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Mainstreaming Women into Disaster Reduction in the Built Environment- A Guideline for Sri Lanka

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Abstract

Purpose: The purpose of this paper is to introduce a guideline to mainstream women into disaster reduction in the built environment in Sri Lanka.

Design/methodology/approach: The paper is based on a set of in-depth interviews conducted in Sri Lanka with ten professionals engaged in disaster risk reduction in the built environment. The interviews are complemented by a comprehensive literature review conducted on the impacts of 2004 India Ocean tsunami on women in Sri Lanka, and the country's status of mainstreaming women into disaster reduction in the built environment.

Findings: The paper introduces a guideline for mainstreaming women into disaster reduction in the built environment in Sri Lanka covering the aspects of factors influencing the process, main steps, parties responsible, required resources, required expertise, appropriate stages of development to conduct the process, barriers to the process and how to improve the process.

Originality: At present, there are no guidelines which specifically instruct how to mainstream women into disaster reduction in the built environment in Sri Lanka. Such guideline is significant to reduce women's vulnerability to natural disasters and also to tackle disaster vulnerabilities of the built environment in general.

Keywords: women's vulnerability, natural disasters, built environment, Sri Lanka, guideline

Paper type: Research paper

Introduction

The aftermath of the Indian Ocean tsunami in 2004 demonstrated that there were significant gender issues in Sri Lanka. According to the United Nations (2009), male survivors from the tsunami outnumbered female survivors by 3 or 4 to 1 in Sri Lanka. It is stated that the women's death toll in the tsunami was equivalent to as much as 80 percent in some parts of the country (Ariyabandu, 2009; APWLD, 2005). The prevalence of gender issues was clearly evident in the tsunami recovery and reconstruction process.

The significance of recognising the different roles, capacities, vulnerabilities and needs of women, and considering them in disaster risk reduction (DRR) has always been emphasised by policy makers and the research community due to the higher disaster vulnerability of women (Kottegoda, 2011; Gender and Disaster Network, 2009; UN/HABITAT, 2004; UN/ISDR, 2002). The adverse effects to women caused by the 2004 tsunami highlighted the significance of reducing women's disaster vulnerability and ensuring the healthcare, privacy, security and safety of women in the event of a

disaster. The impacts urged the necessity of incorporating a gender perspective into DRR in Sri Lanka more than ever in the past.

On the other hand, incorporating a gender perspective into DRR in the built environment is also important to tackle women's higher disaster vulnerabilities and also to achieve overall DRR due to the significant role of the built environment in DRR (Ginige *et al.*, 2009). The vital role of the built environment in fulfilling human activities brings severe disruption to the ability of society to function economically and socially when its elements are damaged or destroyed by disasters (Haigh and Amaratunga, 2010). The majority of human and direct economic losses from natural hazards occur as a result of damage to the built environment (Max Lock Centre, 2009; Benson and Twigg, 2007). Notably, developing countries experience more human and economic losses from natural disasters than developed countries due to the non-availability of sufficient capacity in their construction industries (Benson and Twigg, 2007; Ofori, 2002). Therefore, incorporating a gender perspective into DRR strategies and measures in the built environment in order to minimise the disaster vulnerabilities of women is significant in a country like Sri Lanka.

However, there has no adequate attention been paid to bringing a gender perspective into DRR particularly into the built environment in order to reduce women's vulnerability (Ginige *et al.*, 2009). The paper in this context aims to present a set of guidelines that has been developed to fulfil the gap in the built environment in Sri Lanka based on the concept of gender mainstreaming. Gender mainstreaming is the process of assessing the implications for different gender groups of any planned action. It is a strategy for making the concerns and experiences of women as well as men an integral part of the design, implementation, monitoring and evaluation of policies and programmes at all levels to ensure that women and men benefit equally (UN/ECOSOC, 1997). Accordingly, the term 'mainstreaming women into DRR in the built environment' in the paper refers to the process of identifying the DRR related needs and knowledge of women in local communities, and integrating them into the development within the built environment in order to reduce women's disaster vulnerabilities.

This paper demonstrates the methodology of the study which was employed to develop the guideline and a review of the progression of DRR in the built environment and mainstreaming women in Sri Lanka prior to presenting the guideline in the subsequent sections. The guideline is followed by the conclusions of the paper.

Methodology

The paper is based on a study which incorporated a social constructivism view point to design the research. The research design associated the constructionism ontology and interpretivism epistemology. It adopted a case study approach as the strategy of enquiry and the case study design comprised a single case, holistic design, with a single unit of analysis. The unit of analysis was determined as the process of mainstreaming women into DRR in the built environment with a country specific and cross sectional case study boundary in relation to spatial and temporal variables. Sri Lanka was selected as the case study for the research.

The study was a mono method research which deployed qualitative, in-depth interviews for its primary data collection. Ten comprehensive interviews were conducted with a group of professionals which consisted of academics (referred as A1, A2, A3), practitioners (referred as P1, P2, P3, P4) and policy makers (referred as PM1, PM2, PM3) in DRR in the built environment of Sri Lanka. The study selected only professionals for its primary data collection because the research question intends to fill a gap in policy by trying to establish the process of mainstreaming women.

Accordingly, data was collected using open ended questions on the themes of, importance of mainstreaming women, current status of mainstreaming women in Sri Lanka, barriers hindering the process, ways of improvement, parties who are responsible to implement the process and the applicable protocols to regulate and implement the process. In addition to interview data, a literature review was conducted to improve the knowledge of the associated concepts pertaining to the research.

The interview data of the study was analysed based on thematic analysis. Braun and Clarke (2006) provide a detailed account of the process of thematic analysis categorising it into six phases, namely, familiarising with the data set; generating initial codes; searching for themes; reviewing themes; defining and naming themes; producing the analysis report. Accordingly, thematic analysis of a set of interviews begins with transcribing the interview recordings and ends when the analysis report is written up presenting the content and meaning of themes in the data. In relation to the interview data of this study, a list of 98 initial codes was generated at the end of the second phase of thematic analysis. During the next three stages of the analysis process, the aforementioned list of codes was examined, reviewed, refined and in some instances, re-labelled to identify and finalise the overarching themes contained within them. As a result, three main themes were identified as follows:

1. DRR in the built environment in Sri Lanka
2. DRR knowledge and needs of community
3. Mainstreaming women into DRR in the built environment

The aforementioned themes also contained sub themes within them. The node structure of each theme, which was obtained from NVivo 9 (Version 9) and the respective thematic map which was generated based on the node structure, were then integrated into the narratives. Further, relevant data extracts that were directly quoted from the interview responses were used in the narratives in order to ensure the reliability of the study. The analysis combined inductive reasoning and abductive reasoning in order to build systematic, explanatory accounts from concepts and meanings embedded in the interview responses.

Integrating local communities into disaster reduction in the built environment

The Indian Ocean tsunami in 2004 was an eye opener for Sri Lanka causing the country to re-think its disaster management approach. The tsunami not only paved the way for providing a legal basis for instituting a disaster risk management system in the country, but it also caused a shift from a response-based disaster management approach to a more proactive approach to disaster management (DMC, 2005). However, the lack of public consultation in disaster reduction in the built environment was evident throughout the rebuilding process. A report which analysed the response, recovery and rebuilding efforts of Sri Lanka seven months after the 2004 tsunami noted that moving from a process of telling people what they could have to one in which people were asked what they wanted was a task that most governmental and non-governmental officials, were ill prepared to implement (APWLD, 2005). It suggested that aspects such as the layout of resettlement communities, i.e. the distance between houses etc., needed to have evolved from a process of consultation with the community and with experts in the field.

In the years to follow, Sri Lanka started recognising the importance of listening to the views and suggestions of people for implementing DRR proposals. ADPC (2011), in its report for Mainstreaming DRR into the housing sector in Sri Lanka- Phase 2, admits that the site selection for housing

development projects in Sri Lanka are generally undertaken on the basis of the availability of land, rather than on suitability and taking into consideration the views of beneficiaries. The National Housing Development Authority (NHDA) has instituted meetings with house owners, to obtain their views and suggestions, as an important step in the planning stage of its programme for mainstreaming DRR into selected housing projects (ADPC, 2011). It is emphasised in the report that these meetings are important as the people who are going to live in the houses are aware of the prevailing hazards, surrounding conditions and traditional ways of construction. In this context, the next section examines which practices and procedures are in place in Sri Lanka to facilitate incorporating the views of communities and its people into DRR.

Existing practices to integrate local community

Although community consultation is not a common practice within the built environment in Sri Lanka, the Environmental Impact Assessment (EIA) process provides some provision for the local community to intervene in the development decision making process. It is an internationally agreed assessment procedure that identifies and predicts the likely environmental, social and other effects of proposed new development projects that have potentially significant environmental impact, and examines the alternatives based on preferred or most economically, environmentally and socially sound options for achieving the project objectives (Withanage, 2006; Kodithuwakku, 2004). EIA legislation in Sri Lanka allows a thirty day mandatory public commenting period for the relevant stakeholders, including the general public, to convey their opinions about the proposed development (Withanage, 2006). This consultation stage of the EIA was seen as the most appropriate current framework in Sri Lanka to embed the process of mainstreaming women by the interviewees.

However, there are many weaknesses in the current practice of EIA in Sri Lanka in relation to public consultation (Withanage, 2006; Kodithuwakku, 2004). The following list is a compilation of the main drawbacks as seen by the aforementioned two authors:

- Although public consultation is mandatory under the typical EIA process, the implementation of the process is not satisfactory in most developing countries; in Sri Lanka the EIA process in most instances is limited to a paper exercise.
- It is often seen as an obstacle to development and is a process that is, typically, rushed. As a result, the public's right to comment on the Initial Environmental Examination (IEE), the process which was adopted to assess the impact of less environmentally sensitive projects was withdrawn in 2000.
- Although, the EIA consultants are supposed to be independent, the integrity of the entire process is at stake because their service is funded by the project proponents; as a result the consultants may be predisposed to recommend the execution of the project irrespective of the nature of the impact.
- The 30 day period allowed for public comment is insufficient to complete the consultation effectively.
- Although, local communities are the most important stakeholders in principle, in practice, they are usually paid the least attention, consideration and importance.
- In some instances, public feedback about development decisions is obtained but how the feedback influenced the final decisions is not properly communicated back to the community.
- The training of personnel, the guidelines and any discussion of the EIA are usually in English and unqualified people frequently find it difficult to understand the highly technical content of the EIA report.

Affirming the weaknesses identified in the aforementioned list, A2, P3 and P4 all commented in relation to the poor monitoring and evaluation mechanisms of the EIA. For example, A2 indicated that there is no proper mechanism to check whether the consultations have been conducted and therefore, the evaluation reports can sometimes be prepared even without visiting the proposed development sites and neighbourhoods.

Accordingly, it is clear that implementation of public consultation in development process in general is not satisfactory in Sri Lanka. Having recognised the current situation of incorporating public views into development activities in general, the paper moves to provide an overview of the status of mainstreaming women into DRR in Sri Lanka.

Status of mainstreaming women into disaster risk reduction

According to Enarson and Meyreles (2004), Sri Lanka has been a pioneer in the research on gender and disasters in South Asia. However, the level of implementation of gender sensitive policies and programmes in DRR is still not satisfactory in the country. In particular, the aftermath of the 2004 tsunami exhibited the country's inadequate gender sensitive policies and actions in relation to disaster management. According to APWLD (2005), access during the post-tsunami phase to healthcare was a critical but significantly difficult task for women, especially for pregnant women and women with small children. Furthermore, there were incidents of rape, molestation and physical abuse of women and girls during the unsupervised rescue operations and in the temporary shelters.

APWLD (2005) states that the lack of consultation with women and the lack of any sensitivity to women's issues and women's multiple roles in rebuilding and sustaining their own families, as well as their communities, were evident in the tsunami rebuilding process as well. It states that such a gender insensitive approach has led to many unsustainable reconstruction decisions, for example, the absence of kitchens from many designs for transitional housing. Furthermore, it has been illustrated that the reconstruction of infrastructure in the country took place without due consideration for the specific needs of women (Kottegoda, 2011). Although all the aforementioned issues have emerged during the response and recovery stages of a disaster, it is also important to consider them in risk reduction and to ensure that the needs of women such as security, safety, privacy, healthcare, housing, etc. are incorporated, as required, into the development activities in the built environment in order to reduce their vulnerability for future hazards.

Despite the necessity, incorporation of women's knowledge and needs into DRR in the built environment has not been endorsed explicitly in Sri Lanka. The EIA guidelines provide some reference which align with mainstreaming women into DRR in the built environment. Ensuring that any adverse impact on communities directly affected by developments are minimised and mitigated as much as possible, and avoiding any adverse impact on groups that may be disadvantaged by their gender, age, ethnicity, religion, culture, or way of life, are among the standard requirements of EIA (Withanage, 2006). Notably, it is stated that EIA should ensure that any adverse impact from the location or design of projects should not fall disproportionately on disadvantaged or vulnerable groups. Thus, the EIA process, particularly the information dissemination and public consultation stage of the EIA, can be seen as a useful framework to adopt in mainstreaming women into DRR in the built environment.

Although the current EIA practice was seen to be the most relevant procedure that could be adapted to mainstream women, there are no existing protocols in the country which could directly facilitate the process of mainstreaming women in DRR in the built environment. The current EIA practice does not assess the impact of a development on different social groups separately and an EIA is

prescribed only for development projects with potentially significant environmental impact. Therefore, there is a need to develop a protocol to facilitate the process in a wider range of development projects in the built environment. The set of guidelines was developed to mainstream women into DRR in the built environment in Sri Lanka considering the aforementioned need, is presented in the following section.

Guidelines for mainstreaming women into DRR in the built environment

Factors influencing mainstreaming women

Mainstreaming women into DRR in the built environment is not a universally standard practice that can be designed to implement in any country or place disregarding the contextual variables such as social, economic, cultural and political factors. It is a process which requires endorsement from the policy makers or higher level decision makers to be implemented whilst the extent of recognition it receives as a valid process is significantly dependent on the social, economic, cultural, religious and political environment (Ginige *et al.*, 2014). In other words, the details of the process of mainstreaming women should be designed according to the contextual variables and therefore, the guidelines presented in the paper are sensitive to the social, economic, cultural and political conditions in Sri Lanka which are outlined below.

Sri Lanka is a developing country with a lower middle income (World Bank, 2014). The country's Human Development Index (HDI) indicates that the life expectancy, education and income of people are at the highest level in South Asia (UNDP, 2012). Sri Lanka gained a significant economic growth following the end of the three decades' long civil conflict in 2009. Therefore, the economic and social conditions of Sri Lanka are not overly poor despite being a developing country, and incorporating a women's perspective into development within the built environment is not vastly hindered by conditions such as poverty, illiteracy, poor health and well-being, violent conflicts or political instability. Sri Lanka is a multi-ethnic, multi-religious and, as a result, a multi-cultural country. Although the mainstream culture provides equal opportunities for women, in certain communities, women are more culturally restrained with limited decision making power, inadequate opportunities to voice their needs and knowledge, and unequal access to education. However, the overall cultural and political background of the country accommodate gender sensitive policies and programmes.

On the other hand, as natural disasters, specifically climate-related hazards, pose a significant threat to economic and social development in Sri Lanka (World Bank, 2014), achieving DRR to a satisfactory level is viewed as a priority at the national level, providing a facilitating background for the initiatives which address the issue.

Main steps of mainstreaming women

A process for mainstreaming women into DRR in the built environment involves two main steps (Ginige *et al.*, 2014). They are:

1. Identifying DRR related knowledge and needs of women
2. Integrating the DRR related knowledge and needs of women into the DRR process in the built environment

Identification of the DRR knowledge and needs of women could be conducted by using four main methods:

- I. through directly capturing information through participatory community consultation methods
- II. from available literature

- III. via expert views
- IV. through complaints and feedback procedures

The community consultation methods can be embedded in feasibility studies, or in the public consultation stage of impact assessments (EIA), depending on the scale and nature of the development project. Furthermore, the DRR knowledge and needs of women can be identified using one or a combination of multiple methods. Using multiple methods is the most advisable way of identification because it facilitates corroborating one method's findings with the information gained via other methods. Validation of information is especially important if the main mode is the participatory community consultation method because it produces non-scientific data. The interview data suggested that the DRR knowledge of women lacks scientific clarity as it is often the knowledge gained from past experiences and not by systematic means of education or training. A1, A3, P1, P2 and PM1 all agreed that incorporating knowledge which has not been scientifically validated is not acceptable in the built environment where safety and reliability are paramount for its products. However, using multiple methods for identification of DRR knowledge and needs of women depends on the availability of the information via expert views and literature, and the amount of resources which are required for the identification stage of mainstreaming women such as funds, expertise and time.

Following is a list of features of a good participatory approach that can be considered in the identification of the DRR knowledge and needs of women in this context (Cronin et al., 2004). The features are:

- Listening instead of lecturing, encouraging development practitioners to learn from local people rather than the opposite.
- Emphasising visual and diagrammatic techniques over verbal techniques to allow input from all in group activities.
- Settling for an optimal level of relevant information given limited time and budget
- Verifying information using multiple methods.
- Seeking out diversity of opinion, rather than looking for averages.
- Remaining sufficiently flexible to modify goals as participants better realise their needs.
- Focusing on community strengths rather than dwelling on weaknesses.
- Emphasising the group over individuals and comparisons over precise measurements.
- Identifying and empowering local analysts.

Integration of the DRR knowledge and needs of women requires to be facilitated by a regulatory framework that enforces the implementation and monitoring process with appropriate regulations and guidelines, project documentation that prescribes the integration, and awareness, expertise, and commitment of professionals, developers and regulatory bodies in the built environment to mainstreaming women. Current regulations for EIA can be adapted removing its existing loopholes to facilitate the process for large scale development projects with a potentially high environmental impact.

The DRR knowledge and needs of women which are identified, need to be evaluated in detail prior to integrating them into the development plans, to recognise the most significant requirements to be fulfilled in terms of reducing disaster vulnerabilities whilst attempting to minimise the possible overruns of resource targets for the project in addressing these requirements. Further, the DRR knowledge and needs obtained through community consultation methods or feedback and complaints need to be assessed prior to incorporation into development designs in order to avoid any failures that may occur due to false or substandard information being taken into consideration.

Parties responsible

There are various parties that need to contribute to the process of mainstreaming women to make the process a success. Conforming to the statutory requirements, the developer/owner of a development project needs to bear the main responsibility for ensuring that women are mainstreamed in the development. Accordingly, developers/owners could inform the project team, especially the professionals who are involved in the design of the project, of the need to integrate women's DRR knowledge and needs in the project documentation.

Developers/owners needs to take responsibility for appointing an independent expert/ team of experts with the skills necessary to identify and evaluate the DRR knowledge and needs of women. Alternatively, the responsibility for conducting the aforementioned activities could be dedicated to the design team of the development project. Contacting or approaching women in the local community can be initiated through government village representatives or Divisional Secretariats, as they are a responsible point of contact with considerable understanding of the locality. Further, these entities could also act as the transmitters of the DRR knowledge and needs of women to the development planners or facilitators. In this context, religious leaders in the locality and public representatives are also useful sources of information and have the influence to seek information and action on the disaster vulnerabilities of women and to get women involved in the process.

The next stage for mainstreaming women, i.e. integrating DRR knowledge and needs of women into the development, is inevitably the responsibility of the design team. However, the conformity to the standards in implementing the process needs to be monitored by the relevant regulatory entity which is centrally responsible for the process. In addition, parties such as academia and research community are responsible for raising awareness about the process and populating the knowledge. Accordingly, it is clear that the process incorporates the involvement of various parties. Table 1 demonstrates a list of responsible parties with their associated roles.

Table 1: Parties responsible for mainstreaming women

Required resources

A successful implementation of the process of mainstreaming requires adequate resources in terms of funds, time and expertise. However, the amount of time and funds spent to mainstream women varies upon the nature of each development project and the project objectives. Further, allocating adequate time and funds to mainstreaming women is a factor which depends on the commitment to and awareness of the process of project developers and owners.

Expertise required

Facilitators

Having appropriate expertise to conduct the process of mainstreaming women into DRR in the BE is significant to obtaining successful results from the process. In particular, facilitators who approach women in the local community to capture the DRR knowledge and needs through community consultation methods are required to be skilful in establishing initial contact and developing trust with ordinary women in society. Therefore, facilitators need to possess significant people skills for conducting the direct identification of DRR knowledge and needs through consultation methods.

Furthermore, employing female facilitators is preferable to using male facilitators to capture DRR knowledge and needs directly from women using participatory methods because women in the community may find it more comfortable talking to women about their experiences of former disasters or their DRR needs. In addition, Cronin et al. (2004) identify the following features of good

facilitators of participatory approaches and they can be considered in selecting facilitators for identifying the DRR knowledge and needs:

- Taking a measured and patient approach, whose tone helps establish effective lines of communication with the community groups.
- Balancing between facilitating participatory activities and letting local people run them alone.
- Recognising and self-correcting dominating behaviour.

Further, facilitators of participatory methods need to possess considerable background knowledge about the development projects and also about DRR and disaster vulnerabilities because this aids extraction of more productive information from women whilst, simultaneously, allowing the facilitators to define the most relevant data during the discussions.

Professionals involved in designing and planning the built environment

The design teams of development projects need to be knowledgeable about DRR in the BE and different types of disaster vulnerabilities when producing designs sensitively to match the requirements of a certain locality, to understand the significance of integrating DRR knowledge and needs of women and to choose the most critical requirements to be incorporated among the needs and knowledge identified. Possessing the relevant knowledge and experience can prevent people in the local community trying to manipulate DRR knowledge and needs to fulfil their personal intentions which was also identified as a barrier to mainstream women. Therefore, the experience of professionals in relation to DRR knowledge and needs of the local community, and in particular, women, is important in implementing mainstreaming women.

The required expertise that the professionals and facilitators need to implement the process of mainstreaming women, demonstrates the significance of the knowledge in relation to the process of mainstreaming women and the DRR knowledge and needs of women. Therefore, the next section guides on how to communicate and popularise the relevant knowledge in order to gain desired results from the process.

Appropriate stages

The most preferable time scale to identify the DRR knowledge and needs of women is at the initial stages of designing the development project because it provides the flexibility to adjust the plans depending on the information that is received from the process. However, it is important to complete the preliminary designs of the development prior to identifying DRR knowledge and needs, since it facilitates the understanding of the impact of the development more comprehensively, whilst assisting the facilitators to explain the nature of the development to women, if participatory methods are to be utilised to capture DRR knowledge and needs. Accordingly, if the duration of a development project is divided into four phases, namely preliminary, pre-construction, construction and post-construction (Bosher et al., 2007), the most suitable phase for DRR knowledge and needs identification is the pre-construction phase.

Challenges for mainstreaming women

Following factors have been recognised from the interview responses as the main challenges to establishing and implementing a successful process of mainstreaming women into DRR in the built environment in Sri Lanka.

Regulatory loopholes which hinder proper implementation of the process was indicated as the main challenge including inadequate regulations and guidelines to regulate and guide a similar process, weaknesses in local governments who are responsible for most of the planning approvals and poor

implementation of impact assessments (e.g. EIA). P4 mentioned that “documentation ensuring peoples’ voices are heard can be easily manipulated” suggesting that the process of mainstreaming women could be limited only to a paper exercise. Relatedly, A2 emphasised that it is difficult to successfully implement any process without proper regulatory enforcement. Poor coordination between relevant institutions was indicated as one of the reasons for regulatory loopholes in the country. It was viewed as a reason which leads to isolated policies which are less effective in implementing DRR related activities. Low priority given to DRR by the general public and by the other responsible parties was also viewed as hindrance to poor implementation of impact assessments, community consultations and vulnerability/risk/capacity analysis.

Disparity between academia and other responsible authorities which leads to ignore guidelines, recommendations and useful scientific information generated by the academia which are able to facilitate the process was indicated as another barrier. P3 suggested that the regulatory framework in the country fail to receive the input of the rich information that is available in the country regarding DRR making the frameworks less comprehensive. The respondent mentioned that “there is a lot of very good information within academia, case history and empirical experience of relevant professionals but integrating them into regulatory frameworks is quite weak”. Similarly, mismanagement of useful information on DRR in the built environment, DRR knowledge and needs of women and processes of community integration available in the country due to unavailability of a single repository for such data was also mentioned as a challenge that needs to overcome in order to implement mainstreaming women successfully.

Further, resource limitations such as lack of funds, inadequate human resources, in particular expertise in the social components of DRR, and time constraints associated with completing development projects were identified as factors which make developers reluctant to consider women’s DRR knowledge and needs. Resource limitations could also lead to inadequate vulnerability/risk/capacity analysis conducted in the built environment that can facilitate identifying women’s DRR knowledge and needs which was perceived as another barrier.

In addition, inappropriate community intervention which includes inadequate useful input from the community women, interruptions to development activities due to lack of understanding about the activities and people in the local community trying to manipulate DRR knowledge and needs to achieve their personal intentions was also viewed as a barrier. PM1 believed overwhelming participation of community women could also be a barrier because satisfying a variety of needs is not feasible with a limited amount of resources available. On the other hand, it was stated that the community in general has low power to influence development activities due to the political, economic and cultural factors and this contributes for the authorities to ignore community consultations.

Culture was viewed as a factor which hinders women in particular voicing their DRR knowledge and needs. In this regard, P1 mentioned that “the culture of Sri Lanka is that they just accept a lot of things, they do not fight against.” It was indicated that Sri Lankan women is a difficult group to persuade into providing their views of DRR due to their cultural mindset.

Non-cohesive planning and construction in the built environment that hinders generating location and community sensitive development designs which integrates women’s DRR knowledge and needs was also identified as a challenge. It was further stated by the interviewees it is a common practice to accelerate the phases of planning and designing of a construction projects to meet the requirements of the funding bodies and the clients thereby overlooking some significant details such as risks of disasters and disaster vulnerabilities of the specific project.

Hence, the aforementioned challenges need to be overcome or minimised in order to implement the process of mainstreaming women successfully. The most frequently mentioned challenges by the respondents are regulatory loopholes and resource limitations among the aforementioned factors. Thus, they can be considered as the two most common barriers that can hinder the process of mainstreaming women into DRR in Sri Lanka. However, the barriers which were discussed do not act in isolation and they are interconnected with each other. For example, inadequate community consultations conducted prior to development activities that could facilitate identifying women's DRR knowledge and needs is a barrier to mainstreaming women and this could be a result of one or more factors among loopholes in the regulatory system, unavailability of necessary resources, lack of awareness of community women, and the low level of power the community women in Sri Lanka has over intervening in development decisions. The interconnectivity intensifies the challenge of overcoming the barriers.

Improving the process of mainstreaming women

Mainstreaming women into DRR in the built environment is a process which is new to Sri Lanka. As demonstrated in the previous section, there are various challenges that need to be overcome to promote and establish the process in the country. Therefore, this section presents ways of promoting the process of mainstreaming women into DRR in the BE based on the barriers identified.

The most commonly suggested way for improvement was to strengthen the regulatory framework which governs DRR in Sri Lanka. As elaborated in the earlier data category, weaknesses in the existing regulatory system was seen to be a major hindrance to successful DRR in the BE. Therefore, the majority of the respondents shared the view that the country needs a more comprehensive regulatory system.

In this context, A1, PM1 and PM3 mentioned an important procedure called Disaster Impact Assessment (DIA) that has been proposed for integration into the current EIA process in order to specifically address the impact of disasters on new developments. The respondents thought a specific procedure to assess disaster risks, like DIA, is significant to achieving DRR in the BE.

As demonstrated earlier, one of the major barriers to the process of mainstreaming women is resource limitations. Therefore, the respondents suggested that the built environment in Sri Lanka needs to overcome this barrier and by obtaining sufficient resources such as adequate financial allocations to conduct the process successfully. However, it was indicated that the resources are required to be not only adequate in amount but also in an appropriate state in order to bring the desirable outcomes. In particular, appropriate human resources with correct expertise were seen as vital in order to implement the process within the expected budget and time scales of a development project. In this context, P3 thought the country needs an improved system to utilise the human resources which are already available in the country. He added his views:

"I believe that the bigger INGOs and the bigger players should utilise the grass root local NGOs and local groups far more in programme integration and development"

Further, PM2 and A2 indicated that it is necessary to ensure that the regulations are properly enforced in order to improve DRR in the built environment. In addition, P3 believed that extra efforts need to be taken in order to incorporate the important information available within academia, empirical experience and case history into the guidelines and regulations available for DRR in order to make the regulatory framework more comprehensive. It was said that academia has

a responsibility to influence government institutions to formalise the useful information available in order to improve the current regulations.

Further, educating and raising awareness of the process among all stakeholders including the local community, women and also school children who can effectively convey the message of the advantages of the process to the wider community through their families were seen as a way of improving the process. Education was considered to be an important mode for communicating the message of the process and the associated information such as the importance of incorporating DRR knowledge and the needs of people to various parties such as construction professionals, school children and various social groups. PM3 believed educating children is particularly important because they are able to carry the message to their parents. A2 thought promoting mainstreaming women requires an attitude change across the parties who are engaged in DRR and also the public which could be triggered through education. On the other hand, P1 suggested that following a comprehensive identification process, DRR knowledge and the needs of people can be integrated into the DRR related curriculum and make them available as general knowledge thereby over time easing the procedures.

Raising awareness of ordinary people on DRR in the built environment, in this context, and women's awareness in particular, was illustrated as an important measure to promote their contribution to the process of mainstreaming women. It was indicated that raising awareness of people needs to be coupled with effective communication in order to ensure that people are not overloaded with complicated information leading them to ignore the important facts. The importance of simplified guidelines and leaflets to raise awareness among people was emphasised.

It was also suggested that establishment of more gender focused NGOs could facilitate mainstreaming women. It was indicated that such organisations could support the process by becoming involved in capturing women's DRR knowledge and needs and by monitoring the process with the help of their expertise. In a similar vein, it was suggested that there should be more programmes that specifically focus on women and their disaster vulnerabilities to promote and facilitate incorporating their DRR knowledge and needs into development activities in the built environment. Therefore, empowerment of community women to provide a powerful voice that can influence development decisions in the built environment.

Having presented the guideline for mainstreaming women into DRR in the built environment in Sri Lanka, the paper moves to its conclusions in the next section.

Conclusions

The significance of recognising the needs and knowledge of women and considering them in DRR in the built environment was highlighted by the adverse effects to women caused by the 2004 Indian Ocean tsunami. The impacts urged the necessity of incorporating a gender perspective into DRR in the built environment in Sri Lanka. A guideline was developed in order to facilitate the process of mainstreaming women in DRR in the built environment in the country identifying factors influencing the process, the main steps of the process, parties responsible, required resources, the nature of expertise required, appropriate stages of a development project in the built environment which the process needs to be conducted, barriers to the process, and the ways which the process could be improved.

Mainstreaming women into DRR in the built environment is a context sensitive process which depend on various factors such as social, economic, political and environmental conditions of a particular community. It involves two main steps i.e. identifying DRR related knowledge and needs of

women and integrating the DRR related knowledge and needs of women into the DRR process in the built environment. The parties who are most responsible to implement the process are the developers and professional who are engaged in a development project in the built environment, and the national and local government authorities who are responsible to regulate the process. In addition, parties such as academia and scientific community, community women and general public, religious and community leaders and public representatives all have roles to play in making the process a success and achieving desired outcomes out of it. The most suitable stage to mainstream women into DRR in the built environment is the pre-construction phase of a development project. The two major barriers for the process of mainstreaming women into DRR in the built environment are regulatory loopholes and the non-availability of required resources.

This study could be extended in the future to develop a more comprehensive set of DRR knowledge and needs of women to strengthen the guideline by conducting a research which gathers primary data on DRR knowledge and needs from women in the community in relation to different types of development projects in the built environment.

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Table 1: Parties responsible for mainstreaming women

Responsible party	Role
<ul style="list-style-type: none"> Government authorities (Ministries-Construction, Disaster Management, Women’s Affairs; Other authorities- DMC, UDA, NBRO, etc.) 	<ul style="list-style-type: none"> Formulating policies and protocols (regulations, guidelines, etc.) for mainstreaming women into DRR in the built environment. Monitoring protocols and required standards in development activities to ensure they are met. Educating children by modifying school curriculums to incorporate the importance of mainstreaming women. Training and development/ modification of higher education/vocational education curriculums to develop professional expertise related to the social components of DRR for mainstreaming women into DRR in the built environment. Raising public awareness of processes such as mainstreaming women into DRR in the built environment.
<ul style="list-style-type: none"> Local authorities 	<ul style="list-style-type: none"> Studying the risks and vulnerabilities of the locality and its community women. Ensuring the DRR needs and knowledge of local women are addressed in development through the building approval process.
<ul style="list-style-type: none"> Divisional government Secretariat/ representatives at village level 	<ul style="list-style-type: none"> Acting as a point of contact for government authorities and/or parties involved in a development, to get an initial idea about the locality, its risks and vulnerabilities and approaching local women to capture their DRR knowledge and needs. Representing the interests of the local community and different groups, such as women.
<ul style="list-style-type: none"> Academia and the scientific community 	<ul style="list-style-type: none"> Researching DRR knowledge and needs of women and ways of implementing mainstreaming of women into DRR in the built environment. Developing guidelines for mainstreaming women. Raising awareness of various public groups by dissemination of research findings. Counselling relevant parties, including government bodies, through advisory committees on mainstreaming women into DRR in the built environment.

Responsible party	Role
	<ul style="list-style-type: none"> Developing repositories containing useful information on mainstreaming women into DRR in the built environment.
<ul style="list-style-type: none"> Construction stakeholders (Developers/owners, construction professionals, building contractors) 	<ul style="list-style-type: none"> Acknowledging the importance of integrating DRR knowledge and needs of community women. Ensuring DRR knowledge and needs of women are integrated into development activities by conforming to relevant regulations, standards, and guidelines.
<ul style="list-style-type: none"> Public Community women 	<ul style="list-style-type: none"> Ensuring their DRR knowledge and needs are addressed in development and development activities. Participating in DRR initiatives (community consultations, etc.) when necessary and voicing their viewpoint.
<ul style="list-style-type: none"> Public representatives 	<ul style="list-style-type: none"> Representing the DRR knowledge and needs of the local community women. Influencing the relevant authorities and parties responsible for development activities using their political power to integrate DRR knowledge and needs of women.
<ul style="list-style-type: none"> Religious leaders 	<ul style="list-style-type: none"> Acting as a point of contact for government authorities and/or parties involved in a development to obtain an initial idea about the locality, its risks and vulnerabilities. Representing the DRR knowledge and needs of the local community women. Encouraging the local community women to impart their knowledge of DRR and their needs and to participate in community consultations.
<ul style="list-style-type: none"> Networks of NGOs 	<ul style="list-style-type: none"> Contributing to mainstreaming women in DRR in the built environment using their knowledge and expertise of the subject. Representing the DRR knowledge and needs of the local community women.