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R. Zehra Zaidi, Maureen Fordham

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The missing half of the Sendai Framework: gender and women in the implementation of global disaster risk reduction policy

R Zehra Zaidi[1,*] zehra.zaidi@unive.it, Maureen Fordham[2] m.fordham@ucl.ac.uk

[1]Ca' Foscari University of Venice, Department of Economics, Dorsoduro 3246, 30123 Venice (Italy)

[2]IRDR Centre for Gender and Disaster, University College London, Gower Street, London, WC1E 6BT (UK)

[*]Corresponding author.

Abstract

The Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) is the guiding international policy structure for disaster risk reduction activities, shaping DRR strategies and practices across the world. Its targets, priorities, and supporting documents are critical in influencing the direction of programming and funding streams for national and local level DRR interventions, and its indicators play a vital role in setting benchmarks and monitoring progress. The Framework has made progress by drawing attention to the diverging ways in which women experience disasters, and highlighted their increased vulnerability in certain disaster situations. But how far does the Sendai Framework really go towards delivering a gender responsive strategy for disaster risk reduction? Five years into its implementation, this paper analyses the relevance of the SFDRR for women in the context of disasters. It argues that although the framework has made headway in promoting the inclusion of women and girls in disaster policy and programming, on the whole it represents a missed opportunity for addressing fundamental gender based issues in DRR. Recommendations are offered for mitigating several SFDRR shortcomings during its current process of implementation. These include outlining a more refined conceptualization of gender, improved inclusion of women and sexual minorities in its indicators and implementation documents, and greater alignment with parallel policy frameworks and other indicator systems.

Keywords: Sendai Framework, disaster risk reduction, gender, women, DRR policy

Introduction

Set in the context of the COVID-19 pandemic, the year 2020 provided a unique opportunity for critical reflection on progress achieved in the implementation of global development strategies, marking five years since the creation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR), the Agenda 2030 Sustainable Development Goals (SDGs), the UNFCC Paris Agreement on Climate Change, and the International Conference on Financing for Development [1–4], as well as four years since the World Humanitarian Summit [5]. Efforts to build better coherence across international policy frameworks have resulted in a greater alignment of policy objectives, and led to improved coordination in the implementation of common goals and targets. The reduction of gender (in this case, specifically female) inequality is a shared priority that runs across the majority of global frameworks, and the inclusion of a standalone goal on gender equality in the SDGs (SDG 5) reflects the need for continued action on empowering women and girls in order to achieve

inclusive development. The year 2020 also heralds 25 years since the launch of the Beijing Declaration and Platform for Action at the Fourth World Conference on Women in 1995 [6]. Discussions around the Beijing+25 agenda are currently focused on assessing progress in advancing women's rights in twelve critical areas of concern, one of which centres on the theme of women and the environment. These contemporaneous discussions provide a timely opportunity to reflect on the gender sensitivity of leading international agreements such as the SFDRR. Specifically, converging policy dialogues on the inclusion of women in the fields of disaster risk reduction, climate change adaptation, and sustainable development provide a fitting background for examining the Sendai Framework through a gendered lens.

As the leading policy instrument on disaster risk, the SFDRR and its supporting documents promote an understanding of gender specific vulnerabilities and opportunities created in the context of disasters. The framework makes repeat references to the different modalities in which women experience disasters, and highlights the existence of increased female vulnerability in specific disaster contexts. The importance of women and girls in understanding disaster impacts, and their inclusion and leadership in decision-making around risk reduction is arguably one of the key messages to emerge from the discussions at Sendai. But does the framework go beyond token references of female representation, and offer actionable strategies for gender inclusion? Do its mechanisms for accountable and measurable progress in DRR adequately reflect the concerns of women, or is their engagement deferred to 'mainstreaming' activities further down in the chain of policy implementation? This paper reviews framework documents and data outputs to critically examine the extent and effectiveness of gender based strategies for disaster risk reduction contained in the SFDRR. It identifies inconsistencies and gaps contained in the overall approach of the framework, and offers recommendations for improving the scope of the SFDRR for a more gender considerate approach to disaster risk reduction. In order to do so, we first reflect on the use of the term gender in a large part of disaster research, and its subsequent implications for the portrayal of women in policy strategies such as the SFDRR.

Gender, women and intersectionality in disasters

Natural or physical hazards do not, in and of themselves, trigger damage and destruction that is more biased towards any one particular social group [7–9]. Instead, uneven manifestations of vulnerability are created through differential levels of exposure to physical risk, by discriminatory aspects embedded in formal power structures such as institutional and governance mechanisms [10], and through informal socio-cultural rules that regulate opportunities and behaviour in communities and the private sphere [11–14]. This approach to vulnerability has formed the theoretical basis for research in the field of gender and disasters (Gaillard, et al., 2017). Structural barriers and systemic socio-economic discrimination in society are seen to result in lower levels of access to the resources, skills and information necessary for women and girls to withstand disasters and secure livelihoods [16–18]. Researchers and experts in gender and disasters have drawn upon contributions in the field of gender studies, where the relationship and distinctions between identity, social norms, sex, sexual preference and gender have been extensively explored [19,20]. While the term sex is used mainly in reference to a binary distinction between male or female physical characteristics, gender identity is understood to be a range of socially determined identities, roles, behaviours, aptitudes and power assigned to being female, male or otherwise, which are fluid across temporal, political, cultural and other socio-structural contexts [10,21].

The view of gender and gendered vulnerability as being multifaceted, fluid and socially-constructed has been applied inconsistently and only partially in the broader field of disaster research. A large part of disaster literature continues to utilize the word gender to incorrectly refer to the binary physical sex categories of male and female, and deploys the term gender vulnerability largely in reference to the vulnerability of women. In parallel, policy and programming for gender and disasters has also focused primarily on female risk and vulnerability, and the word 'gender' continues to be used as a synonym for women and girls [15]. This narrative detracts from the important role of women as agents of resilience and risk reduction and gives the idea of gender vulnerability as being somehow exclusive to women, thereby promoting stereotypical notions of women as 'victims' or the weaker sex. Numerous studies [9,22,23] appear to support the (often repeated) assumption that women, on average, experience higher mortality rates and decreased life expectancy than men both during and after the occurrence of a disaster. The estimation that women and girls comprised 77% of the fatalities in some locations of the 2004 Tsunami in Aceh, Indonesia [24], and that nearly 55% of all lives lost in the 2015 Nepal earthquake were female [25] are frequently cited examples of the larger magnitude of risk faced by women.

It is important to remember that this over-generalized trend, however popularized in vulnerability literature, is based on context-specific studies and is by no means absolute. Deviations from the notion that women are always more vulnerable have been evidenced in a growing number of studies on male vulnerability carried out in diverse disaster situations. For example, a greater proportion of men than women were reported to have died both during flood events in Europe and the US [26] and in the 1995 Chicago Heatwave [27]. Not enough attention has been paid to the way in which disasters endanger the wellbeing of boys, men and other gender categories much in the same way as women and girls. This is because, often, vulnerability assessments do not place emphasis on the fact that individuals simultaneously belong to multiple and intersectional social groups - gender being just one of these - from which they draw their identities, and which shape their risk profile in the context of disasters.

When talking about risk, women have often been simplified into a homogenous, monolithic category that experiences vulnerability in a universal manner, irrespective of contextual co-factors such as age, education, ethnicity, income, national origin, religion, sexual orientation, and/or disability [28]. Very rarely have disaster interventions addressed the risk and resilience of women in a holistic and cohesive fashion that recognizes their diverse economic, political, legal, occupational, familial, ideological, and cultural backgrounds. The adoption of an intersectional lens for the study of women and disasters has spurred progress in rectifying essentialist approaches to risk [29], but highly aggregated policy frameworks such as the SFDRR still fail to fully address structural forms of social inequality and the underlying risk dynamics that produce differences (with)in observed female and male vulnerability trends.

The prominent focus on women as subjects of gender vulnerability has also resulted in an oversight of other sexual and gender groups from the disaster discourse. The treatment of gender as a simple binary of male and female sex automatically excludes a consideration of gender and sexual minorities, and produces disaster interventions that are blind to the needs of these minority groups [20,30,31]. Only by being cognizant of the complex and interlinked risks that women, men and other gender groups face in disaster situations, can effective policies for gender-sensitive disaster response, recovery and risk reduction be developed. An

inclusive and intersectional approach to vulnerability must be an essential point of departure for both research and policy. This position is not incompatible with the recognition that there are structural and systemic power differentials between genders and that women, as the largest generic category, are frequently disproportionately impacted economically and socially across the world, and it is these institutionalized inequalities that lay the foundations for the creation of the root causes of disaster vulnerability [7]. That there is not yet equality between women and men, does not preclude the need to address women's needs, interests and rights. Rather it is to go further still and broaden this political project, beyond the binary to address a gender continuum as it intersects with other axes of difference.

Gender dimensions of the SFDRR

The primary goal of the Sendai framework is to 'prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience' [1]. Seven targets, thirteen guiding principles and four priorities of action are outlined to provide further detail on how framework outcomes will be achieved. Building on the lessons learned from its predecessor the Hyogo Framework for Action (HFA), which contained no actionable policies on gender, and drawing on recommendations proposed by the Women's Major Group, the preamble to the SFDRR affirms the need for greater and more meaningful participation by stakeholders such as women, people with disabilities, and other marginalized groups in the disaster planning and implementation process.

No clear definition of gender is offered either in the text of the Sendai Framework or its supporting documents such as the 'Report of the Open-Ended Intergovernmental Expert Working Group on Indicators and Terminology Relating to Disaster Risk Reduction'. Where used, the term gender continues to be employed as an indicator of sex, and appears solely in reference to women and girls. An assessment of the gender responsiveness of the SFDRR - as undertaken in this paper - is therefore largely limited to providing an evaluation of the framework for addressing female vulnerability and contributions, rather than for any other gender grouping.

In addition to the Preamble text, the importance of women in the implementation of the Sendai goal is emphasized in three main sections of the document. The first reference appears in one of the 13 guiding principles (Principle d - Engagement from all of society), which states that 'a gender, age, disability and cultural perspective should be integrated in all policies and practices' and that 'women and their participation are critical to effectively managing disaster risk and designing, resourcing and implementing gender-responsive disaster risk reduction policies, plans and programmes and adequate capacity building measures need to be taken to empower women for preparedness as well as build their capacity for alternate livelihood means in post-disaster situations' [1]. Next, Priority 4 of the four Sendai priorities addresses disaster preparedness, response, recovery, rehabilitation and reconstruction. Here, 'empowering women and persons with disabilities to publicly lead and promote gender equitable and universally accessible response, recovery, rehabilitation and reconstruction approaches' is outlined as a key recommendation for disaster preparedness and effective response [1]. In a further section on stakeholder engagement, women - along with

children and youth, persons with disabilities, older people, indigenous peoples, migrants, academia and the media - are identified as important 'stakeholders' in the DRR process, whose engagement must be ensured throughout framework implementation.

Thirty-eight data indicators have been developed as part of the Sendai Framework Indicators to ensure that progress in achieving the SFDRR's pillars of action – its seven targets for global risk reduction – is monitored and measured. Although none of the seven targets directly address gender focused interventions, two target indicators on mortality (Target A) and affected people (Target B) cover female dimensions of disaster loss through data disaggregated by hazard, income, sex, age and disability. In doing so, the Sendai dataset invites member states to systematically engage in data collection on disaster impacts for both men and women and, for the first time, paves the way for global and national losses of human lives and livelihood aspects to be calculated and analysed in a gender differentiated way.

SFDRR +5 – progress thus far

Perhaps the biggest achievement of the SFDRR to date is the creation of consensus and urgency around a common global vision for disaster risk reduction. Most notably, the implementation of the SFDRR has accelerated the development of national risk reduction strategies around the world. This is, in part, because Target E (Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020) is the first target scheduled for completion in the timeline of framework outcomes. UNDRR, along with UN Women and other agencies, has been providing support to member states in the creation and implementation of national DRR strategies that are gender sensitive. Practical guidance for member states on developing policy strategies and implementing Sendai principles and actions is also outlined in several 'Words into Action' reports. Although no Words into Action report has been developed specifically on the topic of gender responsive DRR policies, several of these guidebooks contain references to women's engagement either in their actionable recommendations for related topics or through existing best practice case studies.

Thus far, 91 out of 195 member states have reported progress in achieving Target E [32] and the majority of these have highlighted the presence of gender sensitive approaches in their national DRR policies. Bolstered by parallel efforts being undertaken for the SDGs and climate adaptation under the Paris agreement, countries have also demonstrated significant advancements in the inclusion of gender dimensions in national and sub-national planning mechanisms, but the degree to which this translates into effective and inclusive action on the ground remains to be seen. Overall, the pace of achieving Target E remains slow, raising concerns about the long term effectiveness of the framework.

The SFDRR has also catalysed improvements in the collection and reporting of statistics and data on disaster impacts at national and sub-national levels. As a tool for measuring progress in achieving the seven targets of the SFDRR, the results the Sendai Indicators are presented in the Sendai Monitor, an online resource for reporting and analysing national loss trends. According to the latest Sendai Monitor Target Reporting, over 107 out of 195 UN member states have initiated reporting on disaster related statistics in some form. For the two target indicators that require sex disaggregated data, 93 countries have submitted data for Target A (disaster related mortality) and 85 for Target B (number of affected people) for the year 2017 – this falls to 82 and 72 respectively for the year 2018 [33]. Nonetheless, it remains a

challenge to estimate the extent of disaster losses experienced by women for either Target A or B as only a handful of these countries have provided data disaggregated by sex. None of the other Sendai targets or their corresponding indicators contain elements that are gender responsive or specific to women, making it impossible to evaluate the degree to which the remaining sections of the SFDRR have translated into effective risk reduction advancements specifically for women. But recent initiatives such as the 'Inclusive Disaster Risk Reduction Policy Tracker' supported by UNDRR and UNWomen (See https://www.preventionweb.net/wrd/tracker/) show that in 2020 only 26 countries have a policy or practice in place that specifically includes strategies for ensuring inclusivity on all Sendai-identified marginalised groups.

Missed opportunities for gender responsive DRR

A critical assessment of the SFDRR must first acknowledge the constraining nature of global policy development – in order to ensure sufficient buy-in from member states, policies can rarely be as radical or progressive as many advocates would desire. There are also limits to the extent to which a policy framework focused specifically on disasters can effect transformative social change (where 'transformation' is understood as a radical alteration of the status quo which 'change' does not necessarily signify). Nevertheless, the continued focus of international DRR policy process on reducing and responding to disaster loss and damage rather than addressing root causes of disaster vulnerability and risk creation has hindered its own transformative capacity [34,35]. This lack of progress in addressing systemic underlying risks becomes clear when applying a gender vulnerability lens for understanding disaster impacts that are socio-culturally mediated and manifest as negative outcomes primarily for women and girls (although this must always be contextualised) [36]. The is a limit to how far a loss and damage oriented technical approach to disasters can fundamentally reduce vulnerability of women, since it provides solutions to more short term, practical needs as opposed to more long term, strategic interests [37,38] that offer a resolution of the root causes of gendered risk. The latter aspects of risk are more in line with the development agenda and the SDGs, and the limited technical solutions advanced by the SFDRR are unlikely to create radical change for women or otherwise [39].

Nonetheless, a technical framework on disaster risk can be important in influencing the direction of international DRR policy and decision-making, and creating a shared understanding of disaster risks and impacts from a gender perspective. This section discusses how the SFDRR - despite making headway in promoting the inclusion of women and girls in disaster policy and programming, represents an overall missed opportunity for addressing gender-based issues in DRR today. Member states are expected to incorporate a gender - or more specifically, women - sensitive approach within all aspects of SFDRR implementation, yet the framework itself falls short in coherently and consistently emphasizing even the role of women across its guiding principles, priorities, targets and indicators.

For example, the framework's failure to outline a definition for the term gender lays down a weak foundation for its engagement with gendered vulnerability. Using gender to refer primarily to women, the SFDRR fails to acknowledge the differentiated vulnerability of men, boys, and other gender groups in specific disaster contexts. In fact, there isn't a single reference to the risks experienced by men, boys or sexual and gender minorities (SGMs) in the entire framework text despite a growing literature pointing to their divergent needs and vulnerabilities. Many studies have highlighted the elevated levels of discrimination and abuse faced by LGBTQI+ groups in disaster contexts [20,21,30], yet the SFDRR remains silent on

their marginalization and vulnerability [21]. This omission is especially of concern in the sectors of health and post-disaster shelter and assistance, where gender and sexual minority groups have specific exigencies and frequently encounter discriminatory attitudes [31,40,41]. Principle (d) of the 13 guiding principles envisages an all of society approach to DRR, but the framework's exclusion of SGMs results in its failure to provide suitable safeguards for minority groups and exposes already vulnerable groups to even greater risks, thereby intensifying pre-existing inequalities and reinforcing vulnerabilities.

The absence of a discussion on gender equality, equity [42,43] or rights represents another fundamental omission in the framework text, although getting widespread member state agreement on the inclusion of 'rights' in global framework documents is often a stumbling block [44]. Principle (c) calls for 'protection of persons and their assets while promoting and protecting all human rights, including the right to development' but the importance of emphasizing the human rights of women in the context of disasters is missing from the SFDRR [45]. This is all the more noticeable since gender equality is flagged by both the Paris Agreement and SDGs as a cross-cutting concern that underpins current and future female participation and social vulnerability. This shortcoming is also apparent in the Sendai Platform's lack of engagement with conventions and policy mechanisms focused on women or gender equality. Even though Guiding Principle (b) requires coherence of disaster risk reduction with international policies, practices and mechanisms addressing issues such as sustainable development, food security, health and safety, climate change, and environmental management, it contains no reference to gender. Nearly every country has ratified the Convention on the Elimination of all forms of Discrimination Against Women (CEDAW) as well as the Committee on the Rights of the Child (CRC), and member states annually follow up on the Beijing Platform for Action at the Commission on the Status of Women. Both platforms have highlighted the connection between DRR and women and girls' rights, and efforts are underway to develop and improve indicators that link female interaction with the environment, ecology and sustainability – three areas that are poorly covered under the Sendai indicators [46]. CEDAW is also developing a General Recommendation on DRR and Climate Change [47] that will stipulate the duty of countries to promote and protect the rights of women and girls in the context of disasters and climate change. Yet, remarkably, none of these initiatives have been drawn upon for enhancing the gender sensitivity of DRR strategies within the Sendai framework's current implementation process.

What is present in the SFDRR - as outlined in Principle (d), Priority 4, and the section on stakeholder engagement - is a call for i) an integration of a gender perspective in all DRR policies and practices, and ii) the increased participation, leadership, and capacity building of women for preparedness and post-disaster response, recovery, rehabilitation and reconstruction. There is no further mention of women or gender in the remaining guiding principles, priorities or targets apart from a call for sex-disaggregated data, and a passing reference to maternal and reproductive health. A simple inflection of gender specific priorities throughout the remainder of the document could have strengthened the implementation of actions described in Principle (d) and Priority 4, and transformed the overall consistency and coherence of the SFDRR in advancing gender sensitive DRR. For example, Priority 1 on Understanding disaster risk could emphasize the distinct role of women as producers, users and subjects of risk knowledge. Priority 2 on Strengthening disaster risk governance could include concrete actions to promote and monitor female

inclusion and leadership in formal DRR institutions and national policy mechanisms, and include gender specific needs, such as safety and protection, in legislation and planning. Similarly, Priority 3 for Investing in DRR for resilience could contain requirements for investment in gender-sensitive risk reduction, and emphasize the need for social safety nets and services targeted specifically at women.

As they stand, framework declarations outlining the role of women appear as soft policy recommendations rather than critical areas for risk resolution, and there are few actionable statements or strategies for implementation that can be translated into concrete national or sub-national planning and programming [48]. The Words into Action guides produced by the UNDRR as supporting documents of the SFDRR offer one avenue for addressing this weakness. Guides exist for a wide range of subjects including the development of national DRR strategies, land use and urban planning policies, disaster displacement, and the promotion of children and youth engagement in SFDRR implementation. Although most of these reports contain some degree of gender analysis (the best of which is contained in the Children and Youth WIA, which finally elaborates the concept of gender equality), there has been no standalone guide produced for the inclusion of women and girls in DRR programming to date. This represents a gap in providing actionable gender strategies tailored to the national and local level, and in setting minimum standards for gender responsive participation, planning, recovery and build back better actions.

Even the repeat recommendation of the SFDRR for increasing female participation is not adequately reflected in its implementation. Women and diverse groups must be better represented in national and local mechanisms responsible for developing disaster preparedness, response and recovery decisions [e.g. 49]. But unlike the IPCC or Agenda 2030, there is no recommended standard or indicator measure for increasing female participation and leadership in institutional DRR structures either at the level of member states or within the Sendai platform itself. As indicated by the findings of the 'Inclusive Disaster Risk Reduction Policy Tracker' formal inclusion of women and minorities in DRR policy structures is extremely low. Increased participation does not necessarily guarantee substantive change, but indicators measuring leadership and decision-making opportunities for women in formal DRR structures could be incorporated into existing Target E (Increasing national and local DRR strategies) as an initial step towards advocating for greater female inclusion in planning. Similarly, efforts to improve training and education of women in science and technology, and DRR related fields could be emphasised. Gender specific indicators could also be included in Target G (Early-warning and risk information) for supporting the creation of inclusive and accessible early warning systems [see also 50].

Women play a more significant role in risk management and resilience-building than is often acknowledged, and while the policy text of the SFDRR recognizes this, the content of the indicators does not measure or monitor positive female contributions to disaster preparedness, prevention, or overall risk reduction [48]. Valid concerns around the practicality of obtaining sex disaggregated data do not prevent the inclusion of qualitative or quantitative indicators, such as a measure for institutional participation described above. Instead, the Indicator's selective focus on female mortality and morbidity reinforces the victim paradigm, with women seen as vulnerable and marginalized, and downplays the role of women as active contributors to disaster management practices and as leaders in risk reduction.

The lack of indicators for measuring elements of gender risk and resilience makes it difficult understand baseline conditions for women, and to monitor whether SFDRR recommendations on gender are being implemented and to what effect. Measuring direct impacts gives very little information on underlying risk factors and pre-existing inequalities that shape the vulnerability and resilience of women in disasters. Data to establish sex-differentiated inequalities, for example access to land, finance, education, etc., is available in existing databases and development indices, but is not reflected in Sendai calculations of risk. Risk-informed decision-making, as enshrined in Principle (g) of the policy document, is also limited by the focus of the Sendai indicators on select (gender-blind) forms of loss. Research on gender and disasters has explored in detail the types of disaster impacts specific to women [See 51]. These include, but are not limited to an increase in gender-based violence against women [52,53]; concerns for safety and protection, especially in the post-disaster emergency phase [54,55]; sexual harassment and sexual and reproductive health issues such as obstetrical care and infant feeding [56,57], all of which should form a critical part of 'build back better' approaches.

The decision to include only direct and mainly first order impacts in the SFDRR calculation of disaster damages comes at the cost of discounting indirect impacts and non-monetised forms of loss. Research on gender indicates that women are more likely to be engaged in informal sectors of the economy and bear greater responsibility for unpaid domestic labour and care giving activities. Along with direct economic costs, the losses they experience during and after disasters can be understood more clearly in terms of decreased time resources, social hardship such as problems with safety and mobility, or diminished access to financial, social and political resources [58]. There is evidence that women receive less aid following disasters in lower SES (socioeconomic status) countries [8]. And while examining post-disaster economic and health effects of typhoons in the Philippines, Hsiang and Anttila-Hughes [59] discovered that infant mortality rose significantly after a lag of one year following the disaster events. The majority of these infant deaths were female, and the rise was attributable to deteriorating economic conditions and disinvestments in human capital rather than physical exposure or vulnerability [59]. The study estimated that unearned income and excess infant mortality in the year after typhoon exposure outnumbered direct damages and death tolls roughly 15-to 1. Yet none of the Target C indicators on economic losses are disaggregated by sex, and nor are any of the indirect and long-term disaster impacts described here captured in the Sendai impact database.

The safeguarding of health is another area of critical concern for gender sensitive disaster risk management [60]. Several Sendai indicators directly measure losses in relation to human health, including those in Target A (mortality), Target B (injured or ill people), and Target D (damaged or destroyed health facilities, and disruptions to health services) [61]. Although paragraph 30(j) under Priority 3 (Investing in disaster risk reduction for resilience) calls for 'Strengthening the design and implementation of inclusive policies and social safety-net mechanisms, such as supporting access to basic health-care services, including maternal, newborn, and child health, sexual and reproductive health' [1], there are no corresponding sub-indicators to measure the loss of women's access to health services.

Other disaster impact databases have utilised the gender inequality index or trends in maternal mortality to incorporate gender based vulnerability [62,63]. These indicators are, at best, reductive in their representation of vulnerability for all groups of women, but their

consideration inflects at least a minimum of gender sensitivity in the calculation of universal risk. More progressive frameworks such as the SDGs have assigned a dedicated indicator category for assessing gender based development. Disappointingly, the Sendai Indicators have not followed suit, despite the strong case made by the Women's Major Group and civil society organizations during negotiations [44,64].

Through a failure to elaborate damages experienced by women and girls, and by discounting the forms of losses discussed above, the Sendai Indicators, as the leading global mechanism for loss accounting, renders women less visible in disaster impact assessments by overlooking them in monitoring and implementation mechanisms. While acknowledging women specific concerns in the policy document, the framework neglects their engagement in subsequent programming and loss accounting in its implementation phase. If the aim of the SFDRR, as it states, is to shift focus from disaster management to disaster risk reduction then its indicators and guidelines must be extended to incorporate a more diverse range of impacts and risk sectors that address the vulnerabilities of the stakeholders and marginalised groups it highlights in the policy document.

Partnering with the SDGs

Fortunately, close alignment with other international frameworks indicates that several shortcomings in the Sendai Framework could potentially be mitigated by supplementing its outcomes with products emerging out of parallel policy structures. The SDGs, in particular, capture elements of vulnerability and resilience in a more comprehensive form than the SFDRR by framing them as a development challenge that cuts across social issues such as health, education and inequality. The consideration of a broader range of vulnerability drivers results in a better understanding of risk factors and inequality experienced by women in disaster situations. For example, SDG Target 1.5 under Goal 1 (End poverty in all its forms everywhere) requires countries to 'build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters' by 2030 [2]. Goal 1 also contains indicators that specifically address female inequality by, for example, assessing the proportion of government spending that disproportionately benefits women. Similarly, Goal 13 urges governments to take urgent action to combat climate change and its impacts; targets under this goal highlight the importance of adapting and building the resilience of communities to climate related disasters, with a focus on supporting capacity building for women, youth and local and marginalized communities.

The Agenda 2030 aims are ambitious in comparison with the approach adopted by the SFDRR; they are more forceful in promoting the need for resilience, and its underlying drivers of equality and poverty eradication. The SDGs also tackle issues such as migration, sustainable development and ecosystem management - themes that are entirely missing from the SFDRR, and which bear particular relevance for women and gender-based vulnerability. As such, the SDGs incorporate themes that play a direct role in hazard mitigation and the reduction of disaster impacts, and can be utilized to counterbalance the SFDRR's lack of engagement with more fundamental risk reduction and management aspects.

Another potential point of convergence between the SFDRR and Agenda 2030 lies in the relatively prolific requirement for disaggregated data by the SDGs. Data on female representation in policy, health, urban contexts, education, and informal sector employment,

for example, offer better insights into vulnerability and risk than measures of direct impacts such as number of dead and missing persons. A more gender responsive framework for disaster risk reduction could be achieved by integrating pre-existing datasets from diverse sectors and non-traditional data pools, including the United Nations Minimum Set of Gender Indicators, which have already been aligned with the SDGs. This would raise the overall relevance and scope of the SFDRR, and serve to link it with the Beijing Platform for Action and rights-based agendas such CEDAW and CRC, where substantial work is already being undertaken to develop a better understanding of the link between women and the environment, climate change, and disasters.

Recommendations

Based on the earlier discussion, the following recommendations can advance gender equality and women's leadership in the implementation of the SFDRR:

- Definition of gender and vulnerability as being pertinent to both sexes and other genders.
- Words into Action on minimum standards for inclusion, data, progress monitoring mechanisms, gender responsive recovery and build back better actions and programming.
- Increased emphasis on the production of sex disaggregated data and gender statistics, including building technical capacity and providing financial support to collect disaggregated data
- Greater emphasis on root causes of disaster risk and unequal distribution of impacts and vulnerability - through inclusion of a broader set of indicators, sex disaggregated data, and indirect impacts - to develop more targeted and relevant national DRR policies.
- Application of an intersectional lens in Sendai Framework implementation, taking into consideration the different needs and capacities of women, girls, men and boys, in all their diversity.
- Dedicated Target Indicator for gender, or additional indicators under existing target categories for measuring gender specific impacts such as: i) monitoring level of financial investments and resources budgeted for gender mainstreaming initiatives, ii) early warning information targeting women, iii) gender based access to health services, iv) female participation and leadership in DRR institutions and planning
- Requirement for a national monitoring and evaluation mechanism to ensure the implementation of inclusive and gender responsive DRR, and the promotion of education and training opportunities for women in science and technology and DRR related fields
- Greater integration and coherence with gender focused policy mechanisms and international frameworks

Conclusion

The process of formulating and implementing disaster management strategies can support the development of integrated approaches to adaptation, sustainable development and DRR in a way that creates an enabling environment for the mainstreaming and upscaling of gender responsive policies, and promotes female participation and empowerment. However, the risk

experienced by women during disasters extends beyond the spheres of policy and risk reduction interventions; taking action to protect women and girls, and harness their knowledge and capacities is also a function of social and cultural norms, access to resources and opportunities (including information and decision-making authority), and the structures of political and economic power. Women's capacity and vulnerability during disasters is therefore inextricably linked with larger development issues. In order for the SFDRR to evolve from a technical policy directive on disaster management into a forward-looking, inclusive strategy for disaster risk reduction and prevention, the framework must take a bolder and broader approach to gender inclusiveness in the current stage of implementation and monitoring. One way of achieving this would be to expand its conceptualization of the term gender, and to adopt a broader consideration of disaster impacts, such as gender based violence, that better reflect the reality of disaster losses experienced by women and sexual and gender minority groups. The framework should also highlight the diversity that exists among women, as well as for men and other gender categories.

SFDRR declarations towards emphasizing the role of women and marginalized groups as stakeholders in the policy text must also be carried through in its implementation and assessment mechanisms. The built-in accountability of the SFDRR through the Sendai Indicators is one of its greatest strengths, providing tangible markers for implementation that assist countries in managing DRR strategies, allocating resources, and making risk informed policy decisions. A sex disaggregated measurement for disaster mortality and damage must be supplemented by gender sensitive indicators that address multi-hazard early-warning systems, improved national and local mitigation strategies, and enhanced international cooperation. Adapting its indicators and monitoring tools to better reflect the role of both women and men as agents of risk reduction could remedy framework shortcomings on the inclusion of women during ongoing updates to the Sendai Indicators - much of this data is already being collected under related indicators contained in parallel policy agreements such as the SDGs. In order to create a truly gender responsive disaster risk reduction system, the themes of equity and justice must also be central to the SFDRR. It must advance the human rights of women, encourage the collection, analysis and use of disaggregated data, promote capacity building and integration of women's leadership, address the redistribution of unpaid domestic and care work, and advocate for social safety nets and investment in women and girls' health and well-being and resilience. Women and girls are on the frontline of disasters, and there is still time for the Sendai framework to take up the challenge of protecting them through its emphasis on their inclusion and engagement in DRR activities, and their recognition as powerful actors for change.

CRediT author statement

R Zehra Zaidi: Conceptualization, Methodology, Investigation, Writing- Original draft, Writing- Reviewing and Editing

Maureen Fordham: Writing- Reviewing and Editing

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Highlights

- Inclusion of women in the Sendai Framework for disaster reduction
- Gender and women in international disaster risk reduction policy
- Improving Sendai Framework outcomes for inclusive national risk reduction
- Recommendations for making disaster risk reduction policy more inclusive
- Gender based approaches for estimating disaster impacts and losses