indicated a clear need for the inclusion of community consultation in the delivery of PDHR to ensure that a high level of beneficiary satisfaction is achieved in the project outcome. However, despite the overwhelming endorsement of community consultation by implementing agencies as a means of achieving a high level of beneficiary satisfaction, there still seem to be gaps in the process when implemented in a real-world context. This can often be attributed to factors such as pressure to provide permanent housing within a predetermined timeframe, funding restrictions, or local government legislation, all of which can have a negative impact on an implementing agency's ability to consult with the affected community.

Beneficiaries also have a role to play in the successful application of community consultation as their willingness to participate in their own recovery will often determine the level at which they participate in the consultation process. In addition, barriers such as relocation in the wake of disaster, capacity deficiencies, religious restrictions, and a lack of community leadership can also impact the levels of participation in the consultation process.

As a result of the research, the following themes were identified as critical to achieving a high level of beneficiary satisfaction in PDHR. Processes for conducting community consultation relating to each theme have been outlined and forms the basis of a proposed effective community consultation framework.

6.1. Determining a Reconstruction Approach

In order to develop a strategy for the implementation of a PDHR project, it would be essential to determine the level at which the affected community is able to contribute to the project in order to determine an appropriate reconstruction approach. Initial consultation with the community should be conducted to determine their physical and psychological capacity to carry out reconstruction activities, along with their willingness to participate in the project. This will need to be undertaken in a sensitive manner as the community may be dealing with the loss of family members, which can impact their ability to participate in consultation practices.

6.2. Establishing the Stakeholder Group

As was the case in both Myanmar and Nepal, an essential step in the process is the establishment of a community advocacy group as a means of re-establishing community structure, encouraging community buy-in and empowering beneficiaries to not only support, but take ownership and drive the project. As part of a multi-stakeholder approach, all those with a role to play in the successful delivery of the project including design consultants and representatives from local government authorities should be included in the stakeholder group. Senior members of the advocacy group should take up key roles in

the stakeholder group, providing a conduit for the delivery of information between the affected community and implementing agency.

A local organization with pre-existing relationships in the affected region should be engaged to manage and coordinate operations on the ground as they would have likely developed a level of trust with the affected community and be familiar with local cultural requirements as was the case in Sri Lanka. This pre-existing relationship will not only encourage beneficiaries to engage and take ownership in the reconstruction of their community, but will also help facilitate communication with local authorities, ensuring that compliance with local legislation is achieved and critical infrastructure such as roads, clean water, and sanitation are re-established in conjunction with housing.

6.3. Design Development

The advocacy group should hold regular scheduled meetings with the affected community and where possible, as in Nepal, these meetings should be conducted in the local language for the purpose of documenting the beneficiaries' requirements, concerns, and feedback on housing design as it develops without fear of being excluded from the program. This provides the opportunity for cultural and socio-economic requirements, crucial to the continuation of both social structure and traditional livelihoods to be included in housing design.

In line with the multi-stakeholder approach, the design should be developed in consultation with both the stakeholder group and beneficiaries, ensuring consideration is given to both beneficiary requirements and compliance with relevant building codes and government legislation. This will help streamline the construction process, avoiding any unnecessary delays associated with redesign. As was the case in Myanmar, consideration should be given for the inclusion of locally sourced building materials where possible, as a means of stimulating the local economy and ensuring materials are readily available for future maintenance. Allowances should be made in the design for future extensions to be constructed using the same resilient construction methods utilized in the core house design. This adaptive approach provides the flexibility to make necessary changes should the need arise, ensuring the design meets beneficiaries' immediate housing needs and also accommodates the changing needs of the future.

As undertaken in both Nepal and Myanmar, demonstration houses should be built where possible to provide an opportunity for beneficiaries to inspect the house and identify any issues that may only become evident when experienced in a full-scale environment. On completion of the process, the house could be utilized by the local organization, community, or beneficiaries in the program. This will help ensure that the beneficiaries' expectations are met and improve the level of satisfaction in the housing outcome.

6.4. Consultation during Project Implementation

Consultation should continue throughout the implementation of the project with training in resilient construction techniques provided to local builders, tradespersons, and beneficiaries where an ODR approach is adopted. As in both Myanmar and Nepal, appropriately skilled members of the local management team should provide adequate supervision and advice to beneficiaries over the course of the construction, ensuring that legislative and building code compliance is achieved.

A list of critical stage hold points will need to be created to ensure compliance is achieved prior to construction continuing to the next stage. This should include sign-off of structural and legislative requirements, material and workmanship quality inspections, and ensuring that beneficiary specific cultural or religious requirements have been addressed. Items such as construction program reviews, construction activity updates, and necessary design changes should be tabled for review and discussion at the PCG meetings with the information relayed to beneficiaries at advocacy group chaired community meetings conducted over the course of the project. As demonstrated in the Maldives, simply providing a new house without consideration for local cultural or religious requirements, irrespec-

tive of its quality, can often leave beneficiaries dissatisfied with the outcome resulting in modifications being made, which can lead to the reintroduction of previous vulnerable construction practices.

Based on the above points as a result of the research, a proposed framework for effective community consultation is shown in Figure 5.

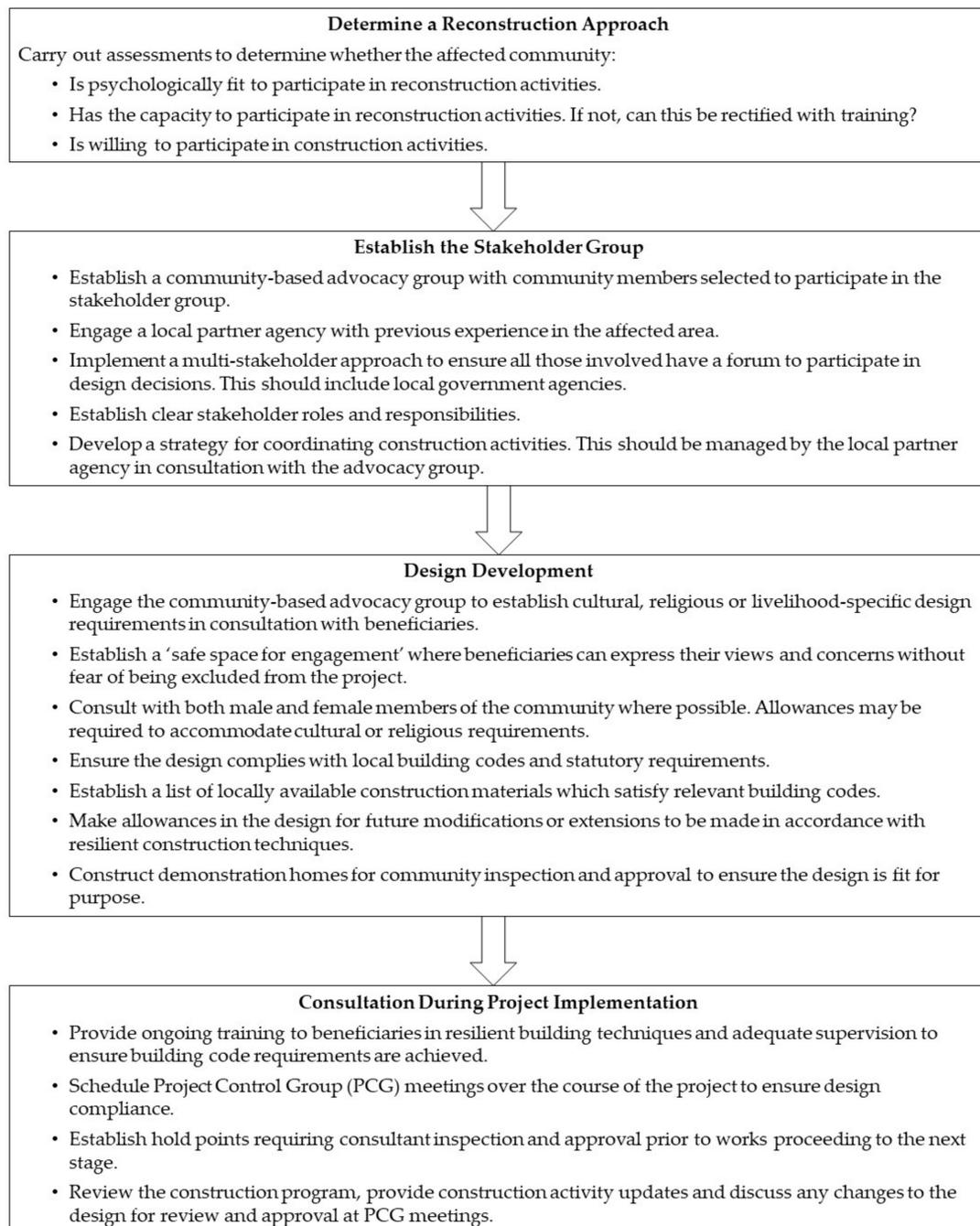


Figure 5. Framework for effective community consultation for post-disaster housing reconstruction (PDHR).

7. Conclusions

An increase in the frequency, scale, and magnitude of disasters has resulted in the need for a more effective approach to the delivery of PDHR in the Global South. However, despite research indicating the widespread endorsement of community consultation by implementing agencies as the means of achieving a high level of beneficiary satisfaction,

there are still many instances of where the requirements of beneficiaries are not accurately reflected in the housing produced.

In response, this research explored the community consultation approaches conducted by implementing agencies, the circumstances affecting that process, and the extent to which the requirements communicated by beneficiaries were incorporated in housing design with the aim of developing a framework for effective community consultation.

It was established that each implementing agency tends to have its own set of procedures for carrying out the process of community consultation, however, it would seem that after conducting extensive research of relevant organizations including the Global Shelter Cluster, there does not seem to be a standard set of guidelines for carrying out effective community consultation in PDHR projects.

This research established a number of good practice guidelines for carrying out community consultation as part of PDHR, which have been used to form the basis of a proposed community consultation framework. The framework draws on the data collected promoting community consultation as the cornerstone for housing design, utilizing local knowledge while promoting skills development within the beneficiary community where possible to empower beneficiaries to drive the project outcome. Although it is impossible to develop a procedure that can be applied in every post-disaster context imaginable, a level of flexibility allows the proposed framework to be adapted to form the basis of a more project specific plan for the delivery of effective community consultation in PDHR.

The intention of this research was to understand why beneficiary requirements were not being more accurately reflected in the housing being produced with the aim of developing a framework for community consultation, which resulted in a high level of beneficiary satisfaction. However, the overwhelming rhetoric and endorsement of community consultation among implementing agencies would lead to the assumption that such a framework already exists within these organizations. If this is the case, then one can only assume that the process falls over when applied in practice, which could be attributed to insufficient participation on behalf of either the agency, beneficiaries, or a combination of the two. Further research needs to be conducted to determine whether this is in fact the case, and if so, where accountability lies for the breakdown in this process and what procedures could be put in place to mitigate the risk of it continuing to occur as a means of improving beneficiary satisfaction in the overall project outcome.

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