



Women Participation in Disaster Risk Management Practices in Indonesia: a Systematic Review

Janine Febe Karistie, Ainur Ridho, Fega Ayu Pangestika and
Mizan Bustanul Fuady Bisri

EasyChair preprints are intended for rapid
dissemination of research results and are
integrated with the rest of EasyChair.

January 24, 2023

Women Participation in Disaster Risk Management Practices in Indonesia: A Systematic Review

Janine Febe Karistie¹, Fega Ayu Pangestika¹, Ainur Ridho¹² and Mizan Bustanul Fuady Bisri¹³ [0000-0001-9831-5729]

¹ CARI! (Cerdas Antisipasi Risiko Indonesia), Indonesia

² University of Reading, United Kingdom

³ Graduate School of International Cooperation Studies, Kobe University, Japan
janine.febe@caribencana.id

Abstract. Along with the increase of disaster occurrences in Indonesia comes the unprecedented innovation for disaster risk reduction by various actors. In particular, women are becoming a fundamental actor across disaster phases reversing the initial understanding that women only play a significant role in response and recovery stages at the household level. Nonetheless, research and studies on women participation in disaster management of various hazards, sectors, and provinces are still limited in Indonesia. Therefore, this study aims to identify the current women's participation in disaster management practices in Indonesia and construct the extent of their involvement in each disaster phase. The study includes peer-reviewed literature and is limited to empirical studies on women participation in disaster in Indonesian context published in international and Indonesian journals. We identified articles from CARI! search engine, which is sourced from Scopus, DoAJ, and Portal Garuda. The literature collection was conducted between 28 April 2022 until 9 May 2022. Manual review was used to assist with preliminary identification and screening, followed by the application of Mixed Method Appraisal Tools (MMAT) to reconstruct the meaning of each article.

A total of 32 articles about women participation in disaster in Indonesia were found and classified into four (4) disaster phases: prevention and mitigation, preparedness, response, and recovery. We then reviewed each literature using the participatory lens defined by Arnstein and Agarwal to understand the extent of women participation studied in each article. Informed by the review, we then discussed the context of (Indonesian) women participation in local, national, regional, and international contexts. This article confirms limited women participation, particularly outside of western Indonesia. Its scope of studies also merely covers a broader range, such as mitigation, preparedness, and response phases, including those related to climate and geological hazards. This can be done by exploring more between those scopes, including elevating women participation in the partnership, citizen control and interactive (empowering) level.

Keywords: Women Participation, Indonesia, Disaster, Systematic Review.

1 Introduction

Women participation is a key priority in disaster risk management practices. The research on gender vulnerability post-Indian Ocean Tsunami in 2004 drew attention to the global community [1, 2]. The Oxfam report [3] stated that 80% of women and girls get affected directly or indirectly in comparison with men and boys during the tsunami. The number of female survivors is also deficient by a ratio of 1:3, meaning that every male death includes three female deaths. Hence, women should be continuously encouraged to become fundamental actors in all disaster phases, including pre, during, and post-disaster.

Although participation and gender approach to disasters has dominated social study and research for past decades, it is still criticised as theoretically unable to distinguish gender relations resulting in its failure to identify and elaborate on social root causes [1, 4, 5]. Several guidelines, disaster policies, and strategies have been developed by the government, researchers, policymakers, and practitioners but are still unable to capture gender equality and equity on practical and community level [4]. Gender mainstreaming should be able to consider distinctive construction analysis for men and women where the effect and impact of disaster occurrence might be varied [6-9]. Thus, more consideration should be taken on how gender roles had a direct bearing on survival during and post the disaster.

The limitation on women participation in research, specifically on disaster-related subject matters, is a result of women's perception as part of a vulnerable and marginalised group. Although women are often mentioned to play a significant role in response and recovery stages at a household level, they are stigmatised as should stay at home and regarded as unable to participate in community activity/programmes [2]. Those limitations and restrictions result in women getting less information or training on disaster management, which is detrimental to their capabilities. For example, they do not know the location of safe places, what they should prioritise during evacuation, and how to lead their children in that condition [2]. In contrast, researchers and practitioners also noted that even though women have physical weaknesses in times of disasters, their traditional coping attitudes and caregiver post-disaster rehabilitation are inevitable [10]. Women could overturn vulnerability into capacity to be prepared, adapt and recover in a resilient way. The more they have strong local knowledge and links to their neighbourhood and community, the more easily they have capability to cope with disaster impact through education and professional capacity building [11].

The urgency to promote women participation across Indonesia and in the ASEAN region is also stated in the ASEAN Gender Mainstreaming Strategic Framework 2021-2025 [20], which is to create an inclusive community that promotes quality of life, and access to all opportunities and protects human rights equally. In the ASEAN region, a gender analysis strategic framework has been implemented since 2008 into its programmes and activities, including disseminating disaggregated data at the national and sub-national level, monitoring and evaluation of its policies, plans and

programmes, also fully support the decision-making bodies and gender mainstreaming initiatives across all groups, programmes, and organisations. Indonesia has a strong potential to apply the ASEAN strategic framework. All provinces and cities/regencies have an office for women's empowerment and child protection at sub-national levels. The Sendai Framework for Disaster Risk Reduction for 2015-2030 (SFDRR) also calls for women participation [28]. The mid-term review of SFDRR shows that globally gender dimensions still need to be promoted in all phases of disaster risk management in every crisis. Women should participate in gender-responsive laws, policies, strategies, plans, and resources management related to finance, partnerships, and early-warning systems [43].

For years, gender and women participation studies have emerged on the social construction of women's roles and expectations in facing disaster risk [12-15]. Women take charge of how they could integrate their domestic and economic activities within the neighbourhood while simultaneously carrying out their double role in the formal and informal sectors. Some women are also reported getting training and guidance on taking control over resources or decisions amid disasters, especially when the head of the family is not at home. Previous systematic literature review (SLR) in 2017 also focused on women participation in global disaster risk governance and factors affecting women in DRR decision-making [22]. The authors conclude that women leadership can be implied vividly on the socio-cultural, socio-economic, individual characteristics, and legal-institutional factors.

In Indonesia, the role of women as an actor in disaster risk management cannot be ignored and underestimated. Women actively participate in various programs or activities rooted in Community-based Disaster Risk Management (CBDRM). However, some studies indicate that women only became an object/participant of the program. Fajarwati et al. [26] have mapped the research trajectory on gender and disaster in Indonesia from 2011-2019. The limitation of the current research review on this topic lies in the unavailability to construct women participation typology, disconnection with the global and regional framework in its discussions, and only considering research published in English and not those published in Bahasa Indonesia. This review article will address these limitations in the next section.

This article aims to identify the current breadth of women participation in disaster management practices in Indonesia from 2006 until 2021. It will also construct the extent of women's involvement in the disaster phases (prevention & mitigation, preparedness, response, and recovery) and interlinkages with national, regional, and global frameworks and strategies. Arnstein [16] and Agarwal [17] typology of women participation is used to classifying the paper reviewed. Arnstein typology of participation is chosen as often used as an underground to map community participation in several social-science context, meanwhile Agarwal type of participation often used for forest management and gender issues. Finally, building on the review result, the article will recommend how women participation can be broadened in disaster man-

agement practices, including tackling and bridging current global challenges in vulnerable sectors.

2 Review Methodology

2.1 Defining participation: Arnstein Ladder of Participation

This paper applies Arnstein’s Ladder of Participation as the analytical lens in reviewing relevant publications [16]. There are eight levels of participation to illustrate the degree of citizens’ involvement in the decision-making process. This framework is widely used in various settings, including in disaster management. For example, Chumiskey et al. used this framework to analyse youth participation at the 3rd UN World Conference on DRR. The study identified that young people had the power to express their ideas and innovations despite still not being seen as equal stakeholders [18]. MacAskill also applied this framework to identify public participation in the post-disaster recovery of the Christchurch earthquake, where citizens were “informed” on the decisions rather than actively engaged in the decision-making process [19]. In Accra, Ghana, the communities are reluctant to be relocated because the flood-prone community leaders were involved only in limited implementations of flood risk management strategies instead of in the higher level of participation, e.g., strategy making [62]. The aforementioned studies provide justification to use Arnstein’s ladder of participation to identify women’s participation in disaster management practices in this review. The table below indicates an example of classification of women’s participation in DRR in each step.

Table 1. Classification of women’s participation in DRR using Arnstein’s ladder of participation

Degree	Arnstein’s Ladder of Participation and definition of each step	Example in the context of women’s participation in DRR
Non-participation	Manipulation – The illusion of participation when actually power is denied	Women are invited / included in the DRR-related meetings, but they are not given any chance to speak-up or influence decision
	Therapy – The experts subject the citizens to clinical group therapy (passive recipients)	Women becomes the subject of disaster recovery, for instance in trauma or psychological healing
	Informing – Citizens are informed of their rights and responsibilities, however, no channel provided for feedback and no power for negotiation	Women be informed of disaster management practices and disaster preparedness
Degree of Tokenism		

Degree	Arnstein's Ladder of Participation and definition of each step	Example in the context of women's participation in DRR
	Consultation – Citizens' views are sought but decisions are made and restricted to power holders only	Women's voice be heard by the respective actors in DRR (e.g., donors, partners, etc), but not sure that their opinion will affect the overall status quo
	Placation – Citizens are able to shape ideas, but final decision sits with power-holders	Women is able to share their opinion, but the ground rules (institution/government) still the one who has the right to decide
Degree of Participation	Partnership – Citizens have direct involvement in decision making	Women already have initiative to conduct activity/programme/business post disaster occurrence, with local government as their collaborator
	Delegated power – Citizens have powers, resources, and responsibility but the goal is created by the powerholders	Women alongside other actors given the right to decide, but still undergo the activity/programme with respective actors
	Citizen power – Citizens have the power to set the initiative and implement the activity	Women take charge in all of the activity/programme/initiative on technical and managerial level

Source: Modified by authors based on Arnstein (1969)

2.2 Typology of Participation

To improve the external validity of our review, we also applied the typology of participation by Agarwal [17], which consists of six categories of participation. Agarwal's typology of participation was derived from the idea of examining women participation in natural resources management, e.g., community forestry groups. Thus, this framework is generally used to map the role and participation of women in forest management activities. Evans et al. [63] applied this framework to investigate the participation of indigenous women in Nicaragua in forest use and management. This study found that weak organisation among women became a barrier for them to effectively participate in the decision-making process of forestry activities.

Another instance where Agarwal's typology participation was reflected in a study to explore forms and levels of women participation in agroforestry systems in Ghana, in which women were also found to participate equally as men in agroforestry practices [64]. In addition, Patnaik [65] also utilised this framework to evaluate women's participation in community-based adaptation projects to define the extent of women's voices in such projects, as well as their motivating and constraining factors to participate. Despite this framework being primarily used in forestry or environmental studies, past research has presented the advantage of employing this framework to explore the extent of women's participation specifically, thus providing rationalisation to apply this framework within the DRM context. The table below shows the definition of each category and examples in the subject matter of women's participation in DRM.

Table 2. Classification of women's participation in DRR using Agarwal's type of participation

Form/Level of participation	Characteristic feature	Example in the context of women's participation in DRM
Nominal participation	Membership in the group	Women become a member in community groups/activities. But sometimes they are excluded as a member if their spouse can be a member. Other case, women automatically become a member by virtue of their husband being a member
Passive participation	Being informed of decisions <i>ex post facto</i> ; or attending meetings and listening in on decision-making, without speaking up	Women attend community or group meetings; however, it is rarely for them to speak their opinion as they often outnumber by men
Consultative participation	Being asked an opinion in specific matters without guarantee of influencing decisions	Women voice be heard by the respective actors in DRR (e.g., donors, partners, etc), but not sure that their opinion will affect the overall status quo
Activity-specific participation	Being asked to (or volunteering to) undertake specific tasks	Women are involved in the DRR programme/activities yet somewhat limited in the specific activities or areas.
Active participation	Expressing opinions, whether solicited, or taking initiatives of other sorts	Women are able to deliver their ideas and self-initiate DRR programmes/activities within their community
Interactive (empowering) participation	Having voice and influence in the group's decisions	Women's voice is influential and considered in decision making process related to DRR

3 Research Collection Methodology

This review paper utilises the scientific publication database platform from CARI! repository-of-repositories for literature collection. CARI! essentially curated numerous scientific publications indexed in Scopus repository, Directory of Open Access Journal (DoAJ) repository, and Portal Garuda repository. This literature search includes scientific publications in English and Indonesian language on indexed journals. The justification for choosing CARI! as the primary source for literature collection on this research is due to its geotagging feature, along with text-based content tagging feature in terms of hazards type and disaster risk management phase.

Although automatic tagging is beneficial in the early stages of literature collection, this study still carried out a deliberate manual filter process to verify the correctness of the tagging system of its literature. The initially collected literature was filtered through a 4 steps cluster analysis to validate the desired criteria of literature by using keywords tagging. Keywords were sought for titles, abstracts, and keywords of scientific publications. Filter steps to validate the literature context are outlined in **Table 3**.

Table 3. Keywords list for literature searches

Cluster	Keywords*	Rationale	Process
Cluster 1	“disaster risk management”, “hazard assessment”, “risk assessment”, “vulnerability assessment”, “prevention”, “mitigation”, “early warning”, “preparedness”, “emergency response”, “relief”, “recovery”, “rehabilitation”, “reconstruction”, “resilience”	To identify literature related to disaster context and disaster management phase	Automatically by CARI! engine
Cluster 2	“flood”, “landslide”, “earthquake”, “tsunami”, “wildfire”, “forest fire”, “coastal erosion”, “abrasion”, “mudflow”, “drought”, “volcano eruption”, “storm”, “extreme weather”, “extreme waves”, “whirlwind”, “tornado”, “climate change*”, “hydrometeorological hazard”, “geohazard”, “multihazard”	To identify literature related to type of natural hazards	Automatically by CARI! engine
Cluster 3	<i>Province name:</i> “aceh”, “north sumatra”, <i>City/district name:</i> “medan”, “bandung”, <i>Subdistrict name:</i> “pancoran”, “kaliwungu”, <i>Geofeature name:</i> “sinabung mountain”, “sunda strait”, “tondano lake”,	To identify literature which studied in Indonesia	Automatically by CARI! engine
Cluster	“women”, “woman”, “girl”, “mother”,	To identify litera-	Manually by

4 “female”, “femine”, “sister”, ture related to researcher
women and girl

(*) Keywords applied in English and its translation in Bahasa Indonesia. Indonesian keywords are not shown here

This review paper intends to evaluate studies focusing solely on women's participation in disaster risk management. Therefore, only research articles that examine women's participation and not broad gender participation are included in the review criteria. Our next inclusion criteria include only empirical research and no other literature research or review articles. Empirical research is based on real-evidence type of research and has verifiable evidence. It provides and obtains qualitative or quantitative data for research processing and conclusion consideration. Thus, not included article in proceeding and other systematic literature review type of research. Moreover, we only include research papers published in international and national peer-reviewed journals.

The process of identifying relevant research papers that were captured by the CARI! The main portal database gave initial results of 254 publications. At the identification stage, 161 papers were excluded because they do not constitute empirical research in Indonesia. At the screening stage, 10 papers were excluded due to duplicates with others existing publications. Furthermore, at the eligibility assessment stage, 41 papers were excluded because they examined gender in general, were not related to disasters, were not peer-reviewed papers, or were not empirical research. Finally, there are 32 research papers that meet our inclusion criteria, with the oldest publication published in 2006. The flow diagram of the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) used in this study is depicted in **Fig 1** [66].

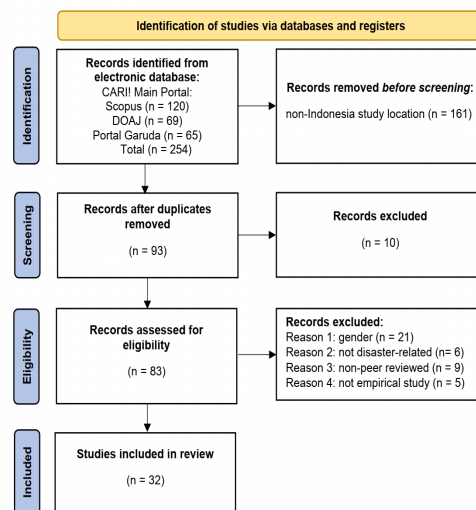


Fig. 1. PRISMA diagram for systematic literature review

4 Result and Discussion

4.1 Review and result and relevance with Indonesia policy on women and DRM

Literature Review Result

The result of the literature analysis shows that women participation in disaster risk management in Indonesia has been studied within a variety of participation types or degrees. The spatial scope of study varied among the collected literature, ranging from school level, village, sub-district, district, regency, province, and watershed area. However, empirical studies analysing multiple provinces and national levels were not found. The majority of articles' first authors were Indonesian researchers, and only 1 article whose first author is foreign researcher. A summary of the literature analysis results is presented in **Table 4**.

Table 4. Matrix of study location and type of participation

Authors	Year	Location of Study	Hazard	Disaster Risk Management Phase	Type of Participation (Arnstein, 1969)	Type of Participation (Agarwal, 2001)
Afrinanto et al.	2018	Purworejo Regency, Central Java Province	Landslide	Recovery	Therapy	Consultative
Amanda et al.	2021	Sigi Biromaru sub-district, Central Sulawesi Province	Earthquake	Recovery	Therapy	Consultative
Astiti et al.	2019	Kekait Village, West Lombok, West Nusa Tenggara Province	Earthquake	Recovery	Therapy	Consultative
Bakti et al.	2017	Citarum Watershed upstream area, West Java Province	Flood	Response, Preparedness	Placation	Active-specific
Birowo et al.	2019	4 villages on the slope of Merapi volcano, Boyolali Regency, Central Java Province	Volcano eruption	Prevention and Mitigation	Consultation	Consultative
Budirahayu et al.	2019	4 subdistricts, North Lombok Regency, West Nusa Tenggara Province	Earthquake	Recovery	Partnership	Interactive (empowering)
Deviani et al.	2013	Syiah Kuala sub-district, Banda Aceh City	Earthquake & Tsunami	Preparedness	Informing	Consultative
Dewi et al.	2020	Muhammadiyah 1 Middle School, Klaten Regency	Earthquake	Prevention & Mitigation, Preparedness	Informing	Passive

Authors	Year	Location of Study	Hazard	Disaster Risk Management Phase	Type of Participation (Arnstein, 1969)	Type of Participation (Agarwal, 2001)
Esariti	2017	urban village in Sampangan and Bendan Dhuwur, Semarang City	Flood	Preparedness	Consultation	Consultative
Fajarini & Abdullah	2018	Kemalang Health Clinic, Klaten Regency	Volcano eruption	Response	Consultation	Consultative
Hanani	2016	West Sumatera Province	Earthquake	Response	Manipulation	Nominal
Itriyati	2020	Bantul Regency, Yogyakarta Province	Earthquake	Recovery	Placation	Active participation
Khairunnisa & Alhadi	2020	Air Tawar Barat District, Padang City, West Sumatra Province	Earthquake & Tsunami	Prevention & Mitigation, Preparedness	Therapy	Passive
Kurniawan et al.	2021	Palu City, Sigi, Donggala Regency, Central Sulawesi Province	Earthquake, Tsunami, Liquefaction	Recovery	Partnership	Interactive (empowering)
Langoy et al.	2021	Manado City, North Sulawesi Province	Flood	Prevention & Mitigation	Therapy	Passive
Lestari & Husna	2017	Banda Aceh City, Aceh Province	Earthquake & Tsunami	Preparedness	Therapy	Consultative
Listiana & Shofaussamawati	2018	Kudus Regency, Central Java Province	Flood	Multiphase	Citizen power	Interactive (empowering)
Mahmud & Azizah	2020	Pandeglang Regency, Banten Province	Earthquake & Tsunami	Prevention & Mitigation	Therapy	Nominal
Marlina et al.	2020	Pulang Pisau Regency, Central Kalimantan Province	Forest and land fire	Multiphase	Manipulation	Passive
Maryani et al.	2006	Aceh Besar Regency, Aceh Province	Tsunami	Recovery	Therapy	Passive
Maulida et al.	2016	Aceh Besar Regency, Aceh Province	Landslide	Preparedness	Manipulation	Consultative
Mustangin	2017	West Bandung Regency, West Java Province	Climate-related	Prevention & Mitigation	Partnership	Active participation
Salsabila & Damaiyanti	2021	East Sempaja Village, North Samarinda District, Samarinda City	Flood	Prevention & Mitigation	Manipulation	Nominal
Silalahi	2017	Deli watershed, Medan Marelan District, Medan City, North Sumatra Province	Flood	Prevention & Mitigation	Manipulation	Passive

Authors	Year	Location of Study	Hazard	Disaster Risk Management Phase	Type of Participation (Arnstein, 1969)	Type of Participation (Agarwal, 2001)
Srimulyani	2018	Aceh Province	Earthquake & Tsunami	Recovery	Manipulation	Passive
Sutni et al	2017	Popilo Village, Tobelo District, North Halmahera Regency, North Maluku Province	Volcano eruption	Prevention & Mitigation	Manipulation	Nominal
Sutton et al	2020	Simeulue Island, Aceh Province	Multihazard	Prevention & Mitigation	Informing	Consultative
Suyito et al	2019	Pangakalan Koto Baru District, Limapuluh Kota Regency	Flood	Preparedness	Therapy	Active-specific
Trianingsih & Marlina	2020	Rajabasa District, South Lampung Regency	Tsunami	Recovery	Manipulation	Passive
Vitasari & Fujiawati	2018	Serang Regency, Banten Province	Flood	Prevention & Mitigation	Therapy	Active-specific
Wijayanti et al.	2018	Nisa Village, Woha District, Bima Regency	Flood	Recovery	Manipulation	Consultative
Wusanani et al.	2013	Bambanglipuro District, Bantul Regency	Earthquake	Recovery	Manipulation	Passive

Source: Authors' compilation

Fig. 2 (a) shows the distribution of the number of research articles based on research locations calculated per province in Indonesia. Aceh and Central Java are the provinces most researched, with 6 publications. Then, West Sumatra and West Nusa Tenggara provinces have 3 publications each, and West Java, Banten, Yogyakarta and Central Sulawesi have 2 publications each. Researchers mainly conducted their studies in the islands of Sumatra and Java, and only a few studies in Kalimantan, Sulawesi, Nusa Tenggara, and Maluku. While research investigated in Papua provinces, to the best of this literature collection, is still zero, as well as in some archipelagic provinces.

Spatial gaps in the research output per province may be fostered by the higher education or research institution locations, where most are located in western and central Indonesia. Another contributing factor to these gaps is that researchers tend to do more research in locations with recent major disasters, such as Aceh, Central Sulawesi, and West Nusa Tenggara province. The level of economic losses from disaster suffered in each province also contributed to this research output.

According to the disaster risk management phase, most research articles have disaster recovery as the primary context, with 11 publications. The prevention & mitigation

phase is the second most studied, with 9 publications. Only 5 publications studied the topic in a preparedness setting, as well as those that studied the combination of several phases or a multiphase total of 5 publications. Finally, the response phase is the least studied, as shown in **Fig 2 (b)**. Based on CARI's documentation in the Indonesia Disaster Knowledge Update series, this finding differs from the general pattern of disaster-related publications, where prevention and mitigation phase publications are usually way higher than the other phases.

Based on the type of hazard studied, flood hazard was the most studied hazard, as shown in **Fig 2 (c)**. Flood disasters are increasing in terms of their occurrence frequency in the last 10 years and expanding in terms of area size affected as well as damage and losses caused. Hence, it may justify the motivation of various researchers to study floods. Geophysical hazards such as earthquake hazards, earthquake & tsunami hazards, volcano eruptions, and tsunamis were also prominently studied. Even though geophysical hazards occur less frequently than hydrometeorological hazards, their impact has significantly worsened. Other types of hazards that have been studied in limited numbers include multi-hazards, forest and land fires, liquefaction, and other climate-related hazards.

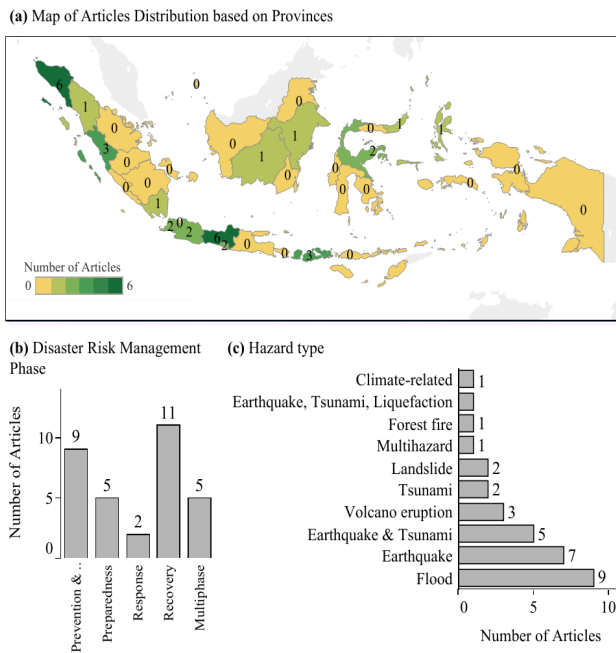


Fig. 2. (a) map of the number of research articles distribution accumulated per province in Indonesia. (b) Number of research articles based on the disaster risk management phase. (c) Number of research articles based on studied types of hazards.

We analysed the inter-relationships of terms used in the literature using the VOS viewer. The size of the circle or the font size of the word indicates the total strength of the link. The connecting line between the circles describes the relationship with each term. The colour difference indicates the cluster link between the terms used in the literature. As seen in **Fig. 3**, in the 6 clusters formed, terms such as earthquake, research, institution, behaviour, and health are the terms that appear the most. Some terms that are specifically related to women, such as mother, pregnant woman, and elderly woman or other words that are closely related, such as family and child, also often appear. Psychological condition, involvement, preparedness, education, and effort are also prominently used.

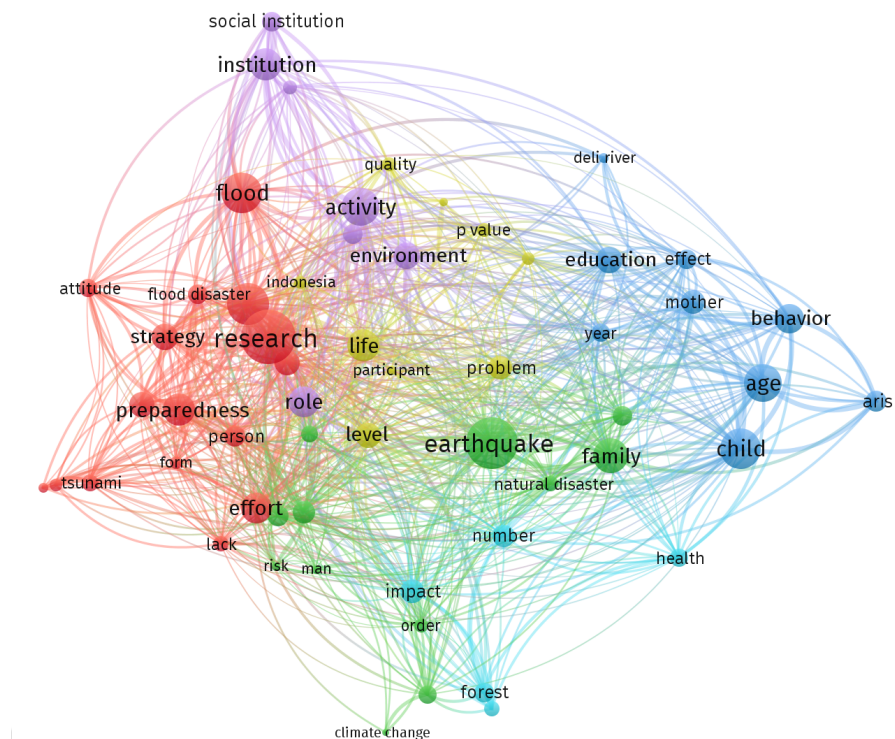


Fig. 3. Research articles relationship based on ladder of citizen participation and typology of participation

Based on **Fig. 4**, the relationship between women's participation level in research articles using the ladder of citizen participation Arnstein (1969) and the typology of participation Agarwal (2001) is mapped. The most research articles that examined women at the nonparticipation level were 20 publications, divided by the same number at the manipulation and therapy levels. Women were studied at the level of degrees of tokenism, namely the level of informing, consultation, and placation. Women were studied at the level of degrees of citizen power, namely more research on part-

nerships and only one on citizen control. Publications on ladder manipulation tend to relate to the typology of passive, nominal, and consultative participation. Publications on ladder therapy tend to relate to consultative, passive, activity-specific, and nominal participation. Publications on ladder informing tend to relate to consultative participation and passive participation, while those on ladder consultation relate to consultative participation. In the ladder placement, the publication deals with active-specific participation and active participation. Publications on ladder partnerships deal with interactive (empowering) participation and active participation. Ladder citizen control relates to interactive (empowering) participation. The generic pattern shows the increase in the level of participation in Arnstein's ladder of citizen participation is proportional to the increase in the level of participation in Agarwal's typology of participation.

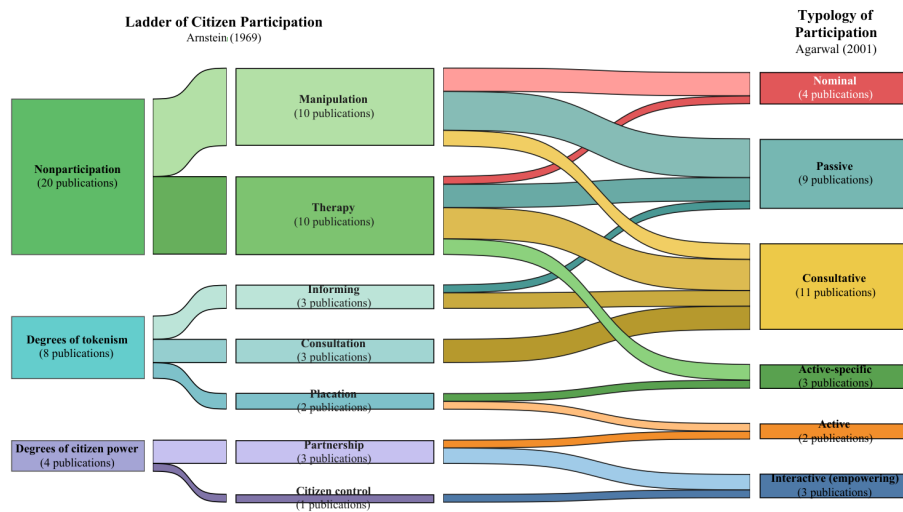


Fig. 4. Research articles relationship based on ladder of citizen participation and typology of participation

Literature on the prevention and mitigation phase studies women as manipulation and therapy participative types or lowest level of participation. Nonetheless, there are studies on higher-level participation, such as partnership. While the literature on the preparedness and response phase only tends to study women as a nonparticipation type and tokenism participation. Literature on the recovery phase shows a solid tendency to study women as the lowest participative types. However, two pieces of literature studied the partnership type. Multiphase disaster management was studied with various participation types, and one literature studied women as citizen control types.

Women as active participants in DRM in Indonesia

One of the efforts by the Government of Indonesia to ensure women participation in disaster management is reflected in the Head of BNPB Regulation 13 of 2014 on Gender Mainstreaming in Disaster Management. Article 4 of this regulation stated that “gender mainstreaming in disaster management is implemented using indicators in four aspects: a) access, b) participation, c) control to resources and decision making, d) benefits of policies and programs. This regulation mandates gender mainstreaming within all disaster management phases by involving men and women in various disaster risk management programs and activities.

PRE-DISASTER Prevention & Mitigation

In the pre-disaster, Article 12 (d) of this regulation stated that “gender-responsive disaster risk assessment is implemented through mapping and engaging community organisations to ensure the participation of men and women in hazard consultation, data collection, and information sharing”. Pre-disaster involves the prevention, mitigation, and preparedness phase. As can be seen from Table 5, six studies in the prevention and mitigation phase were identified as the non-participation stage. While it is necessary to involve women in hazard consultation, most studies focus merely on the level of knowledge or mental and physical condition of women living in disaster-prone areas [52, 53, 55]. These studies fell in the manipulation category in that they only involved women as subjects to be examined without considering their power and capacity to alter their current condition.

In the therapy category, we identified other studies in the prevention and mitigation phase. Studies in this category mainly focused on the impact of an intervention or program on the beneficiaries. This category creates pseudo-public participation, which aims to cure or educate the community with the expectation of solving the existing problems. For instance, Mahmud & Azizah [47] conducted a study to examine to what extent the disaster mitigation program by the local government of Pandeglang is able to enhance the knowledge and skill of those women who were also the victims of Pandeglang earthquake and tsunami. However, such intervention, albeit viewed as a mitigation effort, still denies the targeted communities' power and capacity and places them as passive recipients.

Overall, only three studies fell in the higher participation category in the prevention and mitigation phase. One article categorised in the informing stage investigates the role of grandmothers in effective risk communication to motivate appropriate action to save lives [56]. Two other articles already supported the notion of Article 12 (d) to ensure women participation through community engagement, which falls into the consultation and partnership category. To better understand the social dynamics phenomena of women who live on the slope of Merapi volcano, Birowo et al. [34] investigated women from four villages in Selo, Boyolali, regarding their self-concept and

engagement with DRR efforts. Despite their views and opinions being sought and consulted, there is still a need to ensure that their opinions are able to affect their status quo. Lastly, women were identified to be able to actively participate in environmental management efforts to address climate change by showing their skills and capacity from program design to program sustainability in household waste management [51]. This article showed that with the proper support and opportunities, women can share their role in planning and implementation responsibilities for DRR programs or activities, which resulted in higher participation, despite still being in the partnership category.

Preparedness

In the preparedness phase, four types of participation were identified from five articles. However, three articles were still considered in the non-participation stage. One study conducted in Aceh, which aimed to investigate the preparedness of women in facing landslides, still put women as the subject to be studied instead of an agency to be involved in the preparedness-building efforts [50]. Another study still conducted in Aceh with female students who resided in university dormitories as the respondents found that respondents' preparedness to face disaster in terms of knowledge and evacuation plan was categorised as very ready [45]. Nonetheless, they were still viewed as passive recipients of knowledge and information. Recommendations to enhance preparedness were only given to the dormitory manager instead of involving the students. A study by Suyito et al. [57] which emphasises the need for women's rights fulfilment in disaster situations, still considered women as a vulnerable group whose rights need to be met to minimise their vulnerability. While it is true that women's rights need to be fulfilled, their active participation to ensure their rights are fulfilled still needs to be encouraged.

An effort to ensure women participation through community engagement, as mandated in Article 12 (d) of Head of BNPB Regulation 13 of 2014, is reflected in two studies which identified as in the informing and consultation stage. The first study tried to capture the preparedness and vulnerability factors of women and identify strategies to minimise the vulnerability of women in coastal communities with the aim to inform the respondents about the efforts that can be done by them [36]. However, channels for information feedback for the respondents were not present here, limiting their participation in being informed. Meanwhile, Esariti [38] had put women to participate in a discussion of community flood preparedness by applying gender analysis to ensure equality of men and women in decision making and participation in disaster management programmes.

POST-DISASTER

Recovery

During the post-disaster, which includes the recovery phase, Article 25 (1) in Head of BNPB Regulation 13 of 2014 clearly states, "Women and men actively participated in the planning, implementation, and monitoring of rehabilitation and reconstruction".

Unfortunately, most papers identified in the recovery phase still place women as passive recipients or subjects of recovery and rehabilitation programs. Of 11 papers identified in the recovery phase, 8 papers were categorised as in the non-participation stage. Four papers fell in the manipulation stage, and the other four in the therapy stage.

Papers in the manipulation stage mainly focused on the health and socio-economic examination of women who experienced disasters. Two papers identified women's socio-economic conditions after an earthquake, one was conducted in Bima [60], and one was conducted in Bantul [61]. In addition, an article aimed to examine the benefits of a microfinance program for women as the beneficiaries of the post-Aceh tsunami [54]. Lastly, Trianingsih [58] investigated a booklet media's effectiveness in preventing anaemia among pregnant women in South Lampung. Despite providing helpful information about women's condition after a disaster, these studies remain to create the illusion of participation of women in the recovery phase.

On the other hand, papers identified in the therapy stage focused more on the health and psychological intervention for women who were victims of disasters. For instance, Maryani et al. [49] investigated the underlying cause of poor iron tablet distribution for pregnant women post Aceh tsunami to prevent the prevalence of anaemia. Three other papers focused on the psychological toll of disaster among women, where two papers examined the prevalence of post-traumatic stress disorder (PTSD) of women who survived earthquakes in Sigi [31] and Lombok [32]. In comparison, one paper aimed to measure the effectiveness of the Spiritual Emotional Freedom Technique (SEFT) in improving the quality of life of women who experienced the landslide in Purworejo [30]. Women in these studies were viewed as the subjects who needed to be 'treated' or 'cured' from whatever illness they had.

The rest of the papers identified in the recovery phase successfully captured the efforts to ensure women participation in rehabilitation and reconstruction, as stated in Article 25 (1). A study by Itriayati [41] was trying to capture the experience and effort of newly disabled women in breaking the stigma as people with disability by actively involved in building accessible homes according to their concept (Javanese culture), negotiating with donors, and positioning themselves and their roles in the family and community. This study fell in the placation type of participation in that women were positioned as an agency who could shape their ideas and initiatives even though the final decision still relied heavily on the beholder of the power. As reflected in this study, future reconstruction and rehabilitation efforts need to ensure that inclusivity of women is not just an optics.

Two prior studies categorised in a partnership type of participation had supported the notion of Article 25 (1) in Head of BNPB Regulation 13 of 2014 to engage women in planning, implementation, and monitoring of rehabilitation and reconstruction. A study by Budirahayu et al. [35] showed that women's involvement in joint business activities before the earthquake could become the safety net and address the socio-

economic and psychological problems experienced by women and their families due to the earthquake. In addition, a study by Kurniawan et al. [43] also resonates with the previous study in which women had social modalities that could support the recovery process in the aftermath of the Palu earthquake by also practicing partnership with communities and relevant stakeholders.

4.2 Women as active participants in Indonesia and relevance with selected concept regional and international frameworks

In the regional context, ASEAN consistently prepared an inclusive gender regional framework for the ASEAN Member States and its sectoral bodies. These guidelines and frameworks can improve higher levels of women participation, especially in Indonesia, and improve training on the implementation of gender activities and programmes across the ASEAN region. As stated in "The Guideline for Operationalising the ASEAN Regional Framework on Protection, Gender, and Inclusion in Disaster Management: A Prioritisation and Planning Toolkit" [21], there are six key priorities pillars on the local and regional levels consisting of 1) Cross-Cutting; 2) Development of Studies & Assessment; 3) Development of Strategies, Guidelines, and Policies; 4) Capacity Building; 5) Partnership Development, and 5) National Service Provision.

Cross-cutting issues can be implemented through the institutionalisation of the leadership of women, children, youth, elderly, the poor and people with disabilities in disaster preparedness, response, and recovery, and promote full and equal participation in decision-making. Based on the result, some articles that lie under active-specific participation by Agarwal already stated the position of women leadership, especially in women-based community organisations such as *pengajian* (social community), traditional market (economic community), and small-medium enterprises [33, 57, 59]. Other articles also included the participation of women as an environmental activist in their community. As a result, they become a representation in religious, economic, agricultural, and social activities, although women's positions are usually not mentioned in detail in the respective organisation [33, 42]. In contrast, institutionalised leadership for children, youth, the elderly, and people with disabilities would be the biggest challenge in Indonesia. There is no national strategy framework for the category except for women in general. The report also expressed the importance of consultation with network representatives, thus enabling them to develop their expertise in disaster management practices.

Development of Studies & Assessment relies on two target actions, including 1) Collecting, analysing and using gender, age and disability disaggregated data to inform DRR and response strategies, development and implementation of disaster management programmes, and ensure that unique needs are met; and 2) Conducting gender analysis, including its intersections with age and disability in relation to protection risks, unpaid care work, livelihood activities and health risks, to inform all disaster management policies and programmes. In Indonesia, this strategy has been adopted in

almost selected literature reviews, where the inclusion of gender and age as a subject of participants or actors in general, although some of the articles may not include disability groups depending on the targeted area and subject of study. The criticism can be seen on the topic of research, where most of the assessment heavily relied on the recovery period, such as trauma or psychological convalescence and health quality post-disaster, while less focusing on preparedness and response period. Dedicated programmes on how women perceive their self-concept and identity in disaster-prone areas is important, as the patriarchal position in their family makes them believe they are not the right subject to get education and training, and even more leading such activities.

Development of Strategies, Guidelines and Policies demand evidence from a mainstream gender perspective, especially on all policies, plans, and programmes on disaster management and emergency response. This includes several research initiatives, data collection, regulations, and protection services or interventions. One specific target action also mentioned the importance of evaluation on communal shelters that meet PGI standards. One article specifically elaborates on the evaluation of women in temporary shelters in Padang, West Sumatra [42]. The article stated internal barriers women faced during and post-disaster occurrence. Women unfortunately did not have a general understanding of gender equality and justice. Besides that, during a disaster, women can only have full authorisation in communal kitchens and to keep their children safe, rather than engage actively in the construction of shelters. Thus, resulting in the limitation of facilities to move even in domestic space, furthermore in activities that related with DRR activities.

Moreover, in Indonesia, several initiatives and interventions are also reported in the ASEAN Gender Mainstreaming Strategy Framework [20]. The increased budget allocation for women and children protection has doubled since 2014, with SDG alignment in 2018. At a sectoral level, Anugrah Parahita Ekapraya awards will be given to the organisation that focuses on gender mainstreaming awards, recognised by the Ministry of Public Works and Public Housing in Indonesia.

Capacity Building on gender-responsive training programs and exchange on good practices on gender-responsive disasters risk management and crisis preparedness is also important. However, this can still be a challenge as women perceive as passive subjects to get education and training on disaster awareness and preparedness. Although some of them would be invited to FGD or any discussion and interview, they often remained silent if men also attended the discussion. Often their opinion is also being ignored and cannot ensure the changes in decision making. Most articles also stated the importance of education and training in coastal areas. This comes as a result in Indonesia disaster-prone areas surrounding the coastal line especially in Sumatra and Java islands.

Partnership Development through leveraging partnerships with women's groups and organisations also include joint efforts to promote gender-responsive disaster management. Article written by Budirahayu et al. [35] stated that women's abilities to overcome their social and economic problems in the aftermath of disasters in North Lombok Regency, West Nusa Tenggara cannot be neglected. The paper highlighted the successfulness of joint business activities using agricultural products to restore social, economic, and psychological conditions post-disaster occurrence. Through Women Farmers Group (the name of the organisation), women (mothers, with disabilities) can improve their capacity to work in the agricultural sector and expand their knowledge of micro-scale trading and fisheries. In addition, this initiative can be implemented through cooperation through a partnership with NGOs, women's movement groups, and members' personal funding.

Lastly, National Service Provision on design and implementation of inclusive policies and social safety-net mechanisms, including through community involvement, integrated with livelihood enhancement programmes, and access to basic health-care services, including maternal, new-born and child health, sexual and reproductive health. Although most of this programme has been implemented in Indonesia, inability to capture whether the efforts have been successful or not remains challenging. Most programmes are conducted close to the time post-disaster occurrence, and there is still a limitation on community groups specifically assigned to monitor and evaluate the ongoing programme.

Furthermore, the second target action elaborates on the importance of providing opportunities for women's engagement in targeted recovery measures and long-term rebuilding efforts, for example, through credit facilities and special loan agreements for women to rebuild their livelihoods. As stated in Srimulyani et al. [54] article, women's difficulties in gaining such endorsement would be on knowledge, understanding, and awareness of disaster risk in women were not yet adequate. In addition, women sometimes see credits and loans for economic support as something frightening, and difficult to spare their time on active programmes as they still have to focus on domestic tasks. The challenges might also occur on the donor side, considering the low level of perception of women, which includes weak, not confident, and only capable of handling domestic responsibilities compared to men.

On the global framework positioning, Indonesia has participated in the gender-responsive and inclusive disaster planning developed by the UN Women. It is included in the women's resilience to disaster knowledge hub [29] to monitor and evaluate the progress of inclusive DRR policies. However, Indonesia has yet to have a comprehensive gender framework for other vulnerable and marginalised groups rather than women in general. There are no specific guidelines for girls, women with disabilities, elderly women, migrant women, or those living in poverty.

Although there is no inclusive framework for other subjects of women, several articles have focused on the participation of vulnerable women in disaster practices. Overall, this positioning reflects on the selected literature review where some of the women address as the main subject that actively participates in the programme, and others only seen as a subject of research without further action. Most of the articles briefly mention participation of women in DRR divided by age [30, 35, 55], status as housewives or infant mothers [32, 35, 37, 44, 53, 61], during pregnancy or postpartum [39, 58], and participation of women in organisations or institutions [5, 43, 46, 51]. In correlation with the type of participation, women divided by their status usually lie in the lowest type of participation or passive participation. Meanwhile, women involved with organisation activity lie in active participation or partnership (citizen control).

When we discuss the international context, we cannot neglect the importance of gender on a global lens through the SFDRR. The SFDRR 2015-2030 serves as a guiding international policy for disaster management practices, helping countries develop and implement DRR strategies and prioritising national and local programmes [3]. Therefore, SFDRR is mainly mentioned as a benchmark of DRR and evaluation for any disaster occurrences and experiences worldwide. Consisting of four priorities of action, seven targets and thirteen guiding principles for the achievement of disaster resilience, the framework is always evaluated to adjust to the need of women in disaster practices.

In relation to the identification of women participation in Indonesia, it can be concluded that most research focuses more on the recovery and rehabilitation sector, especially on psychological or trauma healing. Based on **Table 4.**, it can be concluded that ten articles identified on therapy and manipulation – type of participation by Arnstein. Meanwhile, nine articles identified as passive type of participation by Agarwal. Therapy type of participation mostly focuses on women's training on how to tackle their trauma, anxiety, and fear as a cause of disaster events. Manipulation relies more on the ability of women to believe certain traditions, cultures, or religious standing on facing disaster events. In addition, passive participation might be the summary of the examples of both types of participation by Arnstein.

It is discouraging that women are still considered only as a subject of capacity-building interventions without giving them proper space to voice their opinion accordingly [11]. Although it is in line with the SFDRR Priority 4 that confirms the priorities to address disaster preparedness, response, recovery, rehabilitation and reconstruction. It contrasts with the Asia-Pacific Action Plan of the SFDRR, which emphasises stakeholder engagement to integrate a gender perspective in all DRR policies and practices and increase women participation, leadership, and capacity building for disaster phases. Articles that lay on the lowest type of participation do not even get chances to voice their opinion, even more on participating in disaster decision-making as a leader [42, 44, 48, 49, 53, 54, 58, 61].

Kurniawan et al. [43] identified three main problems women often face post-disaster that might be a cause of the minimum participation in planning disaster strategies. Child marriage, environment and domestic violence, and health problems are the factors that hold women from taking the initiative in disaster practices. It is not because women did not want to, but because they often get side-eye or already growing up in such an abusive environment, making it even harder to take part in real situations that can endanger them the most.

The authors [43] also elaborated more on the possibility of expanding women's capacity post-disaster occurrences, particularly in Central Sulawesi Province. Women still have high social tendencies to care for others and be independent. They can easily engage with other women in the same situation through cooperation from the government and local communities. Therefore, economic empowerment programs, disaster preparedness training, and communal land use training can become a process involving women post-disaster recovery. However, these initiatives cannot be succeeded without collaboration with NGOs/INGOs, donors, local agencies, and other parties that understand the importance of women beneficiaries. It is in line with SFDRR Priority 3 on measuring investing in DRR for resilience, whereas stated, "Strengthening the design and implementation of inclusive policies and social safety-net mechanisms, such as supporting access to basic health-cases services, job creation, building construction, as well as the environment.

In fact, two articles specifically reflect on the SFDRR Priority 3, where women become the main subject of the research, even though it relies more on the low level of participation by elaborating on the implementation of local tradition and medication in responding to DRR [40, 55]. Also, two articles stated experiences on women with disabilities in adapting their lives to build accessible homes, negotiating with donors, or positioning themselves in their family or community [37, 41]. However, they were excluded from participation in the process with NGOs, INGO, and donors, as they were not seen as qualified to determine their own housing space. This resulted in restricted guidelines, size, and house design, and some women have to find another aid to expand their home space convenient with their disability condition. Still, vulnerable women are considered a complex group to be involved in DRR activities, even though some are considered victims of child marriage, violence, or dealing with drug and health problems [43]. However, suppose we focus more on the type of activities that women possibly can-do during disasters. In that case, a more targeted type of women participation can be identified, managed better, and empowered further. For instance, in a post-disaster setting, women participation can range from provision of meals in public kitchens, temporary shelter management, and greater decision-making processes [42].

SFDRR's Guiding Principle D emphasised the engagement from all of society and clearly stated that "a gender, age, disability, and cultural perspective should be integrated in all policies and practices". Furthermore, this particular Guiding Principle

also stated 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 programme 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”. One of the research articles reviewed shows the application of this Guiding Principle. In Undaan, Kudus, Central Java Province, a gender-responsive disaster plan and regulations adapted theological perspectives and combined them with entrepreneurship and environment education, which paved the way for a greater voice and influence by women groups [46].

Lastly, Mustangin [51] article reflected on UN Women’s vision to ensure gender equality and women’s empowerment and leadership in DRR beyond its vulnerability. Women involvement in sustainability and design programmes for household waste management and disaster information dissemination in Bandung, West Java Province, demonstrates the application of this vision whereby a local women-led organisation became the first responders during a crisis and played a greater role during recovery. They have strong networks and trust within the community, which helps them identify people in the most vulnerable situations who may need assistance. They also have expertise from past emergencies, which makes their leadership and participation critical for effective DRR programming and policies. The involvement of women is also essential to ensure the different socio-economic needs of women and men, boys and girls, are taken into account to improve community resilience.

5 Conclusion

"DRR leadership must still take measures to be inclusive and that more can be done to strengthen the participation of women and girls in decision-making, implementation, and leadership." Co-chairs' Summary of GPDRR 2022

Research on women participation in disaster management practices has been conducted on several themes and phases. However, research on women and their participation in disaster phases remains challenging. Our review confirms that research about women's participation in a disaster is still limited and considerably performed in western Indonesia. Its scope of studies also was merely covered at micro to a sub-national level only, as none of the studies conducted an empirical study at the national level. The literature mainly examined and studied women's participation in the recovery phase. Regarding the type of hazards, most research focused on women's participation in flood-risk management, followed by other geophysical hazards. This literature review reveals that women are more studied as non-participation actors or in manipulation and therapy participation.

Recalling that only a limited number of research and studies focusing on partnership and citizen power participation, followed by active-specific or interactive participa-

tion, there is a need to implement and encourage women participation at a higher level as aspired in the Head of BNPB Regulation 13/2014. Current studies still position women in the stage of non-participation where their power and capacity to be involved in disaster risk management efforts are being neglected. There is also a need to conduct more studies to examine women's role and participation in disaster risk management practices which might already be in the higher stage of participation, viz., degree of tokenism or degree of citizen power. This can be done by conducting strategies and principles based on the national, regional, and international context and frameworks. Furthermore, more empirical research can demonstrate the quantity and quality of women's leadership and its positive outcomes for risk reduction and resilience building is urgently needed.

At the regional and international levels, Indonesia has contributed to implementing women framework planning. However, the country has not created a national policy and framework that caters toward and empowers the roles of children, youth, disability, elderly, indigenous and migrant women, and women living in poverty within the disaster risk management policy-making and implementation. In retrospect, and by recalling the stipulation within the SFDRR, one of the challenges in women participation in Indonesia is how other stakeholders provide meaningful engagement to integrate a gender perspective in all DRR policies and practices. This refers not only to the government but also to the other stakeholders, including NGOs, INGOs, donors, local communities, and even women who experience and become victims of disasters. Women should be involved in all disaster phase planning, and capacity building is still needed to increase their participation and leadership in their community and neighbourhood. In a regional context, the development of studies and assessment needs to focus more on mitigation, preparedness and response period. Women should be taught how to respond during disasters, alone or with their children, how to prepare if there is any disaster occurrence, and how their resilience trait can mitigate disaster impact in the future. This can be improved by creating dedicated education and training, focusing on health and food resilience and other similarly important sectors such as building construction, information technology, finance, and business.

References

1. Hoare, J., Smyth, I., Sweetman, C.: Introduction: post-disaster humanitarian work. *Gender & Development* 20(2), 205-217 (2012).
2. Dijkhorst, H. van, Vonhof, S.: Gender and humanitarian aid: a literature review of policy and practice. Disaster studies, Wageningen: Wageningen University/COR-DAID (2005).
3. Oxfam report 2005 on the tsunami's impact on women, <https://reliefweb.int/report/indonesia/tsunamis-impact-women>, last accessed 2022/07/10.
4. Zaidi, R. Z., Fordham, M.: The missing half of Sendai framework: Gender and women in the implementation of global disaster risk reduction policy. *Progress in Disaster Science*, 10 (100170), 1-7 (2021).
5. Fordham, M.: Making women visible in disasters: problematizing the private domain. *Disasters*, 22, 126–143 (1998).

6. Ginige, K., Amaratunga, D., Haigh, R.: Tackling women's vulnerabilities through integrating a gender perspective into disaster risk reduction in the built environment. In: 4th International Conference on Building Resilience, Building Resilience, pp 327-335. Procedia Economic and Finance 18, United Kingdom (2014).
7. Alston, M.: Drought policy in Australia: gender mainstreaming or gender blindness? *Gender, Place and Culture*, 16(2), 139–154 (2009).
8. Neumayer, E., Plümper, T.: The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981–2002. *Annals of the Association of American Geographers*, 97(3), 551-566 (2007).
9. Enarson, E., Meyreles, L.: International perspectives on gender and disaster: differences and possibilities. *International Journal of Sociology and Social Policy*, 24 (10–11), 49–93 (2004).
10. Bradshaw, S., Fordham, M.: *Women, Girls and Disasters: A review for DFID*. (2013).
11. Horton, L.: *Disaster through a gender lens: a case study from Haiti*. 1st edn. Routledge, New York (2015).
12. Gaillard, J. C., Sanz, K., Balgos, B. C., Dalisay S. N. M., Gorman-Murray, A., Smith, F., Toelupe, V.: Beyond men and women: a critical perspective on gender and disaster. *Disasters*, 41(3), (2016).
13. Fordham, M.: Gender, sexuality and disaster. In B. Wisner, J.C. Gaillard, and I. Kelman (eds). *Handbook of Natural Hazards and Disaster Risk Reduction*, pp 424–435. Routledge, Abingdon (2006).
14. Mishra, P.: Let's share the stage: involving men in gender equality and disaster risk reduction'. In E. Enarson and P.G. Dhar Chakrabarti (eds). *Women, Gender and Disaster: Global Issues and Initiatives*, pp 29-39. Sage, New Delhi (2009).
15. Enarson, E., Pease, B.: *Men, Masculinities and Disasters*. Routledge, Abingdon (2016).
16. Arnstein, S. R.: A Ladder Of Citizen Participation. *Journal of the American Institute of Planners*, 35(4), 216-224 (1969).
17. Agarwal, B.: Participatory Exclusions, Community Forestry, and Gender: An Analysis for South Asia and a Conceptual Framework. *World Development*, 29(10), 1623-1648 (2001).
18. Cumiskey, L., Hoang, T., Suzuki, S., Pettigrew, C., Herrgard, M.: Youth participation at the Third UN World Conference on Disaster Risk Reduction. *International Journal of Disaster Risk Science* (2015) 6:150-163.
19. K. MacAskill, Public interest and participation in planning and infrastructure decisions for disaster risk management, *International Journal of Disaster Risk Reduction* (2019), doi: <https://doi.org/10.1016/j.ijdr.2019.101200>.
20. ASEAN gender mainstreaming strategic framework 2021-2025, ASEAN Secretariat, September 2021.
21. *Guideline for Operationalising The ASEAN Regional Framework on Protection, Gender, and Inclusion in Disaster Management: A Prioritisation and Planning Toolkit*, ASEAN, UN Women, European Union Humanitarian Aid, June 2022.
22. Hemachandra, K., Amaratunga, D., Haigh, R.: Role of women in disaster risk governance. In: 7th International Conference on Building Resilience; Using scientific knowledge to inform policy and practice in disaster risk reduction, pp 1187-1194. *Procedia Engineering* 212, Bangkok, Thailand (2017).
23. Hadlos, A., Opdyke, A., Hadigheh, S.A.: Where does local and indigenous knowledge in disaster risk reduction go from here? A systematic literature review. *International Journal of Disaster Risk Reduction* 79, 103160, (2022).
24. Ahmed, B., Sammonds, P., Saville, N.M., Le Masson, V., Suri K., Bhat, G.M., Hakhoo, N., Jolden, T., Hussain, G., Wangmo, K., Thusu, B.: Indigenous mountain people's risk

- perception to environmental hazards in border conflict areas. *International Journal of Disaster Risk Reduction*, 35, (2019).
25. Ponce-Pacheco, A.B., Novelo-Casanova, D.A., Agustin-Ortíz, I.N., Gardun˜o-González, A.B.: Risk perception in unincorporated areas, Chiapas, Mexico. *Nat. Hazards*, 106(1), 855–879, (2021).
 26. Fajarwati, A., Wardhani, A.G., Sintesa, M.P.: Journey of researchers and disaster in Indonesia. In: *The 3rd Environmental Resources Management in Global Region*, 012048. IOP Conf. Series: Earth and Environmental Science 451, Yogyakarta, Indonesia (2020).
 27. Fatouros, S., Capetola, T.: Examining Gendered Expectations on Women’s Vulnerability to Natural Hazards in Low to Middle Income Countries: A critical Literature Review. *International Journal of Disaster Risk Reduction* 64, 102495, (2021).
 28. Mid-term Review of the Sendai Framework for Disaster Risk Reduction 2015-2030: Gender Guidance
 29. UN Women Women’s resilience to disaster knowledge hub, <https://wrđ.unwomen.org/policy-tracker#map-table>, last accessed 2022/08/08.
 30. Afrinanto, Z., Hayati, E.N., Urbayatun, S.: Spiritual Emotional Freedom Technique (SEFT) untuk Meningkatkan Kualitas Hidup pada Wanita yang Mengalami Bencana Tanah Longsor. *Jurnal Studia Insania*, 6(1), 069-089 (2018).
 31. Amanda, A.R., Hidajah, A.C., Wahyuni, C.U.: The Effect of Post-Traumatic Stress Disorder on Women After the Earthquake in Central Sulawesi. *Jurnal Berkala Epidemiologi*, 9(3), 303-309 (2021).
 32. Astiti, D.P., Diah Fridari, I.G.A., Wideasavitri, P.N., Supriyadi: The Psychological Conditions of Mother and Child Survivors of West Lombok Post-Earthquake. *Journal of Psychology and Instruction*, 3(3), 97-101 (2019).
 33. Bakti, I., Hafiar, H., Budiana, H.R., Puspitasari, L.: Pemberdayaan Pranata Sosial Melalui Komunikasi Lingkungan: Menakar Pelibatan Peran Perempuan dalam Mitigasi Banjir Citarum. *Kawistara*, 7(1), 94-107 (2017).
 34. Birowo, M.A., Widyastuti, D.A.R., Sidhi, T.A.P.: Konsep Diri Perempuan di Kawasan Rawan Bencana Gunung Merapi. *Jurnal ASPIKOM*, 4(1), 156-170 (2019).
 35. Budirahayu, T., Farida, A., Amala, S.M.: Women’s Resilience in Preserving Family Life Following an Earthquake in North Lombok Regency, West Nusa Tenggara, Indonesia. *Journal of International Women’s Studies*, 20(9), 107-120 (2019).
 36. Deviani, E., Safrida, I.: Preparedness and Vulnerability Analysis of Women in Coastal Areas in Facing Earthquake and Tsunami of Disaster in Syiah Kuala Sub-District of Banda Aceh. *Idea Nursing Journal*, 4(3), 74-81 (2013).
 37. Dewi, R.P., Handitcianawati, W., Hermawan, R.: Mewujudkan Perempuan Tangguh Bencana Melalui Peningkatan Kesiapsiagaan Bencana Gempabumi di Pimpinan Cabang Nasyiatul Aisyiyah Klaten Selatan. *Jurnal Pengabdian Masyarakat*, 4(1), (2020).
 38. Esariti, L.: Women’s Role in Flood Mitigation Strategies in the Sampangan Sub-District and the Bendan Dhuwur Sub-District of Semarang. *Ruang*, 3(2), 181-187 (2017).
 39. Fajarini, Y.I., Abdullah, A.A.: Perangkat Kesiapsiagaan Bencana untuk Wanita Hamil dan Pasca Melahirkan. *Indonesian Journal of Nursing Practices*, 2(2), 90-95 (2018).
 40. Hanani, S.: Perlindungan Perempuan Lanjut Usia Korban Bencana Gempa Bumi Melalui Tradisi Sumbayang 40 di Sumatera Barat. *Jurnal Ilmiah Kajian Gender*, 6(1), 13-33 (2016).
 41. Itriayati, F.: Rumah Akses: Reconstructing Homes and Every Day Lives of the Newly Disabled Women after the 2006 Earthquake in Bantul, Yogyakarta. *Umbara: Indonesian Journal of Anthropology*, 5(1), 51-64 (2020).

42. Khairunnisa, Alhadi, Z.: Kendala Peran Perempuan dalam Pengurangan Resiko Bencana Gempa Bumi dan Tsunami di Kelurahan Air Tawar Barat. *Jurnal Mahasiswa Ilmu Administrasi Publik (JMIAD)*, 2(3), 26-33 (2020).
43. Kurniawan, A., Maarif, S., Rahardi, C.S.: The Role of Women in Community Development after Earthquake, Tsunami and Liquefaction in Central Sulawesi, Indonesia. *Ganaya: Jurnal Ilmu Sosial dan Humaniora*, 4(2), 722-742 (2021).
44. Langoy, M., Katili, D.Y., Umboh, S.D.: Aplikasi Teknologi Tepat Guna dalam Pencegahan Banjir dengan Pembuatan Lubang Resapan Biopori bagi Para Ibu di Kelurahan Pandu Kecamatan Bunaken. *Jurnal Perempuan dan Anak Indonesia (JPAI)*, 2(2), 18-23 (2021).
45. Lestari, A.W., Husna, C.: Bidikmisi Scholarship Female Students' Preparedness in Facing the Earthquake and Tsunami. *Jurnal Ilmiah Mahasiswa Fakultas Keperawatan*, 2(3), (2017).
46. Listiana, A., Shofaussamawati: Teologi Sosial Masyarakat Pinggiran: Teologi Kaum Perempuan dalam Memaknai Banjir di Kecamatan Undaan Kabupaten Kudus. *Palastren*, 11(2), 289-308 (2018).
47. Mahmud, S., Azizah, Hermawan, T.D.J.: Perempuan dan Resiliensi (Potret Korban Gempa dan Tsunami di Pandeglang Banten). *Gender Equality: International Journal of Child and Gender Studies*, 6(2), 1-10 (2020).
48. Marlina, S., Lutt, B.S., Usup, A., Sunaryati, R.: Impact Land and Forest Fire on the Women's Health in Pulang Pisau District. *EnviroScienceae*, 16(3), 424-431 (2020).
49. Maryani, Alit, I.M.G., Helmyati, S.: Sistem Distribusi dan Cakupan Suplementasi Tablet Besi Ibu Hamil Pasca Bencana Tsunami 2004 di Kabupaten Aceh Besar Provinsi Nanggroe Aceh Darussalam. *Jurnal Gizi Klinik Indonesia*, 3(1), 66-73 (2006).
50. Maulida, N., Dirhamsyah, M.: Kesiapsiagaan Perempuan Kampung Persahabatan Indonesia-Tiongkok Gampong Neuheun Kecamatan Masjid Raya Aceh Besar terhadap Ancaman Bencana Tanah Longsor. *Jurnal Ilmu Kebencanaan (JIKA)*, 3(3), 80-84 (2016).
51. Mustangin, M.: Perubahan Iklim dan Aksi Menghadapi Dampaknya: Ditinjau dari Peran Serta Perempuan Desa Pagerwangi. *Jurnal Pendidikan dan Pemberdayaan Masyarakat*, 4(1), 80-89 (2017).
52. Salsabila, B., Damaiyanti, M.: Analisis Faktor Stress yang Berhubungan dengan Kualitas Hidup Wanita di Daerah Banjir Perumahan Bengkuriang Kelurahan Sempaja Timur. *Borneo Student Research*, 2(3), 1584-1591 (2021).
53. Silalahi, B.: Pengaruh Pengetahuan tentang Sampah dan Ketersediaan Sarana Prasarana terhadap Perilaku Ibu Membuang Sampah yang Berpotensi Bencana Banjir di Daerah Aliran Sungai Deli Kota Medan. *Jurnal Ilmu Keperawatan Imelda*, 3(1), 43-52 (2017).
54. Srimulyani, E.: Perempuan dan Program Micro Finance (Keuangan Mikro) di Aceh: Dampak dan Tantangan Program Pasca Tsunami dan Konflik. *TAKAMMUL: Jurnal Studi Gender dan Islam serta Perlindungan Anak*, 7(1), 1-18 (2018).
55. Sutni, S.H.I., Sutriningsih, A., Warsono: Hubungan Antara Paparan Abu Vulkanik Letusan Gunung Dukono dengan Kejadian ISPA pada Wanita (40-60 Tahun) di Desa Popilo Kecamatan Tobelo Halmahera Utara. *Nursing News*, 2(3), 112-121 (2017).
56. Sutton, S.A., Paton, D., Buergelt, P., Sagala, S., Meilianda, E.: Sustaining a Transformative Disaster Risk Reduction Strategy: Grandmothers' Telling and Singing Tsunami Stories for over 100 Years Saving Lives on Simeulue Island. *International Journal of Environmental Research and Public Health*, 17, 1-20 (2020).
57. Suyito, Meldianto, R.P., Anisa, S., Prima, T.: Penguatan Kapasitas Perempuan sebagai Stakeholder dalam Penanggulangan Korban Bencana Banjir di Pangkalan. *HUMANISMA: Jurnal of Gender Studies*, 3(2), 141-153 (2019).

58. Trianingsih, I., Marlina: The Using of Pregnant Women Booklets in Efforts to Prevent Anemia in Pregnant Women of Tsunami Victims. *Jurnal Kesehatan*, 11(2), 258-264 (2020).
59. Vitasari, M., Fujiawati, F.S.: Peningkatan Peran Wanita terhadap Penanggulangan Bencana Banjir di Kawasan Rawan Bencana Banjir Kabupaten Serang. *Jurnal GeoEco*, 4(1), 1-8 (2018).
60. Wijayanti I., Pneumatica, O.I., Nurjannah, S.: Perempuan Bima dan Strategi Adaptasi Pasca Bencana Banjir Bandang (Studi Kasus Peran Perempuan di Kabupaten Bima, NTB). *SIMULACRA*, 1(1), 5-18 (2018).
61. Wusanani, Y., Ismail, D., Triasih, R.: Mother's health care-seeking behavior for children with acute respiratory infections in a post-earthquake setting. *Paediatrica Indonesiana*, 53(3), 144-149 (2013).
62. Atanga, R.A.: The role of local community leaders in flood disaster risk management strategy making in Accra. *International Journal of Disaster Risk Reduction*, 43 (2020), doi: <https://doi.org/10.1016/j.ijdrr.2019.101358>.
63. Evans, K., Flores, S., Larson, A.M., Marchena, R., Müller, P., Pikitle, A.: Challenges for women's participation in communal forests: Experience from Nicaragua's indigenous territories. *Women's Studies International Forum*, 65, 37-46 (2017). doi: <https://doi.org/10.1016/j.wsif.2016.08.004>.
64. Diawuo, F., Kosoe, E.A., Doke, D.A.: Participation of women farmers in agroforestry practices in the Jaman South Municipality, Ghana. *Ghana Journal of Development Studies*, 16(2), 267-289. doi: 10.4314/gjds.v16i2.13.
65. Patnaik, H.A.: Gender and participation in community based adaptation: Evidence from the decentralized climate funds project in Senegal. *World Development*, 142, 105448, doi: <https://doi.org/10.1016/j.worlddev.2021.105448>.
66. Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G.: The PRISMA Group Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7): e1000097, (2009). <https://doi.org/10.1371/journal.pmed.1000097>.