

Nayla Karima

Departement of Public Policy and Management, Faculty of Social and Political Sciences, Universitas Gadjah Mada, Indonesia.
(email: naylakarima@mail.ugm.ac.id)

Submitted: 12 December 2023, Revised: 24 January 2024, Accepted: 25 January 2024

Karima, Nayla an undergraduate Public Policy and Management student and an assistant lecturer at Universitas Gadjah Mada, was born on 17 May 2002. She received her Bachelor of Political Sciences in Public Policy and Management in 2023 and graduated Cum Laude from the Faculty of Social and Political Science at Universitas Gadjah Mada. Nayla has been passionate about academic contributions; hence, she became a teaching assistant, managed projects in the Public Policy and Management Department, and assisted in handling the international affairs of Universitas Gadjah Mada. Research in the areas of public policy, disaster risk management, and spatial planning policies is her interest.

Women in Disaster Policy: A Bibliometric Mapping of the Research Literature 2015-2023

Abstract

The research regarding women in disaster policy discourse received attention from scholars and policymakers as the current leading international disaster policy had a shortfall in mentioning women's rights. Although many studies have deliberated how women engage with disaster, research that systematically maps how the literature regarding women in disaster policy develops has not yet been conducted. Per the result through the bibliometric mapping, the 58 pieces of literature included by the PRISMA (Preferred Items for Systematic Reviews and Meta-Analyses) framework are clustered into health, environment, economic, and socio-political contexts. The discourse discussion revolves around women's vulnerability, capacity and capability, and strategy and policy initiatives. The study contributes to the literature by mapping the research trajectory regarding women in the disaster risk reduction policy framework following the Sendai Framework for Disaster Risk Reduction 2015-2030 establishment. A recommendation model of the disaster policy framework and prospective research agenda is developed through the study.

Keywords:

disaster policy; gender mainstreaming; women; bibliometric analysis

Introduction

In responding to disaster, a coordinated multidisciplinary response became crucial to ensure the survival of the affected population. Accordingly, the disaster management discourse has gone on a noteworthy dynamic in recent decades as frameworks to cope with disaster are developing in its literature (Novajan et al., 2018). A multiple-scaled policy

instrument and framework that are adequately versatile for adaptation and implementation are crucial by virtue of being the critical element for disaster risk reduction (UNISDR, 2013). As regards the international policy frameworks for disaster risk reduction, the Hyogo Framework for Action 2005-2015 was the blueprint concerning the international strategy of DRR as it aims to strengthen the society's

resilience and lessen global socio-economic and environmental losses (UNISDR, 2005). It sought to incorporate risk reduction on both global and national levels of implementation (UNISDR, 2011; Zhou et al., 2014). The assessor, Sendai Framework for Disaster Risk Reduction, was adopted in March 2015 at the Third United Nations World Conference. Comprehensive framework objectives were constituted to the Sendai Framework for Disaster Risk Reduction/SFDRR to achieve coherence in global policy which concerns public health (Aitsi-Selmi et al., 2015; Wright et al., 2020; Hung et al., 2021), climate change (Kelman, 2015; OECD, 2020) and development (Zia & Wagner, 2015; Munene et al., 2018; Mizutori, 2020) within 10 years until 2030. According to Busayo et al. (2020), the Sendai Framework for Disaster Risk Reduction signifies the human-centered perspective, which acknowledges potential contributions by various stakeholders rather than limits the disaster policy to the vulnerability perspective. Moreover, the policy framework implicates highlighting the 'bottom to up' approach; therefore, relevant institutions are encouraged to engage in sustaining development policies, and policy on evaluating and monitoring disaster risk is reciprocally advanced.

Along with the Sendai Framework for Disaster Risk Reduction, the United Nations also adopted the Sustainable Development Agenda in 2015, which also set a deadline of 2030. One of which is the objective sought to achieve gender equality and empower all women and girls, or so-called SDG 5. SDG 5 calls attention to how the representation of women in economic and political leadership remains far from equal (UN Women, 2022). Comparatively, the Sendai Framework was criticized by scholars because the framework lacked measures regarding women's rights in disaster risk reduction despite priority 4 in the framework dealing with the empowerment of women (Nhamo et al., 2018). Being the assessor to the Hyogo Framework for Action 2005-2015

which progressively had called for a gender approach in the implementation of disaster risk reduction efforts, the Sendai Framework was expected to bring the enhancement and further guidelines following the previous framework objectives. Sendai Framework gender standalone statement under 'role of stakeholders' was said to construe women as resources to be used for disaster risk reduction; however, while the policy text of the framework recognized it, they lacked indicators to measure gender risk and resilience elements, hence, only a few feasible strategies able to be nationally implemented into disaster policies, programs, and overall risk reduction (Bradshaw, 2015; Zaidi & Fordham, 2021). Retrospectively, research regarding women in disaster has been explored by scholars within various discourses. The way women face obstacles in disaster response and recovery is not the same as men, especially when women are socially, economically, and politically vulnerable in a patriarchal society (Ginige et al., 2014; Drolet et al., 2015; Reyes & Lu, 2016; Hemachandra et al., 2018; Thapa & Pathranarakul, P, 2019). Additionally, researchers emphasize the importance of mainstreaming gender perspective significantly beyond the focus of women as disaster risk reduction decision-makers (Nhamo et al., 2018; Gaillard et al., 2017; Yadav et al., 2021), also highlighted how women contributed crucially to disaster response and recovery despite the vulnerability and not being acknowledged in disaster policy-making (Saito, 2012; De Silva & Jayathilaka, 2014; Drolet et al., 2015). However, research that systematically maps how the literature regarding women in disaster policy develops has not yet been conducted.

Therefore, this study aims to answer the following question: What is the research trajectory regarding women in disaster policy framework after establishing the Sendai Framework for Disaster Risk Reduction 2015-2030? A big question hole regarding the policy gaps and criticisms of the current disaster policy and

how it affects women is still existing. Through a bibliometric approach, this paper will provide deliberation of the analysis through: 1) To what extent has the discourse on women’s research in disaster policy developed throughout the eight years of the Sendai Framework? 2) What are the multidimensional key areas of research discussed regarding women in disaster within the policy realm? 3) What implications may policymakers derive from the research? 4) What is the promising future research agenda projected from the current findings of the research?

Methods

Identification

Data Collection

As the paper’s novelty is to propose a disaster policy framework recommendation, considering the SFDRR’s assessor in the future, the trajectory regarding women in disaster policy research and overlooked issues throughout the existing works of literature should be analysed. Therefore, bibliometric analysis is adopted. To retrieve quality peer-reviewed and broad range of existing literature, the author chose a multidisciplinary Scopus database for the literature bibliography source (Corbet et al., 2019; Patel et al., 2022). Scopus is chosen due to its wide use in bibliometric analysis and its comprehensive coverage of scientific publications, referring to Putera & Pasciana (2021). Accordingly, twenty percent more coverage is also offered by Scopus compared to Web of Science. Following Adegoke (2023), the Preferred Items for Systematic Reviews and Meta-Analysis or the so-called PRISMA framework (see Figure 1) will be used as the guidelines throughout curating the recorded literature to achieve objectivity in the paper.

Inclusion and Exclusion Criteria

The author performed the following keywords to clarify the literature focus on the Scopus search engine: TITLE-ABS-KEY ((Women

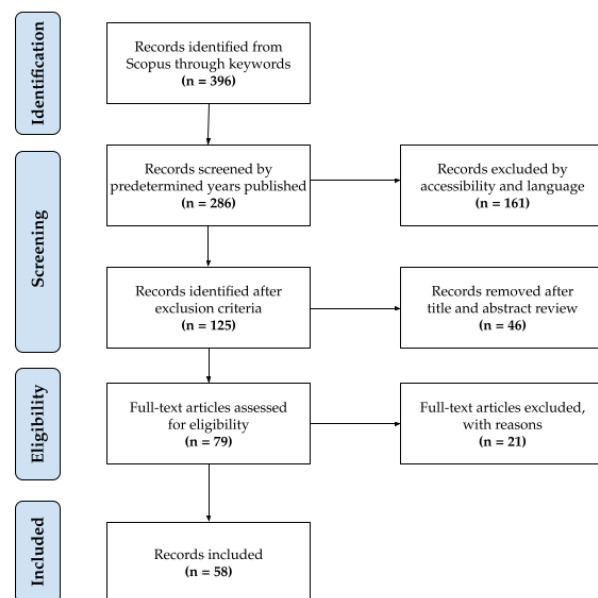


Figure 1. PRISMA diagram depicting the document collection process from the Scopus database

Source: Processed by Author.

AND (Disaster Risk Reduction OR Disaster Management OR Disaster Policy)) which yields 396 documents on the result page. As the first aim is what was written in the precursory, we limit the research to 2015–when the Sendai Framework for Disaster Risk Reduction was established, until 2023. The literature before 2015 was not accounted for because the research will be starting to analyse the literature on the year when the Hyogo Framework of Action was last implemented and SFDRR was established. Accessibility and English language journals are brought up as the inclusion criteria for the literature review. The author also carried out a title and abstract review, which resulted in 79 documents being assessed for full-text screening for eligibility. The documents were eliminated if they were deemed irrelevant with the exclusion reasons in the following: the study deliberated disaster policy without a specific focus on women; by “women”, this study refers to both gender identity and biological sex, or the study deliberated women discourse without a specific focus regarding disaster policy; “disaster policy” referred to guideline and strategies in

managing disaster risk reduction. Moreover, the study selection by the PRISMA framework resulted in 58 documents (see Table 1) being included in the research.

Table 1.
Journals Included in the Literature Review

Source	Count
IOP Conference Series Earth and Environmental Science	5
International Journal of Disaster Risk Reduction	4
International Journal of Disaster Risk Science	4
Sustainability Switzerland	4
International Journal of Environmental Research and Public Health	3
Disasters	2
Environment and Ecology Research	2
Progress in Disaster Science	2
World Development	2
Others (n = 30) with each consisting of 1 document	30
Total	58

Source: Processed by Author.

Bibliometric Review

Pioneered by Pritchard (1969), the bibliometric methodology describes intellectual structure regarding specific science realms and has been widely used in the literature (Goodell et al., 2021). It also describes how research areas are organised with the way the discourse evolved while also identifying research gaps able to be portrayed through bibliometric analysis (Forliano et al., 2021). Accordingly, the VosViewer software is used as the literature mapping visualization tool to carry out the research (Hamidah et al., 2020; Putera & Pasciana, 2021).

Results

Development of the Literature

Subject Area of the Research

A total of 58 papers were retrieved from Scopus following the screening process with the PRISMA framework. Looking at the subject areas of literature, the discourse of women in disaster policy is expanded into several realms (see Table 2) with social sciences (28%), environmental

science (27,3%), followed by earth and planetary sciences in third place being the three major disciplines being covered in the published literature. Namely, 83 documents are included in the three subjects. The subject classification is carried out by the ASJC (All Science Journal Classification) system from the Scopus database. Accordingly, the least covered subject areas are [1] agricultural and biological sciences, [2] business, management, and accounting, and [3] physics and astronomy, each consisting of 1 document. The discussion on these subjects respectively revolves around disaster resilience through a gender lens in flood-prone areas (Chisty et al., 2022), women's economic empowerment in mitigating climate change (Nosheen et al., 2023), and water management system for drought disaster risk reduction within the gender mainstreaming context (Susilorini et al., 2021). This implicates how women in disaster policy research had called the gender mainstreaming discourse on several aspects of its developing subject areas.

Table 2.
Subject Areas of Research Included in the Literature Review

Subject Area	Percentage (%)	Count
Social Sciences	28	34
Environmental Science	27.3	33
Earth and Planetary Sciences	13.2	16
Medicine	7.4	9
Engineering	6.6	8
Energy	5	6
Art and Humanities	3.3	4
Computer Science	3.3	4
Biochemistry, Genetics and Molecular Biology	1.7	2
Economics, Econometrics and Finance	1.7	2
Others (n = 3) with each subject consisting of 1 document	2.5	3

Source: Processed by Author.

Publication Trends

Looking at the published literature in 2015 following the establishment of the Sendai Framework for Disaster Risk Reduction, only

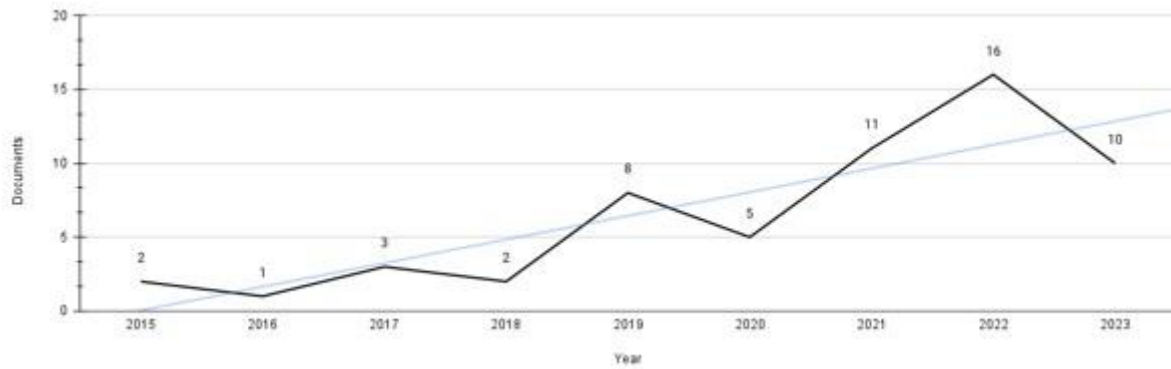


Figure 2. Number of Publications of Research on Women in Disaster Policy

Source: Processed by Author.

two documents covered the discussion regarding women in the disaster policy framework. They discuss how women are vulnerable while at the same time construed as a resource in managing disaster, followed by criticism on how women's vulnerability discourse remains dominant and leadership discourse somewhat problematic in the Sendai Framework for Disaster Risk Reduction 2015-2030 (Bradshaw, 2015; Işık et al., 2015). Through the five years of the SFDRR, the literature moves towards the discourse of mainstreaming women into disaster risk reduction (Ginige et al., 2016; Yumarni & Amaratungga, 2017; Sopiawati & Hatuti, 2019), acknowledging climate change as a disaster risk multiplier for women (Sorensen et al., 2018; Masson et al., 2019), and calling for recognition of VAWG (Violence Against Women and Girls) and SRHR (Sexual and Reproductive Health and Rights) in disaster policies and practices as the SFDRR fails to appropriately mention women's rights in the policy frameworks (Bradshaw, 2015; Bhadra, 2017; Bhattacharjee, 2019; Llorente-Marrón et al., 2020). Remarking on the eighth year of the Sendai Framework for Disaster Risk Reduction, the publication trends regarding women in disaster policy (see Figure 2) experience fluctuation, which firstly remained under five documents being published from 2015 to 2018 and later had significant raises in 2019 and 2022 with 8 and 16 documents respectively.

Authorship and Countries

The discourse of women in disaster policy is being discussed globally, and hence, the geographical distribution of the author's country of origin is diverse. With 18 publications, the United Kingdom is marked as the most productive country for authors deliberating on women in disaster policy discourse. Although the publication originated in the United Kingdom, the disaster study cases are discussed and analyzed mostly regarding events in Asia—India, Indonesia, Nepal, Philippines, Sri Lanka, and Vietnam—and Africa—Chad, South Africa, and Zimbabwe. The ranked second country is Indonesia, with 9 documents with 8 literature discussing criticism and evaluation of the implemented disaster policies in specifically mentioned regions in Indonesia which has and has not yet empowered women in disaster risk management policy and practice, while the one document analyses the research of disaster and gender in Indonesia. The number of other countries whose authors contributed to the literature was 26, along with the United Kingdom and Indonesia. Nonetheless, the United Kingdom and Indonesia went the opposite when it came to the coverage of case studies regarding women in disaster policy research (see Figure 3 below). The most discussed country in the literature is Indonesia, with a total of 9 documents. This is aligned with the fact that Indonesia is located in

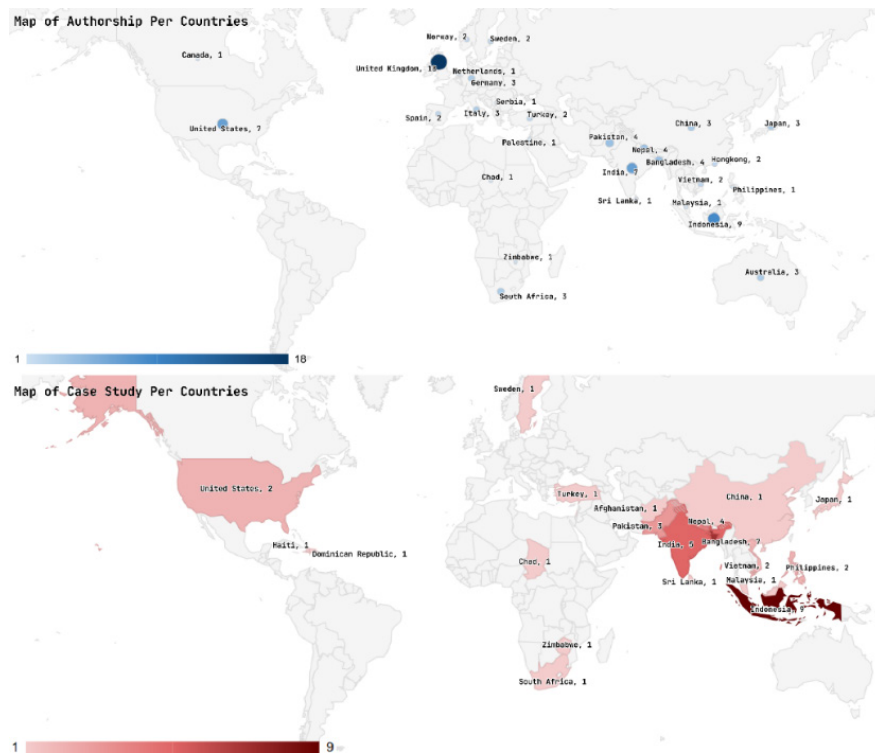


Figure 3. Map Visualizing Published Documents per Country
 Source: *Processed by Author.*

the “ring of fire”, hence being prone to natural disasters (Rindrasih et al., 2019).

Bibliometric Mapping of the Research

Literature mapping through keyword clustering was carried out to determine the multiplicity of the research. Analysis of the keyword and co-occurrence are conditioned to keywords with three or more occurrences with fractional counting. Accordingly, 52 out of 537 keywords were taken into consideration for the bibliometric analysis. Quoting van Eck & Waltman (2023), the network visualisation map represents the analysis item by its label and, by default, also by a circle in which the label and circle of the item are determined by the weight of the item.

Multidimensional Concepts of Research on Women in Disaster Policy

A total of four research clusters are generated and represented by the colors blue, green, yellow, and red. While the node colors distinguish

research clusters, the node size represents the keyword occurrences, and the line of each keyword depicts the relationship between each keyword. First, according to the co-occurring keyword, the red cluster indicates the interest regarding women in disaster policy within the health context, which the keywords are public health, coronavirus disease 2019, pandemic, mental health, and others. Second, the yellow cluster reflects the women’s discourse in disaster policy, specifying the environment or climate context with keywords climate change, disaster risk reduction, disaster prevention, women, risk assessment, et cetera. The third cluster is green. The discourse on economic context was deliberated as the mentioned keywords consist of gender disparity, livelihood, adaptive management, developing world, and others. Fourth, the blue cluster suggests the deliberation on the social and political context regarding women in disaster policy as the keywords concerning vulnerability, intersectionality,

health, resulting in a high prevalence of low birthweight. This leads to criticism of how policies and programs for women in the perinatal period regarding their mental health are non-existent in the post-disaster management guidelines, indicating perinatal mental health is overlooked in disaster discourse. A similar case on how women's health is somehow overlooked in disaster policy is deliberated by Azrimaidaliza et al. (2021). The study reveals how reproductive health policies and programs for women have not been implemented properly in West Sumatra despite the province potentially experiencing four main disasters, namely landslides, floods, earthquakes, and tsunamis. Although there are certainly women and girls who need help amidst disasters, antenatal care services, and reproductive health facilities are unavailable. It is aligned with the criticism of the Sendai Framework for Disaster Risk Reduction due to the policy framework lacking in comprehensively mentioning women's rights to sexual and reproductive health services.

Moving towards 2022, keywords relating to health are dominated by 'pandemic' and 'COVID-19' with five occurrences. This year, 6 out of 16 publications discuss the COVID-19 pandemic, relating it to women in disaster risk reduction. Although COVID-19 strikes globally, the vulnerability of women and men is incomparable. Childcare and household chores are primarily burdened on women, so they face a double burden amidst COVID-19. This leads to women facing greater fear of COVID-19 compared to men and having less time to engage in home-based learning activities (Cvetković et al., 2022; Muyambo et al., 2022). This suggests how the pandemic has influenced traditional gender roles and responsibilities, both at home and in the workforce. Accordingly, the disaster literature has adapted to capture the evolving dynamics of gender roles during prolonged crises like the COVID-19 pandemic. A study by Ancheta and Gamayo (2022) provides a discussion on how

women who are mothers are disproportionately disadvantaged in facing COVID-19 after the Taal volcanic eruption. The displaced mothers are concerned about health and nutrition, food security, children's education, water, sanitation, hygiene, or WASH. A similar list regarding concerns in facing COVID-19 amidst disaster or post-disaster also highlights how global aid reports have not yet been fully inclusive to raise awareness of the needs of women (Malakar & Lu, 2022; Smith et al., 2022). The study suggests embodying a gender-inclusive approach to the disaster risk reduction management plan.

Accordingly, a feminist approach to pandemic preparedness and response has also been called for by feminist scholars and gender equity advocates for global health security inclusivity purposes. The underlying gender inequality in health systems does not solely disadvantage women as healthcare receivers; it is also a struggle for female frontline health workers amidst the COVID-19 outbreak (Krishnan, 2022). Moreover, the study supports the aforementioned studies, which advocate a gender-inclusive approach to disaster risk reduction within the health discourse.

Research Streams of the Women in Disaster Policy Research

The research cluster and how each cluster discussion is being developed in the discourse can be identified throughout the literature bibliometric mapping. As the research aims to provide research implications for policymakers regarding women in disaster policy discourse, research stream identification is carried out to traject research evidence into policy.

The research stream identification regarding the discourse of women in disaster policy requires an analysis of content to be conducted. Following Frerichs & Teichert (2023), the most referenced literature is selected to identify research streams. In this research, the minimum cited score is set

Table 3.
Most-cited Article Journals

Documents	<2019	2019	2020	2021	2022	2023	Subtotal	>2023	Total
Rao et al. (2019)			6	16	18	15	55	1	56
Thurston et al. (2021)				5	21	21	47	1	48
Rakib et al. (2017)		3	4	10	10	8	35		35
Hamidazada et al. (2019)		1	5	7	15	4	32		32
Wisner (2020)			4	8	11	7	30		30
Zaidi & Fordham (2021)				4	11	8	23		23
Llorente-Marrón et al. (2020)				4	11	8	23		23
Yadav et al. (2021)				7	10	5	22		22
Ruszczuk et al. (2020)			1	6	11	4	22		22
Hemachandra et al. (2018)		2	4	5	5	4	20		20
Sorensen et al. (2018)				6	4	6	16	1	17
Işık et al. (2015)	3	5		2	4	3	14		17
Ramalho (2019)		1	2	2	5	6	16		16
Bhadra (2017)		1		6	5	4	16		16
Masson et al. (2019)		1		5	4	5	15		15
Bhattacharjee (2019)		1		4	4	5	14		14
Danielsson & Eriksson (2022)				2	7	4	13		13
Rouhanizadeh & Kermanshachi (2021)					8	3	11		11
Bradshaw (2015)		3	3	1	3		7		10

Source: Processed by Author.

to 10 times to provide comprehensive analysis without peril the depth of the discussion. The analysis separates 19 publications from the included 58 publications on the discourse (see Table 3). Analyzing the literature with high citations is considered critical because it contributes to shaping understanding regarding the discourse, which will guide researchers in future research. Moreover, through the analysis of content, it is suggested research of women in disaster policy discourse leads to three plights of research streams, namely capacity and capability of women (3 articles), vulnerability (5 articles), and strategy and policy initiatives (11 articles). A thorough examination of the contexts of the articles is done in the article grouping procedure.

Capacity and Capability of Women

The research on the capacity and capability of women stream aims to bring up the notion regarding the importance of gender mainstreaming in the disaster risk reduction policy. Through that, the capacity and capability of women could be acknowledged. The appearance of the notion first

occurred in the same year as the establishment of the Sendai Framework for Disaster Risk Reduction 2015-2030. The researcher discussed the Gölcük earthquake event and how the role of women was acknowledged, specifically in the rehabilitation (Işık et al., 2015). It is observed that women's own reliance and adaptive capacity during post-disaster rehabilitation, risk perception, and capability to provide group therapy by nature through their tendency to talk and share (Işık et al., 2015; Sim et al., 2019). The work by Hemachandra et al. (2018) also adds that the Sendai Framework for Disaster Risk Reduction lacks measures regarding incorporating women into disaster policy. However, women's capacity and capability find their way to be recognised and acknowledged. Both locally and in the broader realm, women's presence is considered crucial as women's absence in disaster governance will result in disaster risk reduction disruption (Saito 2012, as cited by Hemachandra et al., 2018).

While the two pieces of literature discussed how women's capacity and capability are being acknowledged despite the gender disparity in the

disaster risk reduction policy framework—within its limitation on acknowledgment, Danielsson and Eriksson (2020) discussed how women’s capacity and capability in disaster somewhat overlooked from being acknowledged because the work done by women is considered to be the responsibility of women by nature. To illustrate, in the case of firefighter work during the forest fire in Sweden, when women do female-coded tasks such as cooking food for the firefighters and preparing places for firefighters to rest, it is portrayed as women have done not-so-challenging work. All that when, in fact, women face a double burden. While women try to contribute to managing disasters, women also have to do domestic work and take care of the elderly and children, even during the disaster evacuation (Bartel & Naismith, 2023; Hagedoorn et al., 2021; Scaparra et al., 2019). Moreover, literature on the stream of women’s capacity and capability collectively agreed on adopting a gender-responsive approach during the formulation of disaster risk reduction policies. Therefore, no one can prevent or put barriers towards women in delivering their capacity and capability in disaster risk reduction governance while also acknowledging that the work done by women is as important as a male-coded task in a disaster management organisation.

Vulnerability

The discourse regarding disaster risk reduction is tightly related to the vulnerability discourse, which is concerned with how disasters unequally affect women and men due to vulnerability. The vulnerability of women already existed in pre-disaster due to power relations, social hierarchies, and gender roles (Khalid et al., 2021; Trentin et al., 2023). Accordingly, it is inevitably exacerbated by the absence of specific policy guidelines concerning the aspect of gender in disaster management. Research by Hamidazada et al. (2019) utilised the Grounded Theory and Interpretive Structural Modeling, with

the aim of mapping the root cause of vulnerability. The lack of disaster education and protection measures, followed by patriarchal culturally rooted beliefs in pre and post disaster disasters, contributes towards the vulnerability of women experiencing a rise. The findings are similar to research by Rakib et al. (2017), who stated that inadequate disaster mitigation and management strategies aggravated the vulnerability of people, especially women, in disaster. Moreover, a lack of accessibility and opportunities to education and resources results in women being socio-economically disadvantaged (Kantamaneni et al., 2022; Mendis et al., 2023), especially those who are widowhood or live in a family without male household lead (Bhadra, 2017). Age also considerably contributes to the vulnerability of women—young girls perhaps struggle to continue their education, while women who are middle-aged face obstacles in facing the economic burden in post-disaster. The three early pieces of literature in the stream signify how culturally rooted norms, socio-political environment, and the condition of women’s biologically-specific needs regarding reproductive and maternal health collectively contributed towards the vulnerability of women, which was exacerbated when access and opportunities of women to recovery support services were being limited.

As the vulnerability research stream highlighted how disaster disadvantages women more, Llorente-Marrón et al. (2020) emphasised the arguments by stating and providing a study on how gender inequality persists and intensifies after a disaster. This aligned with the agenda of Sustainable Development Goals, which recognises vulnerability and resilience towards disaster reciprocally have a significant relationship with gender equality (Haque et al., 2022). Moreover, it is concluded through this stream that the status of women in disasters is manifested through socio-demographic characteristics, socio-economic status, and the built environment. It

is also suggested that violence against women and girls increased during the disaster event—psychological, sexual, financial, and emotional violence (Bhadra, 2017; Hamidazada et al., 2019). Regarding that, gender policies are being called for because they constitute key elements in decreasing the vulnerability of women in pre, during, and post disaster. Therefore, Thurston et al. (2021) are the second most referenced among 58 literature, as depicted in Table 3, due to the document discussing qualitative and quantitative evidence through screening numerous literature regarding vulnerability discourse, specifying how disasters can increase violence against women and girls. This signifies the discussion regarding women and how disaster exacerbated their vulnerability, which to such an extent resulted in the increase of violence against women and girls, are recognised and gaining acknowledgment amongst researchers.

Strategy and Policy Initiatives

The literature regarding this stream is the most cited publication amongst the other topical foci on women in disaster policy discourse. As the research objectives first intend to focus on the research trajectory after the Sendai Framework for Disaster Risk Reduction 2015-2030, the included literature covered policy-related discussions. Moreover, the research stream aims to provide recommendations by evaluating and analyzing the established policies concerning women in disaster risk reduction. Few studies specifically criticise the Sendai Framework for Disaster Risk Reduction 2015-2030 shortfall as the leading international disaster policy (Bradshaw, 2015; Wisner, 2020; Zaidi & Fordham, 2021).

The highest cited document among 58 sample literature is grouped into this research stream. Rao et al. (2019) discussed how women's agency is being challenged by climate change; the study also highlighted the labour of poor women being undervalued in the competitive markets

which enhances further reduction of the agency of women—referred to as the ability of women in making a strategic decision, the capacity of women in owning control over their lives and having the sense to autonomy and empowerment. Although the discussion is based on the capacity and capability of women, with the study findings provide implications for the multilateral policy frameworks, including the Sendai Framework for Disaster Risk Reduction. Hence, it is grouped into the strategy and policy initiatives research stream. Moreover, the research emphasised how climate variability and environmental degradation adversely affected livelihood, which made women face numerous obstacles in decision-making and access to resources, specifically in the agricultural context. Towards the Sendai Framework for Disaster Risk Reduction, the study called for policies and interventions to address women's specific barriers in the disaster-prone area. These involve adequate measures of social protection implementation and forming an enabling environment for women to exercise agency to achieve adaptive capacity – the ability of individuals to cope with environmental or climatic alteration.

Research that particularly addressed the policy regarding women's health during disasters, sexual and reproductive health also included, were found on this stream. Still relevant to the discussion brought by the highest cited literature (Rao et al., 2019) on how climate change widens gender disparities issues on women, Sorensen et al. (2018) addressed the issues signifying the gender-based health disparities in the policy realm. As women experienced disproportionate mortality during climate-related disasters—flooding and hurricanes, et cetera, women were also at greater risk of physical and sexual violence. In addition, women who gave birth after the disaster occurrence have a higher risk of preeclampsia, bleeding, and low birth weight babies. Therefore, the research suggests

safeguarding gender-sensitive emergency shelters and facilitating obstetric and gynaecology services. Aligned with the need for women's rights to sexual and reproductive health facilities, there have been studies discussing menstrual hygiene management in disaster situations, which is somewhat challenging in developing countries. The cultural stigma regarding menstruation is secrecy, taboo, and shame still exists, it hindered institutions and policymakers from addressing existing challenges in implementing menstrual hygiene management in disaster situations (Bhattacharjee, 2019; Orderud et al., 2023; Tufail et al., 2023).

Towards the vulnerability that challenges the capacity and capability of women, Masson et al. (2019) suggest resilience-building programs as a strategy to address the issue systematically. A transformative capacity approach was highlighted due to its objectives in economic, social, cultural, or political alteration with aims to eliminate or reduce vulnerability. Moreover, while enhancing resilience also requires the empowerment of women participatory in disaster risk reduction, it shall be emphasized how the sustainability of initiatives relies on the local authorities' commitment and capability to incorporate it into policies and is unlikely to reach the transformative potential if socio-spatial manifestation on gender roles, power, and agency are overlooked (Crawford & Morrison, 2021; Kusumasari, 2010; Ramalho, 2019; Ruszczyk et al., 2020). Yadav et al. (2021) accordingly suggested a feminist vision for transformative alteration in enhancing resilience in disaster risk reduction.

Throughout the eight years of the Sendai Framework for Disaster Risk Reduction 2015-2030, literature that criticised the policy framework is contributed to this stream. The same year as the establishment of the international policy framework literature criticised how SFDRR fails to address the VAWG/Violence Against Women and Girls (Bradshaw, 2015). It explained

why publication regarding VAWG is the second most referenced literature in the discourse (Thurston et al., 2021). Moreover, the SFDRR missed the opportunity to propose a gender-responsive disaster risk reduction policy with greater coherence on gender-perspective policy and international frameworks (Zaidi & Fordham, 2021).

Discussion

Research Implication for Policymakers

The study has identified four research themes on women in disaster policy through a bibliometric approach and its research streams. To create a comprehensive proposed policy framework, a summary table is provided (see Table 4) to give more understanding regarding the relation between multidimensional discussion and streams of the research.

As we refer to the analysis of the findings, the study derived three elements that allow for mainstreaming gender in the disaster policy framework. The proposed policy framework is shown in Figure 6, which consists of the gender-inclusive, gender-responsive, gender-sensitive, and gender-perspective approaches.

Gender-inclusive approach facilitates the assessment of the roles and standing of women, men, and individual minorities by capturing how gender inequality manifests in various aspects of life (Smith et al., 2022). It entails evaluating access to resources, decision-making power, values and beliefs, gendered laws, policies, and inequitable governance. Moreover, it incorporates measurements specific to sex and gender, as well as those that account for the intersections between different forms of inequality. **Gender-responsive approach** advocates actively toward specific needs, vulnerabilities, and capacities of different genders in the context of disaster management, in order to tailor response and resilience-building efforts accordingly (Nosheen et al., 2023; Sopiawati & Hatuti, 2019; Zaidi &

Table 4.
Findings of the Bibliometric Analysis

Research Streams	The Current State of Women in Disaster Policy	What Should Be Proposed?
Capacity and Capability of Women	<p>Health Women’s capacity and capability to access knowledge, resources, and technologies that can help reduce their workload, deliver services more effectively, and support communities affected by a health crisis are influenced by the gendered implications of health system resilience, as well as broader contextual barriers that affect the forms of agency available to them (Krishnan, 2022).</p> <p>Environment Women answer the need for empirical insights—vital information, skills, resources, and experiences for building resilience strategies in disaster risk reduction, which allows for adaptive capacity for women and men (Evertsen, 2023; Tobi et al., 2023). Addressing creatively the barriers, including subpar working conditions for women and institutional failure or poverty, which restrict women’s agency and hinder their ability to adapt effectively, could potentially enhance their resilience and adaptability (Rao et al., 2019).</p> <p>Economy The capacity and capability of women to minimising property loss during a disaster. It is also noted how, in the flood case in Bangladesh, women actively participate in financial and property savings, which are integral to developing economic structures to aid families during a crisis (Sletto et al., 2022). In Palestine, women were involved in post-man-made disaster housing reconstruction (Saleh et al., 2022). Despite women’s status in vulnerable groups, adaptive capacity and resilience are understood and acted upon (Azad & Pritchard, 2023; Rakib et al., 2017).</p> <p>Socio-political Women’s roles in analysing disaster risks are acknowledged in disaster governance despite barriers that challenge their participation in DRR decision-making. Evidence states the absence of women in disaster planning leads to disruptions in response and recovery stages of disaster—women’s reproductive needs being unavailable due to women not being part of disaster decision-making. Therefore, women are considered crucial decision-makers in both the local and broader spectrum of disaster governance, also due to their strong social networks as a forum to exchange disaster information and knowledge (Hemachandra et al., 2018; Suharini & Syifauddin, 2020; Yunus et al., 2022).</p>	<p>Health</p> <ol style="list-style-type: none"> i. Incorporating gender-disaggregated data in health planning and response efforts. <i>Gender-inclusive.</i> ii. Develop health system policies that respond to the distinct health requirements of women, acknowledging the gendered implications of resilience: Programme for maternal health, family planning, and addressing gender-based violence. <i>Gender-responsive.</i> <p>Environment</p> <ol style="list-style-type: none"> i. Promote equal and <i>gender-inclusive</i> participation and representation of women and men in decision-making processes, policies, and leadership roles related to disaster risk reduction and climate change adaptation. ii. Conduct <i>gender-sensitive</i> assessments, challenge cultural norms, and analyze socio-political factors contributing to women’s marginalization, with a focus on preventing the reinforcement of gender disparities in development projects. <p>Economy</p> <ol style="list-style-type: none"> i. Conduct gender analysis to assess and address the gender differences and inequalities in post-disaster recovery efforts in regards to financial issues; legal frameworks are in place to protect women’s rights to resources, employment, and financial independence, also ensuring that the specific challenges faced by women are recognized and considered. <i>Gender-sensitive.</i> ii. Provide training and capacity-building initiatives that empower women to actively contribute to disaster preparedness and response efforts. Develop financial policies that promote gender equality, ensuring that women have equal access to financial resources and opportunities. <i>Gender-responsive.</i> <p>Socio-political</p> <ol style="list-style-type: none"> i. Implement educational programs that emphasize the benefits of gender equality within households. This can contribute to a shift in attitudes and behaviors, fostering empowerment and resilience-building for both women and men. <i>Gender-responsive.</i> ii. Integrating a gender perspective into the content of different policies and addressing the representation of women and men in the given policy area. It aims to ensure that the needs of all citizens, regardless of gender, are equally addressed. <i>Gender-perspective.</i>
Vulnerability	<p>Health The vulnerability of women and girls to disasters highlights gender-based violence, reproductive, mental, and physical health (Miki & Ito, 2022; Thurston et al., 2021).</p> <p>Environment The effects of climate change, compounded by socio-political factors, have resulted in women being pushed to the periphery of society. They are also more vulnerable to food and nutrition security issues, chronic malnutrition, adverse reproductive outcomes during pregnancy and breastfeeding, and negative consequences for reproductive and sexual health (Nosheen et al., 2021; Udo & Naidu, 2023).</p> <p>Economy Women’s resources are deprived and prevented from working by the husband/family, creating challenges in post-disaster recovery (Masson et al., 2019).</p> <p>Socio-political Women are often considered the critical drivers of grass-roots action. However, their inclusion in DRRM initiatives may be driven more by instrumentalist efficiency motives than by equity considerations. This can leave women bearing the brunt of the burdens of “building back better” after disasters. Additionally, women’s participation in multiple spheres of activity may prompt a redistribution of labor within the household, which can have implications for empowerment and resilience-building (Ramalho, 2019).</p>	

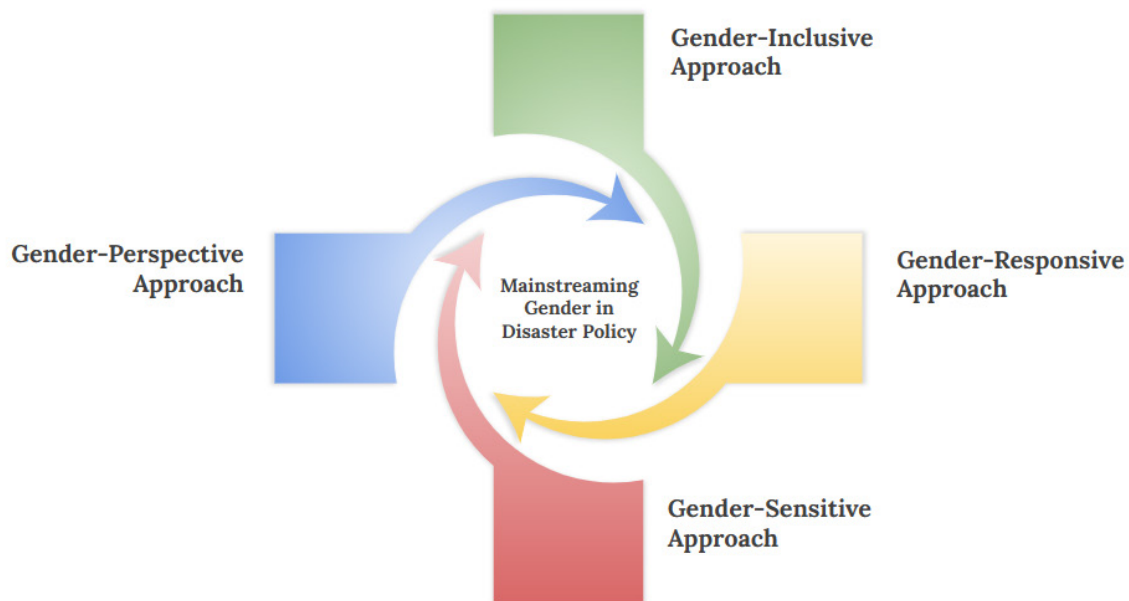


Figure 6. Proposed Framework for Mainstreaming Gender in the Disaster Policy

Source: Proposed by Author.

Fordham, 2021). As it is important to acknowledge how gender as a social construct affects the way people experience disaster, therefore **gender-sensitive approach** emphasises the gendered dimensions into account of disaster risk reduction. While a gender-responsive approach goes beyond inclusion in addressing the roots of gender inequality, a gender-sensitive approach involves accounts for how policies, projects, and programs impacted men, women, boys, and girls, as well as calculating to mitigate the negative consequences thereof (Işık et al., 2015; Bhadra, 2017). Two pieces of literature also highlight gender-sensitive approaches that are mostly needed in menstrual hygiene management implementation (Bhattacharjee, 2019; Tufail et al., 2023). The last, **gender-perspective approach**, which completes the previous three elements due to its emphasis on how women contributed with critical knowledge, capacity and capability, and experiences for ensuring inclusive resilience in disaster risk reduction despite being more vulnerable to disaster and climate change (Chisty et al., 2021; Tobi et al., 2023). Moreover, the

gender perspective integrates the importance of acknowledging the different roles, responsibilities, access, and control over resources that men and women have in responding to disasters into all aspects of disaster policy and planning, data collection and analysis of disaster, and decision-making processes (Chisty et al., 2021; Sorensen et al., 2018; Yadav et al., 2021).

Future Research Agenda

There are still many knowledge gaps to explore for researchers regarding women in disaster, particularly in the policy context, to gain further comprehension of the discourse. Through analysis of content and qualitative review of the literature, potential future research questions are developed.

As depicted in Table 5, research regarding gender-responsive policies in the disaster context is highly suggested to be explored for future study. Discussion regarding strategies in bridging the gap between women empowerment initiatives and praxis also has not been covered in the literature. Moreover, the prospective research can shed light

Table 5.
Future Research Questions

Number	Cluster	Topic	Author
1	Capacity and Capability of Women	How can disaster risk governance frameworks be adapted to better integrate women's role in the decision-making process?	(Hemachandra et al., 2019)
		How do gender norms and expectations influence the recognition and appreciation of women's work in disaster situations, and what are the implications for disaster management and response?	(Eriksson & Danielsson, 2020)
2	Vulnerability	How do the findings and recommendations from the studies on the vulnerability of rural women to disasters in specific regions apply to other areas with similar or different cultural, economic, and gender dynamics, and what adaptations may be necessary to address the specific vulnerabilities of women in different contexts?	(Hamidazada et al., 2019)
		How do specific types of natural disasters impact the vulnerabilities of women and girls to violence, including physical, psychological, sexual, and financial violence, in different cultural and socio-economic contexts?	(Thurston et al., 2020)
3	Strategy and Policy Initiatives	What are the most effective strategies for bridging the gap between aspirations to empower women in DRR and the implementation of empowerment initiatives, particularly in the context of everyday hazards and risks?	(Ruszczuk et al., 2020)
		What are the potential impacts of disaster risk reduction policy frameworks being integrated within gender dimensions, and how can the impacts be measured and evaluated?	(Zaidi & Fordham, 2021)
		How can disaster risk reduction policies be reimagined through a feminist lens to create a more equitable future?	(Yadav et al., 2021)
		How can gender-responsive disaster risk reduction policies be effectively integrated across different ministries and levels of government to ensure comprehensive and coordinated support for marginalized populations?	

Source: Processed by Author.

on issues regarding women in disaster to advocate for a more inclusive and equitable framework of disaster policy in reducing vulnerability and building resilience.

Conclusion

As the assessor of the previous international disaster policy framework, the Sendai Framework for Disaster Risk Reduction 2015-2030 was formulated to achieve coherence in global policy which concerned public health, climate change, and development. However, there are many criticisms on how the SFDRR, as the leading international disaster policy framework, had a shortfall in mentioning women's rights in the framework. Throughout the eight years of the adoption of the Sendai Framework for Disaster Risk Reduction 2015-2030 as the international leading disaster risk reduction policy, the discourse regarding women in the disaster policy realm had broadened

into multidisciplinary discussion.

The study identified how the research of women in disaster policy emphasized how mainstreaming gender is needed in the policy framework, with gender mainstreaming not only empowering women but creating inclusiveness towards the marginalized as well. Assessing the literature through bibliometric mapping allows for multidimensional concepts regarding the topic to be identified, as well as research gaps and future research questions. The bibliometric mapping summarised the four general themes being discussed as listed in the following: health, environment, economy, and socio-political. Through a content analysis, three key research streams are found in the literature: 1) capacity and capability of women, 2) vulnerability, and 3) strategy and policy initiatives. Moreover, the study signifies research implications for policymakers while suggesting improving the policy framework

into a more sustainable and inclusive disaster policy framework by integrating a gender-inclusive, gender-responsive, gender-sensitive, and gender-perspective approach.

This study has several limitations in the follows: 1) The reviewed literature was derived from the Scopus journal database using strictly predetermined keywords and inclusion and exclusion criteria; hence, the inclusion of articles from another journal database is limited, and 2) A detailed pragmatic recommendation was not covered as the policy needs adaptability depends on which areas of disaster due to different social norms and culture; it is out of the scope of systematic literature review. Researchers who considered broadening the scope of discussion may expand the literature sources and fill the knowledge gaps listed based on the analysis of bibliometric reviews throughout the study.

References

- Adegoke, D. (2023). A systematic review of big data and digital technologies security leadership outcomes effectiveness during natural disasters. *Sustainable Futures*, 5, 100113. <https://doi.org/10.1016/j.sftr.2023.100113>
- Aitsi-Selmi, A., Egawa, S., Sasaki, H., Wannous, C., & Murray, V. (2015). The Sendai Framework for Disaster Risk Reduction: Renewing the Global Commitment to People's Resilience, Health, and Well-being. *International Journal of Disaster Risk Science*, 6(2), 164. <https://doi.org/10.1007/s13753-015-0050-9>
- Azad, M. J., & Pritchard, B. (2023). The importance of women's roles in adaptive capacity and resilience to flooding in rural Bangladesh. *International Journal of Disaster Risk Reduction*, 90, 103660. <https://doi.org/10.1016/j.ijdr.2023.103660>
- Azrimaidaliza, Qori Andayani Putri, & Yessy Markolinda. (2021). Evaluation of reproductive health program during disaster in West Sumatra Province. *E3S Web of Conferences*, 331, 02013–02013. <https://doi.org/10.1051/e3sconf/202133102013>
- Bartel, B. A., & Naismith, A. K. (2023). Children first: women's perspectives on evacuation at Fuego volcano and implications for disaster risk reduction. *In Frontiers in Earth Science (11)*. <https://www.frontiersin.org/articles/10.3389/feart.2023.1172867>
- Bhadra, S. (2017). Women in Disasters and Conflicts in India: Interventions in View of the Millennium Development Goals. *International Journal of Disaster Risk Science*, 8(2), 196–207. <https://doi.org/10.1007/s13753-017-0124-y>
- Bhairawa Putera, P., & Pasciana, R. (2023). Big Data for Public Domain. *Policy & Governance Review*, 5(3), 220–239. <https://doi.org/10.30589/pgr>
- Bhattacharjee, M. (2019). Menstrual Hygiene Management During Emergencies: A Study of Challenges Faced by Women and Adolescent Girls Living in Flood-prone Districts in Assam. *Indian Journal of Gender Studies*, 26(1-2), 96–107. <https://doi.org/10.1177/0971521518811172>
- Bradshaw, S. (2015). Gendered rights in the post-2015 development and disasters agendas. *IDS Bulletin*, 46(4), 59–65. <https://doi.org/10.1111/1759-5436.12158>
- Busayo, E. T., Kalumba, A. M., Afuye, G. A., Ekundayo, O. Y., & Orimoloye, I. R. (2020). Assessment of the Sendai framework for disaster risk reduction studies since 2015. *International Journal of Disaster Risk Reduction*, 50, 101906. <https://doi.org/10.1016/j.ijdr.2020.101906>
- Chisty, M. A., Rahman, M. M., Khan, N. A., & Dola, S. E. (2022). Assessing Community Disaster Resilience in Flood-Prone Areas of Bangladesh: From a Gender Lens. *In Water*, 14(1). <https://doi.org/10.3390/w14010040>
- Climate Change Adaptation and Disaster Risk

- Reduction. (2020). OECD. <https://doi.org/10.1787/3edc8d09-en>
- Corbet, S., Dowling, M., Gao, X., Huang, S., Lucey, B., & Vigne, S. A. (2019). An analysis of the intellectual structure of research on the financial economics of precious metals. *Resources Policy*, *63*, 101416. <https://doi.org/10.1016/j.resourpol.2019.101416>
- Crawford, G., & Morrison, C. (2021). Community-led reconstruction, social inclusion and participation in post-earthquake Nepal. *Development Policy Review*, *39*(4). <https://doi.org/10.1111/dpr.12512>
- Cvetković, V. M., Nikolić, N., Ocal, A., Martinović, J., & Dragašević, A. (2022). A Predictive Model of Pandemic Disaster Fear Caused by Coronavirus (COVID-19): Implications for Decision-Makers. *International Journal of Environmental Research and Public Health*, *19*(2). <https://doi.org/10.3390/ijerph19020652>
- Danielsson, E., & Eriksson, K. (2022). Women's invisible work in disaster contexts: gender norms in speech on women's work after a forest fire in Sweden. *Disasters*, *46*(1), 141–161. <https://doi.org/10.1111/disa.12464>
- De Silva, K., & Jayathilaka, R. (2014). Gender in the context of Disaster Risk Reduction; A Case Study of a Flood Risk Reduction Project in the Gampaha District in Sri Lanka. *Procedia Economics and Finance*, *18*, 873–881. [https://doi.org/10.1016/s2212-5671\(14\)01013-2](https://doi.org/10.1016/s2212-5671(14)01013-2)
- Drolet, J., Dominelli, L., Alston, M., Ersing, R., Mathbor, G., & Wu, H. (2015). Women rebuilding lives post-disaster: Innovative community practices for building resilience and promoting sustainable development. *Gender and Development*, *23*(3), 433–448. <https://doi.org/10.1080/13552074.2015.1096040>
- Evertsen, K. F. (2023). Women as subjects of risk in Bangladesh's coastal riskscapes. *The Sociological Review*, *71*(5), 1154–1171. <https://doi.org/10.1177/00380261231175223>
- Fajarwati, A., Wardhani, A. G., & Sintesa, M. P. (2020). Journey of researches on gender and disaster in Indonesia. *IOP Conference Series: Earth and Environmental Science*, *451*(1), 12048. <https://doi.org/10.1088/1755-1315/451/1/012048>
- Forliano, C., De Bernardi, P., & Yahiaoui, D. (2021). Entrepreneurial universities: A bibliometric analysis within the business and management domains. *Technological Forecasting and Social Change*, *165*, 120522. <https://doi.org/10.1016/j.techfore.2020.120522>
- Gaillard, J. C., Sanz, K., Balgos, B. C., Dalisay, S. N. M., Gorman-Murray, A., Smith, F., & Toelupe, V. (2017). Beyond men and women: a critical perspective on gender and disaster. *Disasters*, *41*(3), 429–447. <https://doi.org/10.1111/disa.12209>
- Ginige, K., Amaratunga, D., & Haigh, R. (2016). Mainstreaming women into disaster reduction in the built environment. *Disaster Prevention and Management: An International Journal*, *25*(5), 611–627. <https://doi.org/10.1108/DPM-11-2015-0255>
- Goodell, J. W., Kumar, S., Lim, W. M., & Pattnaik, D. (2021). Artificial intelligence and machine learning in finance: Identifying foundations, themes, and research clusters from bibliometric analysis. *Journal of Behavioral and Experimental Finance*, *32*, 100577. <https://doi.org/10.1016/j.jbef.2021.100577>
- Hagedoorn, L. C., Bubeck, P., Hudson, P., Brander, L. M., Pham, M., & Lasage, R. (2021). Preferences of vulnerable social groups for ecosystem-based adaptation to flood risk in Central Vietnam. *World Development*,

- 148, 105650. <https://doi.org/10.1016/j.worlddev.2021.105650>
- Hamidah, I., Sriyono, & Hudha, M. N. (2020). A Bibliometric Analysis of Covid-19 Research using VOSviewer. *Indonesia Journal Of Science and Technology*, 5(2), 209–216.
- Hamidazada, M., Cruz, A. M., & Yokomatsu, M. (2019). Vulnerability Factors of Afghan Rural Women to Disasters. *International Journal of Disaster Risk Science*, 10(4), 573–590. <https://doi.org/10.1007/s13753-019-00227-z>
- Haque, A., Haider, D., Rahman, M. S., Kabir, L., & Lejano, R. P. (2022). Building Resilience from the Grassroots: The Cyclone Preparedness Programme at 50. *International Journal of Environmental Research and Public Health*, 19(21). <https://doi.org/10.3390/ijerph192114503>
- Hemachandra, K., Amaratunga, D., & Haigh, R. (2018). Role of women in disaster risk governance (A. D. & H. R. (eds.); Vol. 212, pp. 1187–1194). Elsevier Ltd. <https://doi.org/10.1016/j.proeng.2018.01.153>
- Hung, K. K. C., Mashino, S., Chan, E. Y. Y., MacDermot, M. K., Balsari, S., Ciottone, G. R., Della Corte, F., et al. (2021). Health Workforce Development in Health Emergency and Disaster Risk Management: The Need for Evidence-Based Recommendations. *International Journal of Environmental Research and Public Health*, 18(7), 3382. MDPI AG. <http://dx.doi.org/10.3390/ijerph18073382>
- Işık, Ö., Özer, N., Sayın, N., Mishal, A., Gündoğdu, O., & Özçep, F. (2015). Are Women in Turkey Both Risks and Resources in Disaster Management?. *International Journal of Environmental Research and Public Health*, 12(6), 5758–5774. MDPI AG. Retrieved from <http://dx.doi.org/10.3390/ijerph120605758>
- Jeffrey Rosario Ancheta, & George Vincent Gamayo. (2022). Women in Disasters: Unfolding the Struggles of Displaced Mothers in Talisay, Batangas during the Taal Volcano Eruption and the Pandemic. *Rupkatha Journal on Interdisciplinary Studies in Humanities*, 14(4). <https://doi.org/10.21659/rupkatha.v14n4.01>
- Kantamaneni, K., Panneer, S., Sudha Rani, N. N. V., Palaniswamy, U., Bhat, L. D., Jimenez-Bescos, C., & Rice, L. (2022). Impact of Coastal Disasters on Women in Urban Slums: A New Index. *Sustainability (Switzerland)*, 14(6). <https://doi.org/10.3390/su14063472>
- Kusumasari, B., Alam, Q., & Siddiqui, K. (2010). Resource capability for local government in managing disaster. *Disaster Prevention and Management: An International Journal*, 19(4), 438–451. <https://doi.org/10.1108/09653561011070367>
- Kelman, I. (2015). Climate Change and the Sendai Framework for Disaster Risk Reduction. *International Journal of Disaster Risk Science*, 6(2), 117–127. <https://doi.org/10.1007/s13753-015-0046-5>
- Khalid, Z., Meng, X.-M., & Khalid, A. (2021). A Qualitative Insight into Gendered Vulnerabilities: A Case Study of the Shishper GLOF in Hunza Valley, Pakistan. *Sustainability*, 13(16). <https://doi.org/10.3390/su13168798>
- Khatri, G. K., Tran, T. D., Baral, S., & Fisher, J. (2020). Experiences of an earthquake during pregnancy, antenatal mental health and infants' birth weight in Bhaktapur District, Nepal, 2015: a population-based cohort study. *BMC Pregnancy and Childbirth*, 20(1), 414. <https://doi.org/10.1186/s12884-020-03086-5>
- Kim, B. J., Jeong, S., & Chung, J.-B. (2021). Research trends in vulnerability studies from 2000 to 2019: Findings from a bibliometric analysis. *International Journal of Disaster*

- Risk Reduction*, 56, 102141. <https://doi.org/10.1016/j.ijdr.2021.102141>
- Krishnan, S. (2022). Exploring female frontline health workers' role and capacities in COVID-19 response in India. *International Journal of Disaster Risk Reduction*, 75. <https://doi.org/10.1016/j.ijdr.2022.102962>
- Llorente-Marrón, M., Díaz-Fernández, M., Méndez-Rodríguez, P., & González Arias, R. (2020). Social Vulnerability, Gender and Disasters. The Case of Haiti in 2010. *Sustainability*, 12(9), 3574. MDPI AG. <http://dx.doi.org/10.3390/su12093574>
- Malakar, K., & Lu, C. (2022). Hydrometeorological disasters during COVID-19: Insights from topic modelling of global aid reports. *Science of the Total Environment*, 838. <https://doi.org/10.1016/j.scitotenv.2022.155977>
- Masson, V. L., Benoudji, C., Reyes, S. S., & Bernard, G. (2019). How violence against women and girls undermines resilience to climate risks in Chad. *Disasters*, 43(S3), S245–S270. <https://doi.org/10.1111/disa.12343>
- Mendis, K., Thayaparan, M., Kaluarachchi, Y., & Pathirage, C. (2023). Challenges Faced by Marginalized Communities in a Post-Disaster Context: A Systematic Review of Literature. *Sustainability*, 15(14). <https://doi.org/10.3390/su151410754>
- Miki, Y., & Ito, K. (2022). Appropriate Health Management Considering the Vulnerability of Women during Disasters. *Tohoku Journal of Experimental Medicine*, 256(3). <https://doi.org/10.1620/tjem.256.187>
- Mizutori, M. (2020). Reflections on the Sendai Framework for Disaster Risk Reduction: Five Years Since Its Adoption. *International Journal of Disaster Risk Science*, 11(2), 147–151. <https://doi.org/10.1007/s13753-020-00261-2>
- Munene, M. B., Swartling, Å. G., & Thomalla, F. (2018). Adaptive governance as a catalyst for transforming the relationship between development and disaster risk through the Sendai Framework?. *International Journal of Disaster Risk Reduction*, 28, 653–663. <https://doi.org/10.1016/j.ijdr.2018.01.021>
- Muyambo, N., Mlilo, P., Mathe, U., & Chitongo, L. (2022). Perceived knowledge on management of COVID-19 by rural, youths and women: A blurred dialectic of the ontologies and experiences in rural Gwanda South, Zimbabwe. *Cogent Social Sciences*, 8(1), 2069208. <https://doi.org/10.1080/23311886.2022.2069208>
- Nhamo, G., Muchuru, S., & Nhamo, S. (2018). Women's needs in new global sustainable development policy agendas. *Sustainable Development*, 26(6), 544–552. <https://doi.org/10.1002/sd.1717>
- Nojavan, M., Salehi, E., & Omidvar, B. (2018). Conceptual change of disaster management models: A thematic analysis. *Jàmbá: Journal of Disaster Risk Studies*, 10(1), 11 pages. <https://doi.org/10.4102/jamba.v10i1.451>
- Nosheen, M., Iqbal, J., & Ahmad, S. (2023). Economic empowerment of women through climate change mitigation. *Journal of Cleaner Production*, 421. <https://doi.org/10.1016/j.jclepro.2023.138480>
- Orderud, H., Härkönen, J., Hårsaker, C. T., & Bogren, M. (2022). Floods and maternal healthcare utilisation in Bangladesh. *Population and Environment*, 44(3), 193–225. <https://doi.org/10.1007/s11111-022-00410-3>
- Patel, R., Goodell, J. W., Oriani, M. E., Paltrinieri, A., & Yarovaya, L. (2022). A bibliometric review of financial market integration literature. *International Review of Financial Analysis*, 80, 102035. <https://doi.org/10.1016/j.irfa.2022.102035>
- Pritchard, A. (1969) Statistical Bibliography or Bibliometrics. *Journal of Documentation*, 25, 348-349.

- Rahmatika, N. I., Sakti, S. K., & Boediarto, A. (2021). Women empowerment in post- disaster recovery after the 2018 tsunami in Sumur Regency Pandeglang District. *IOP Conference Series: Earth and Environmental Science*, 708(1). <https://doi.org/10.1088/1755-1315/708/1/012072>
- Rakib, M. A., Islam, S., Nikolaos, I., Bodrud-Doza, M., & Bhuiyan, M. A. H. (2017). Flood vulnerability, local perception and gender role judgement using multivariate analysis: A problem-based “participatory action to Future Skill Management” to cope with flood impacts. *Weather and Climate Extremes*, 18, 29–43. <https://doi.org/10.1016/j.wace.2017.10.002>
- Ramalho, J. (2019). Empowerment in the era of resilience-building: gendered participation in community-based (disaster) risk management in the Philippines. *International Development Planning Review*, 41(2), 129–148. <https://doi.org/10.3828/idpr.2018.25>
- Rana, I. A. (2020). Disaster and climate change resilience: A bibliometric analysis. *International Journal of Disaster Risk Reduction*, 50, 101839. <https://doi.org/10.1016/j.ijdr.2020.101839>
- Rao, N., Mishra, A., Prakash, A., Singh, C., Qaisrani, A., Poonacha, P., Vincent, K., & Bedelian, C. (2019). A qualitative comparative analysis of women’s agency and adaptive capacity in climate change hotspots in Asia and Africa. *Nature Climate Change*, 9(12), 964–971. <https://doi.org/10.1038/s41558-019-0638-y>
- Rindrasih, E., Witte, P., Spit, T., & Zoomers, A. (2019). Tourism and Disasters: Impact of Disaster Events on Tourism Development in Indonesia 1998-2016 and Structural Approach Policy Responses. *Journal of Service Science and Management*, 12(02), 93–115. <https://doi.org/10.4236/jssm.2019.122006>
- Retno Susilorini, R. M. I., Lika, R. R., Sriyana, Angghita, L. J., & Sinaga, J. I. (2021). Gender Mainstreaming in Drought Disaster Risk Reduction. *Journal of Physics: Conference Series*, 1811(1), 12109. <https://doi.org/10.1088/1742-6596/1811/1/012109>
- Reyes, D. D., & Lu, J. L. (2016). Gender dimension in disaster situations: A case study of flood prone women in Malabon City, Metro Manila. *International Journal of Disaster Risk Reduction*, 15, 162–168. <https://doi.org/10.1016/j.ijdr.2015.11.001>
- Rouhanizadeh, B., & Kermanshachi, S. (2021). Gender-based evaluation of economic, social, and physical challenges in timely post-hurricane recovery. *Progress in Disaster Science*, 9, 100146. <https://doi.org/10.1016/j.pdisas.2021.100146>
- Ruszczuk, H. A., Upadhyay, B. K., Kwong, Y. M. C., Khanal, O., Bracken, L. J., Pandit, S., & Bastola, R. (2020). Empowering women through participatory action research in community-based disaster risk reduction efforts. *International Journal of Disaster Risk Reduction*, 51. <https://doi.org/10.1016/j.ijdr.2020.101763>
- Saito, F. (2012). Women and the 2011 East Japan Disaster. *Gender and Development*, 20(2), 265–279. <https://doi.org/10.1080/13552074.2012.687225>
- Saleh, N., Enshassi, A., & Sundermeier, M. (2022). Women’s Empowerment in Post-Conflict Housing Reconstruction in Palestine. *IOP Conference Series: Earth and Environmental Science*, 1101(2), 22033. <https://doi.org/10.1088/1755-1315/1101/2/022033>
- Scaparra, M., Cong Chinh, N., Dang, T., Phuong, Trung, H., & Tran. (2019). Community perceptions of social, economic and environmental impacts of flooding in central districts of Hanoi, Vietnam. *Journal of the British Academy*, 137–154. <https://doi.org/10.5871/jba/007s2.137>

- Sembiring, B. M. (2016). Climate Change , Disaster Risk Reduction and Gender : The Southeast Asia Experience. 111. <https://wrdd.unwomen.org/sites/default/files/2021-11/CO16111.pdf>
- Sim, T., Lau, J., Cui, K., & Wei, H.-H. (2019). Post-disaster Psychosocial Capacity Building for Women in a Chinese Rural Village. *International Journal of Disaster Risk Science*, 10(2), 193–203. <https://doi.org/10.1007/s13753-019-0221-1>
- Sletto, B., Luguana, A. M. L., Rakes, K., & Stycos, M. (2022). Intersectionality, gender, and project-induced displacement in the informal city: The struggle over stormwater development in Los Platanitos, Dominican Republic. *World Development*, 158, 105972. <https://doi.org/10.1016/j.worlddev.2022.105972>
- Smith, J., Davies, S. E., Grépin, K. A., Harman, S., Herten-Crabb, A., Murage, A., Morgan, R., & Wenham, C. (2022). Reconceptualizing successful pandemic preparedness and response: A feminist perspective. *Social Science and Medicine*, 315. <https://doi.org/10.1016/j.socscimed.2022.115511>
- Sopiawati, N., & Hatuti. (2019). The Role of Women in the Management of Flood Disasters in Bima District, Nusa Tenggara Barat. *IOP Conference Series: Earth and Environmental Science*, 271, 012030. <https://doi.org/10.1088/1755-1315/271/1/012030>
- Sorensen, C., Saunik, S., Sehgal, M., Tewary, A., Govindan, M., Lemery, J., & Balbus, J. (2018). *Climate Change and Women's Health: Impacts and Opportunities in India*. *GeoHealth*, 2(10), 283–297. <https://doi.org/10.1029/2018GH000163>
- Suharini, E., Kurniawan, E., & Syifaudin, M. (2022). Evaluating the Implementation of BNPB's Srikandi Bencana Program in Dharma Wanita Persatuan UNNES. *International Journal of Safety and Security Engineering*, 12(3), 329–337. <https://doi.org/10.18280/ijssse.120307>
- Tan, N. T. (2013). Emergency Management and Social Recovery from Disasters in Different Countries. *Journal of Social Work in Disability & Rehabilitation*, 12(1–2), 8–18. <https://doi.org/10.1080/1536710X.2013.784172>
- Thapa, V., & Pathranarakul, P. (2019). Gender inclusiveness in disaster risk governance for sustainable recovery of 2015 Gorkha Earthquake, Nepal. *International Journal of Disaster Risk Reduction*, 34, 209–219. <https://doi.org/10.1016/j.ijdrr.2018.11.019>
- Thurston, A. M., Stöckl, H., & Ranganathan, M. (2021). Natural hazards, disasters and violence against women and girls: A global mixed-methods systematic review. *BMJ Global Health*, 6(4). <https://doi.org/10.1136/bmjgh-2020-004377>
- Tobi, S. U. M., Razak, K. A., Siow, Y. M., Ramlee, L. H. S., & Aris, N. A. M. (2023). Empowering women for disaster risk reduction: a case study of geologically based disaster at Yan, Kedah, Malaysia. *IOP Conference Series: Earth and Environmental Science*, 1144(1), 12013. <https://doi.org/10.1088/1755-1315/1144/1/012013>
- Trentin, M., Rubini, E., Bahattab, A., Loddo, M., Della Corte, F., Ragazzoni, L., & Valente, M. (2023). Vulnerability of migrant women during disasters: a scoping review of the literature. *International Journal for Equity in Health*, 22(1), 135. <https://doi.org/10.1186/s12939-023-01951-1>
- Tufail, Z., Ahmer, W., Gulzar, S., Hasanain, M., & Shah, H. H. (2023). Menstrual hygiene management in flood-affected Pakistan: Addressing challenges and ensuring women's health and dignity. *Frontiers in Global Women's Health*, 4. <https://www.frontiersin.org/articles/10.3389/fgwh.2023.1238526>
- Udo, F., & Naidu, M. (2023). Assessing local government's response to black women's vulnerability and adaptation to the impacts

- of floods in the context of intersectionality: The case of eThekweni metropolitan municipality, South Africa. *Environmental Policy and Governance*, n/a(n/a). <https://doi.org/10.1002/eet.2053>
- UN Women. (2022, September 7). Explainer: Sustainable Development Goal 5. UN Women Headquarters. <https://www.unwomen.org/en/news-stories/explainer/2022/09/explainer-sustainable-development-goal-five>
- UNISDR (2011). *Global assessment report on disaster risk reduction*. United Nations Office for Disaster Risk Reduction: Geneva, Switzerland. Retrieved from <https://www.undrr.org/publication/global-assessment-report-disaster-risk-reduction-2011>
- UNISDR. (2005). *Hyogo Framework for Action 2005–2015: Building the resilience of nations and communities to disasters*. United Nations Office for Disaster Risk Reduction: Geneva, Switzerland. Retrieved from <https://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english>
- UNISDR. (2013). *Towards the post 2015 framework for disaster risk reduction tackling future risks, economic losses and exposure*. United Nations Office for Disaster Risk Reduction: Geneva, Switzerland. Retrieved from <https://www.undrr.org/publication/towards-post-2015-framework-disaster-risk-reduction>
- Wisner, B. (2020). Five Years Beyond Sendai—Can We Get Beyond Frameworks? *International Journal of Disaster Risk Science*, 11(2), 239–249. <https://doi.org/10.1007/s13753-020-00263-0>
- Wright, N., Fagan, L., Lapitan, J. M., Kayano, R., Abrahams, J., Huda, Q., & Murray, V. (2020). Health Emergency and Disaster Risk Management: Five Years into Implementation of the Sendai Framework. *International Journal of Disaster Risk Science*, 11(2), 206–217. <https://doi.org/10.1007/s13753-020-00274-x>
- Yadav, P., Saville, N., Arjyal, A., Baral, S., Kostkova, P., & Fordham, M. (2021). A feminist vision for transformative change to disaster risk reduction policies and practices. *International Journal of Disaster Risk Reduction*, 54. <https://doi.org/10.1016/j.ijdr.2020.102026>
- Yumarni, T., & Amaratunga, D. (2017). Resource Capability of Local Governments in Mainstreaming Gender into Disaster Risk Reduction: Evidence from Bantul Indonesia. *Journal of Regional and City Planning*, 28(3), 178. <https://doi.org/10.5614/jrcp.2017.28.3.2>
- Yunus, M., Andi Tenri, & Aziz Thaba. (2022). Evaluation of Gender Variables in Disaster Management Systems in Indonesia. *Environment and Ecology Research*, 10(5), 572–579. <https://doi.org/10.13189/eer.2022.100505>
- Zia, A., & Wagner, C. H. (2015). Mainstreaming Early Warning Systems in Development and Planning Processes: Multilevel Implementation of Sendai Framework in Indus and Sahel. *International Journal of Disaster Risk Science*, 6(2), 189–199. <https://doi.org/10.1007/s13753-015-0048-3>
- Zhou, L., Perera, S., Jayawickrama, J., & Adeniyi, O. (2014). The implication of the Hyogo Framework for Action for disaster resilience education. *Procedia Economics and Finance*, 18, 576–583. [https://doi.org/10.1016/S2212-5671\(14\)00978-2](https://doi.org/10.1016/S2212-5671(14)00978-2)