



# GENDER TRANSFORMATIVE EARLY WARNING SYSTEMS:

## Experiences from Nepal and Peru

Early warning systems build community resilience to disasters, with the potential to save lives and livelihoods. Women and marginalized gender groups face unique barriers in disasters, and EWS that do not explicitly consider gender are likely to increase marginalisation. This research extracts key findings and recommendations to ensure no one is left behind.

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# Gender Transformative Early Warning Systems

## Experiences from Nepal and Peru

Sarah Brown, Mirianna Budimir, Alison Sneddon, David Lau,  
Puja Shakya, and Sujana Upadhyay Crawford

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Sarah Brown, Mirianna Budimir, Alison Sneddon, David Lau, Puja Shakya, and Sujana Upadhyay

With contributions (including data collection and review) from Dilip Gautam, Madhab Uprety, Sumit Dugar, Sanchita Neupane, Kopila Thapa, Kirty Shrestha, Lili Ilieva, Alicia Quezada, Miluska Ordoñez, Jenny Nizama, Emilie Etienne, Charlotte Taylor, Loise Maina, Colin McQuistan, Pedro Ferradas, Orlando Chuquisengo, Alcides Vilela, Miguel Arestegui, and Walter Méndez.

With external reviews and contributions from Virginie le Masson, Maureen Fordham, and Emily Dwyer.

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Practical Action is a member of the Zurich Flood Resilience Alliance, a multi-sectoral alliance focusing on helping communities in developed and developing countries strengthen their resilience to flood risk. Practical Action has been supporting the development of effective early warning systems in countries including Nepal, Peru, and Bangladesh as a key component of building flood resilience.

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Contact Sarah Brown for more information  
[sarah.brown@practicalaction.org.uk](mailto:sarah.brown@practicalaction.org.uk)



Browse other publications:  
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# Executive summary

Early warning is integral to disaster preparedness, which is central to building the resilience of households and communities to disaster. Effective early warning systems (EWS) are people centred, ensuring appropriate, applicable, and timely early warning reaches the last mile, including the most vulnerable.

Gender is a critical consideration in ensuring effective EWS leave no one behind. However, limited research has focused specifically on the connection between gender and EWS, and there is a shortage of evidence on best practices to ensure EWS are effective for all.

## EWS and gender

Early warning systems that do not explicitly consider gender are gender unaware. A gender unaware approach, in a context with gender inequality, will likely be gender unequal, increasing the marginalization and vulnerability of groups who have less power and influence.

An EWS that is gender aware recognizes that different genders (including gender minorities) are impacted differently or have different needs, but makes only minor adjustments to address this (adapted from Dwyer and Woolf, 2018). A gender sensitive EWS ensures disaster preparedness, response and contingency planning, and proactively considers gender, making some adaptations to respond to the specific needs, concerns, and capabilities of marginalized gender groups. A gender transformative EWS proactively (re)designs approaches, policies, and practices to reduce gender-based inequalities and to meet the needs of all people.

## Study data

Data was collected from three regions in Nepal and two regions in Peru, focusing on areas where a flood early warning system is already operational. Additional interviews were conducted with marginalized women including those who are elderly, those with disabilities, single mothers, transgender women, women who were pregnant or with young babies, those with young children, and women with visual impairments.

## Key findings

Gender inequality and social marginalization increases **vulnerability** to disasters. The less economic, political, and cultural power women and gender minorities have before an event, the greater their suffering during and in the aftermath. Gender norms (e.g. men being viewed as decision-makers), gender roles, and gender-based violence can increase the vulnerability of women and gender minorities during a disaster. Efforts to consider gender need to be intersectional – lack of political rights, low social capital, ethnicity, age, health, disability, gender, gender identity, and sexuality influence vulnerability and capacity to respond to early warning.

Marginalized gender groups risk being **excluded** from disaster risk reduction (DRR) policies, strategies, and decision-making as DRR processes are not currently designed to enable them to engage. Marginalized gender groups participate less in EWS initiatives because of their domestic roles, lack of autonomy, mobility challenges, social isolation and persecution, and gendered assumptions (e.g. that men represent a household). Marginalized gender groups demonstrate high levels of interest in participation in DRR and EWS initiatives but feel their voices do not matter or are not welcome. Proactive efforts are needed to include the needs, priorities, and capabilities of marginalized gender groups, and magnify their voices at every stage of the EWS.

Gender inequality in economic capital, access to technology, and social capital have an impact on **access** to early warning. Gender inequality in education and literacy levels affects the capacity to



receive, understand, and act upon early warning. People of different genders may have different levels of access to formal and informal dissemination channels, have different communication preferences (shaped by gender norms), and face different challenges in accessing and being able to act upon early warning.

Groups with higher vulnerability have different preferences and capacities to prepare and **respond**, including a preference for earlier evacuation. Response plans may not be designed according to the needs, capabilities, and preferences of vulnerable groups. Women and men traditionally have distinct roles in response, though changing mobility patterns mean women increasingly need to cover a wider range of roles. Disasters exacerbate discrimination faced by marginalized gender groups. Gendered cultural norms, social marginalization, and gender-based violence reduce security in responding to disasters and affect the decision-making of marginalized gender groups, disincentivizing evacuation. Vulnerable groups are at a higher risk of sexual harassment and assault during and after a disaster.

DRR and EWS initiatives take place in locations where some groups have less power than others, where, in some cases, individuals or groups are deliberately marginalized. Participation in EWS initiatives does not equate to influence or **power over decision-making**. Groups with less power (often including women and gender minorities) lack control over decision-making in disaster situations, with social norms prioritizing male leadership. Lack of power and influence over decision-making increases gendered vulnerability to disasters. Representation in DRR and EWS initiatives matters: there is a need for transformational change and empowerment of marginalized gender groups in all elements of EWS.

## Recommendations for a gender transformative approach to early warning

The first necessary step is **acknowledgement** that gender is a critical consideration, including consideration of the likely impacts of gender norms, gender stereotypes, and cisnormative assumptions, with repercussions that marginalize women and gender minorities.

Gender **analysis** is another critical component to understanding gender inequality in a given context and the ways in which gender norms, gender roles, and gendered power structures shape the families, communities, and institutions in a given location. At this point it is important to **examine** and question gendered assumptions (including stereotypes and cisnormativity) informing the analysis.

Proactive effort is needed to reach out to, partner with, and **listen** to the voices of marginalized gender groups, with careful consideration of which voices are missing. In this research project we heard from marginalized women including those who are elderly, those with disabilities, single mothers, transgender women, those who are pregnant or with young babies, those with young children, and women with visual impairments. Consideration of other marginalized gender groups is also needed, including other gender minorities (including but not limited to trans men, third gender people, non-binary people) and sexual minorities (e.g. lesbian and bisexual women).

In the context of an EWS, it is important to explicitly consider gendered impacts on **vulnerability, participation, dissemination, response, and power and decision-making**.

Women and gender minorities are not all equally and uniformly vulnerable, and therefore an inclusive and **intersectional** perspective is critical, understanding and considering how multiple intersecting marginalized identities of vulnerabilities can increase vulnerability. For example, a widow living with a disability from a minority ethnic group may have higher vulnerability than an individual facing only one area of marginalization. It is important in an intersectional approach to acknowledge the interaction of gender with other socially excluding factors including disability, socio-economic status, gender identity, marital status, and sexual orientation.

An important achievement is moving to a **gender aware** EWS, where there is explicit consideration and understanding of the specific ways in which gender affects a particular EWS (in a particular context), and any differential impacts of the EWS on different gender groups.

A next step can be moving to a **gender sensitive** approach, with some adaptations to activities to mitigate the negative impact on marginalized gender groups.

A more ambitious EWS is **gender transformative**, aiming for an improvement over the status quo so that people of all genders can access, understand, and respond to effective early warning. Gender transformative approaches to early warning must respond effectively to the nuances of different gendered experiences, vulnerabilities, and capacities, recognizing that marginalized groups are heterogeneous and consist of diverse populations with varying degrees of power.



# Glossary

Please see below an explanation of terms used throughout this paper and their definitions for the purposes of our study. Where we adhere to the definitions articulated by other organizations or institutions, they are referenced.

<b>Ableist</b>	Discriminatory against people with disabilities
<b>Cisgender</b>	A person whose gender identity is consistent with their sex assigned at birth (Oxfam)
<b>Cisnormative</b>	The assumption that all people are cisgender, and the organization of the world on the basis of that assumed norm (Oxfam)
<b>Disaster</b>	A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability, and capacity, leading to one or more of the following: human, material, economic, and environmental losses and impacts (UNISDR)
<b>Early action</b>	Actions taken before a hazard event based on warning information to protect individuals, households, and communities from the impacts of a disaster
<b>Early warning</b>	Information communicated to stakeholders to advise them of the likelihood of a disaster occurring within a given timeframe
<b>Early warning system</b>	An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication, and preparedness activities, systems, and processes that enables individuals, communities, governments, businesses, and others to take timely action to reduce disaster risks in advance of hazardous events (UNISDR)
<b>Flood risk</b>	The likelihood of a flood event occurring, and the impact caused
<b>Gender</b>	Socially constructed characteristics of women and men – such as norms, roles, and relationships of and between groups of women and men
<b>Gender binary</b>	The stereotypical categorization of gender into two categories of women and men, and the organization of the world on the basis of that assumed norm (Oxfam)
<b>Gender minorities</b>	A category of people whose gender identities are seen as different from the social majority, and are discriminated against on that basis (Gender Minorities Aotearoa)
<b>Hazard</b>	A process, phenomenon, or human activity that may cause loss of life, injury, or other health impacts, property damage, social and economic disruption, or environmental degradation (UNISDR)
<b>Marginalized gender groups</b>	Any groups who are marginalized on account of their gender, often including cisgender women and gender minorities
<b>Non-binary</b>	An umbrella term for gender identities that are not exclusively either boy/man or girl/woman (Gender Spectrum)

<b>Preparedness</b>	The knowledge and capacities developed by governments, response and recovery organizations, communities, and individuals to effectively anticipate, respond to, and recover from the impacts of likely, imminent, or current disasters (UNISDR)
<b>Resilience</b>	The ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, adapt to, transform, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management (UNISDR)
<b>Third gender</b>	A person who has a gender identity that is neither female nor male. Third gender people may also demonstrate fluidity within their gender identity and may occupy social roles typically associated with one or more gender identities. Third gender identities are usually culturally specific, and third gender people may or may not identify as transgender (Oxfam)
<b>Transgender</b>	A transgender person has a gender identity that does not match the sex they were assigned at birth (Gender Spectrum)
<b>Vulnerability</b>	The conditions determined by physical, social, economic, and environmental factors or processes which increase the susceptibility of an individual, a community, assets, or systems to the impacts of hazards (UNISDR)

# Acronyms

CDMC	Community Disaster Management Committee
CSO	civil society organization
DEOC	District Emergency Operating Centre
DHM	Department of Hydrology and Meteorology
DRR	disaster risk reduction
EWS	early warning systems
FGD	focus group discussion
KII	key informant interview
MOHA	Ministry of Home Affairs
NEOC	National Emergency Operating Centre
NGO	non-governmental organization
VCA	Vulnerability and Capacity Assessment
WHO	World Health Organization

# Introduction

Effective early warning systems (EWS) are people centred, ensuring appropriate early warning reaches the last mile, including the most vulnerable. An effective and sustainable EWS considers and is designed to meet the needs, capacities, constraints, and priorities of all people, enabling appropriate and timely early action to save lives and reduce losses.

Practical Action is a member of the Zurich Flood Resilience Alliance, a multi-sectoral alliance focusing on helping communities in developed and developing countries to strengthen their resilience to flood risk. Practical Action has been supporting the development of effective EWS in countries including Nepal, Peru, and Bangladesh as a key component of building flood resilience.

Practical Action is committed to ensuring equitable access to technological options for all, advancing gender equality and women's empowerment throughout its work including programmes, knowledge sharing, advocacy and external communications, and through its own organizational development. This study aims to support that strategic aim by taking an in-depth review of gender and EWS in Nepal and Peru as a step towards identifying gender transformative approaches with the potential for replication at scale.

Limited research has focused specifically on the connection between gender and EWS, and there is a shortage of evidence on best practices to ensure EWS are effective for people of all genders. This study considers the impact of gender on the operation and effectiveness of EWS in two countries, Nepal and Peru, examining differential impacts across diverse gender groups.

## Aims of the study

This study aims to capture a diverse range of experiences and perspectives on EWS, harnessing the perspectives, skills, and knowledge of diverse communities. The study aims to translate these perspectives, and available evidence, into tangible recommendations, to help ensure EWS deliver effective early warning for people of all genders.

The study refers throughout to marginalized gender groups, which includes (but is not limited to) cisgender women, transgender women, transgender men, and non-binary or third gender people. The research has predominantly interviewed cisgender men and women; however the study consciously adopts an inclusive and intersectional approach and aims to acknowledge and reflect the diversity of identities and experiences that are integral to all discussions relating to gender.



# Approach

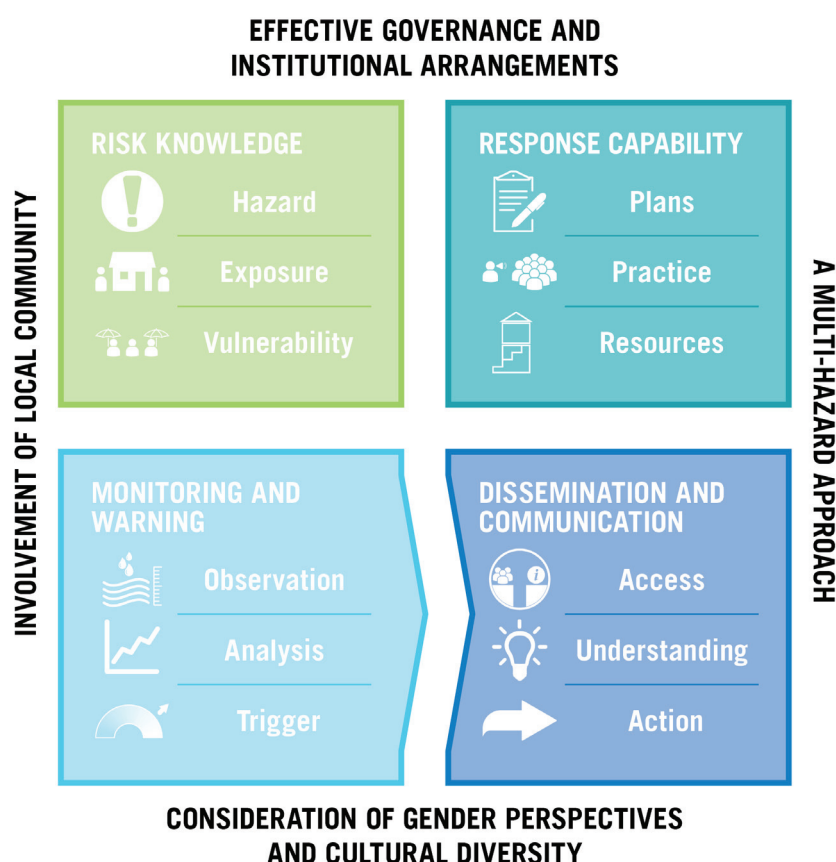
## Early warning systems

Early warning is integral to disaster preparedness, which in turn is central to building the resilience of households and communities to disaster. Early action can often prevent a hazard from turning into a human disaster by preventing loss of life and reducing economic and material impacts. This, in turn, can reduce disruption to longer-term development progress, resulting in a faster (or less disrupted) recovery after a hazard event. There is also potential for EWS to improve the resilience of communities by developing their awareness of likely hazard events, improving their response and preparedness activities, and increasing their coping capacity to disasters.

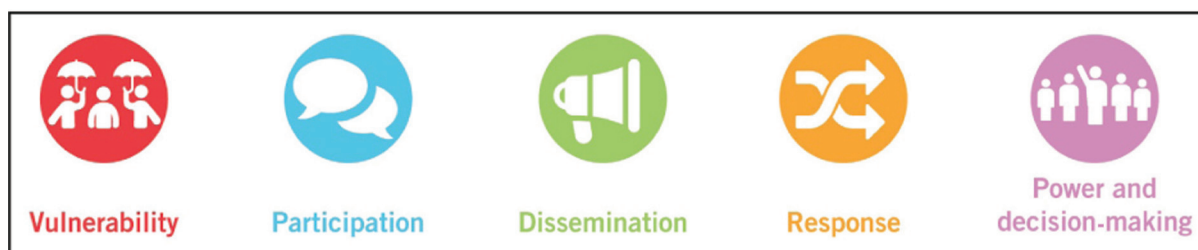
Early warning has been defined as ‘the set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss’ (UNISDR, 2009). There are generally considered to be four main elements of any natural hazard-related early warning system: risk knowledge; monitoring and warning; dissemination and communication; and response capability (adapted from UNISDR, 2006). All four elements are required for an effective early warning system (Figure 1).

Effective EWS are people centred, ensuring appropriate, applicable, and timely early warning reaches the last mile, including the most vulnerable.

Gender is a critical consideration in ensuring effective EWS leave no one behind. However, limited research has focused specifically on the connection between gender and EWS, and there is a shortage of evidence on best practices to ensure EWS are effective for all.



**Figure 1** Four elements of an effective early warning system  
Source: Adapted from Olaf Neussner (GIZ, 2006)



**Figure 2** Findings and recommendations have been grouped into five key themes which emerged over the process of research and analysis.

This report considers all of the above components of an EWS, while focusing on the aspects of the warning system where human action and interaction (and therefore gender) is most relevant. As the research and analysis progressed, five themes emerged, into which gender-related findings and recommendations have been grouped. These are: vulnerability; participation; dissemination; response; and power and decision-making (Figure 2).

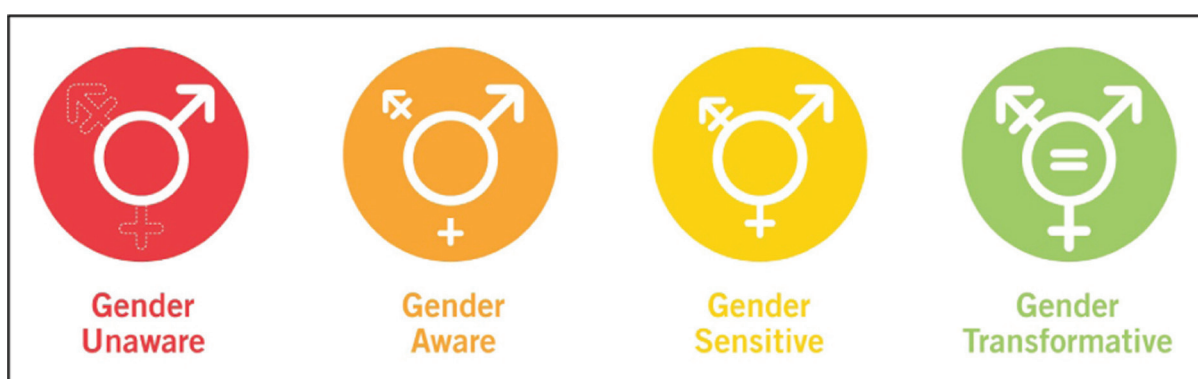
## Gender in EWS

The study will be informed by a continuum from gender unaware<sup>1</sup> to gender transformative practice, as illustrated in Figure 3.

Early warning systems that do not explicitly consider gender are gender unaware. In contexts of gender inequality people of different genders access, process, interpret, and respond to information in different ways, due to the social and cultural organization of gender relations and the gendered division of labour (UNISDR, 2009).

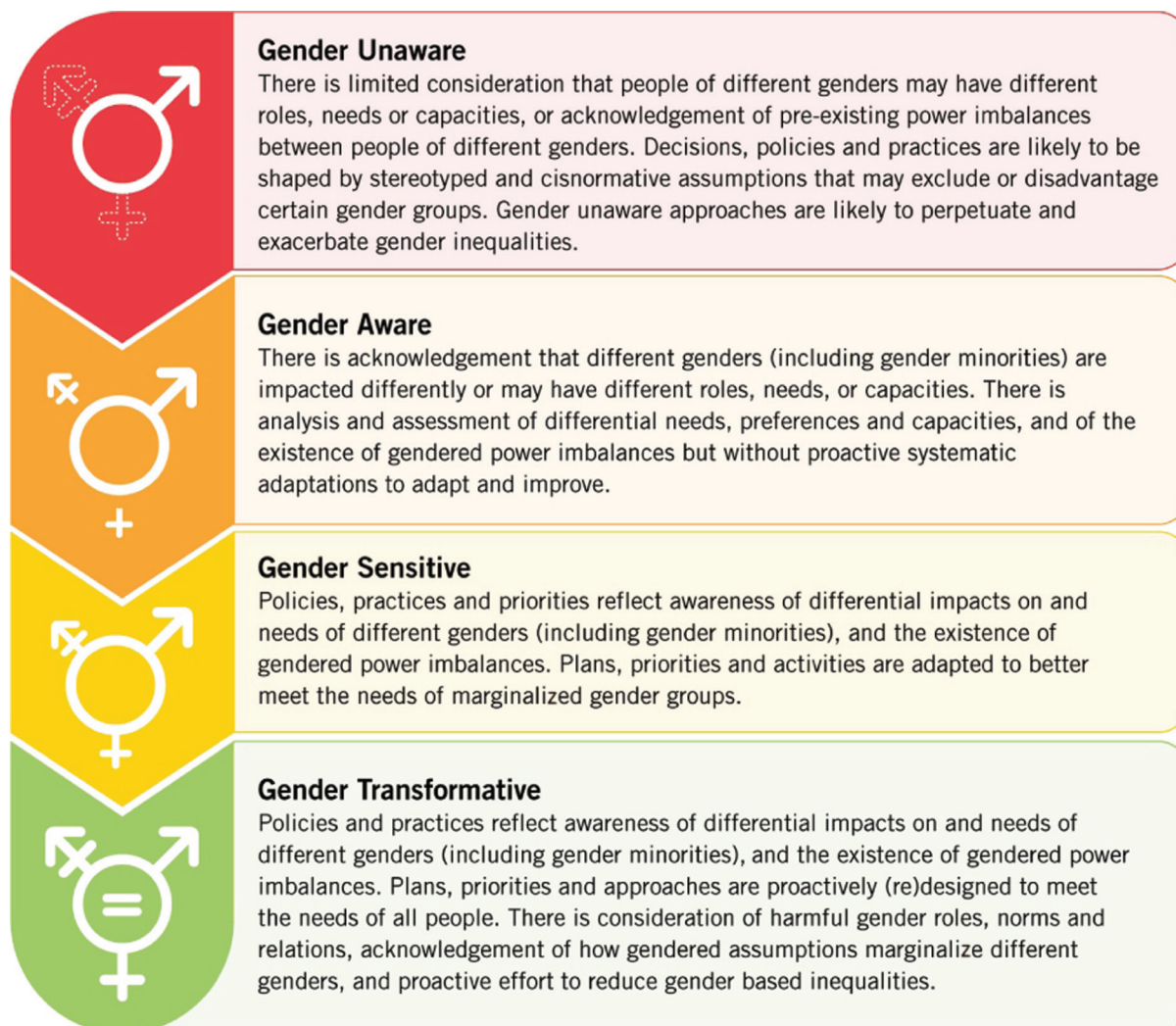
A gender unaware approach, in a context with gender inequality, will likely be gender unequal, increasing the marginalization and vulnerability of marginalized gender groups who have less power and influence. Therefore, taking a gender aware, gender sensitive, or preferably gender transformative approach is vital, analysing, acknowledging, and understanding how gender impacts the effectiveness of EWS, and taking proactive steps to ensure EWS deliver for all (see Figure 4).

An EWS that is gender aware recognizes that different genders (including gender minorities) are impacted differently or have different needs, but makes, only minor adjustments to address this (adapted from Dwyer and Woolf, 2018). A gender sensitive EWS ensures disaster preparedness, response, and contingency planning proactively consider gender, making some adaptations to respond to the specific needs, concerns, and capabilities of marginalized gender groups (adapted from UNISDR, 2009).



**Figure 3** EWS are examined in relation to the continuum from gender unaware to gender transformative practice

<sup>1</sup> The study avoids the use of ableist language (avoiding the term gender blind and replacing with gender unaware).



**Figure 4** From gender unaware to gender transformative practice

Source: Adapted from Dwyer and Woolf (2018)

A gender transformative EWS proactively (re)designs approaches, policies, and practices to reduce gender-based inequalities and to meet the needs of all people.

**From outputs to outcomes:** A shift from a gender sensitive aspiration to a gender transformative one may mirror a shift from a focus on outputs to a focus on outcomes. A gender sensitive aspiration may focus on the ways in which a given intervention is carried out. For example, where fewer women are attending technical training, a gender sensitive approach may focus on the output, and seek to increase the number of women attending the training, perhaps through a quota system or incentives for women to attend that training course. Such narrow changes may not consider the wider gender context, and may increase the number of women trained, but may not tackle underlying gendered barriers (and may also have unintended consequences, for example shifting care roles to a younger (or older) generation).

A gender transformative approach is likely to reframe the question from ‘how can we get more women to attend this training?’ to asking ‘how would we approach capacity building if it was designed with marginalized gender groups in mind, and if it was designed jointly with marginalized gender groups?’ If marginalized groups are at the heart of intervention design, they may prefer different ways of building capacity, for example family friendly training sessions or home-based training. A gender transformative approach can be likened to a focus on outcomes over outputs, emphasising the effectiveness of the EWS for marginalized gender groups, improving gender equality within and across the EWS. This often requires greater understanding (and acknowledgement) of gendered norms and power structures, and willingness to explore alternative ways of reaching the desired outcome.

# Methodology

## Literature review

A literature review was conducted around gender and disaster, and gender and disaster risk reduction (DRR), identifying key findings and common themes to help shape quantitative and qualitative research questions on gender and EWS. Key literature findings are summarized in the methodology with a wider overview of the literature in the Annex.

## Data collection

Data was collected from three regions in Nepal and two regions in Peru, focusing on areas where a flood early warning system is already operational. Quantitative and qualitative data was drawn from one-to-one interviews and focus group discussions (FGDs). Men and women representing a range of socio-economic backgrounds were invited to participate in FGDs. These discussions explored in greater detail the reasons behind common issues or challenges identified in the one-to-one interviews.

Additional semi-structured interviews were held with key informants – people involved in the EWS in different capacities, from local civil society, municipal government, and national organizations and NGOs.

A mixed gender team was used to collect data at the community level (with at least one male and one female researcher). Participants were clearly briefed on all aspects of the project and all data were anonymized.

The collected quantitative data were then compiled into country-specific sets and coded, with descriptive statistical analysis conducted. Qualitative responses (from focus group discussions and semi-structured interviews) were documented as a narrative and reviewed alongside the quantitative data to identify trends, convergences, and divergences in perspectives and experiences.

## Missing Voices interviews

This study aimed to capture a diverse range of experiences and perspectives from vulnerable and marginalized groups whose voices often go unheard; however it became clear that there were many voices missing whose contributions are vital to a full understanding of the ways in which marginalization and vulnerability interact with early warning systems. Additional ‘Missing Voices’ interviews were therefore conducted to listen to and learn from their experiences of disaster and early warning. During the initial data analysis it became apparent that the quantitative data lacked an intersectional perspective. The literature review underscored the importance of proactive identification of marginalized groups, and prompted the addition of targeted Missing Voices interviews.

Additional targeted interviews with individuals from vulnerable or marginalized groups were conducted to ensure the research was informed by a wide variety of experiences and to strengthen an intersectional understanding of gender and EWS.

Interviews were conducted with marginalized women including those who are elderly, those with disabilities, single mothers, transgender women, women who were pregnant or with young babies, those with young children, and women with visual impairments. Names were changed to preserve anonymity, apart from when an individual explicitly requested using their name. Additional information and extended transcripts are available in a companion Missing Voices document available via Practical Action.



Proactive efforts were made to build trust with individuals from marginalized groups, often linking with a related community-based organization (CBO) or trusted intermediary and taking a snowball sampling approach relying upon chains of personal introduction to reach individuals.

In Nepal a strategic decision was made to conduct Missing Voices interviews remotely, via telephone, finding times when the interviewee felt confident to speak openly, giving greater reassurance of privacy and anonymity, and potentially enabling interviewees to share their views more openly than might have been expected when an interview team arrives from outside a community.

In Peru, attempts to conduct a detailed interview with a member of a gender minority group in the target area were unsuccessful, because of difficulties in identifying members of the community in the target location and/or because of a lack of trust or willingness to be interviewed. Transgender women in Peru are particularly vulnerable, often isolated from families and communities, exposed to violence and discrimination, and lacking appropriate identity documents, impeding access to public services including health care and education. Careful effort is needed to engage sensitively with such marginalized groups. A potential recommendation is for researchers and practitioners to explicitly partner with members of minority communities and with civil society organizations working with these groups, first building trust, and then listening, to ensure marginalized voices are heard.

The contributions of these Missing Voices are included in part in this report, and in full in the accompanying report entitled *Missing Voices: Experiences of Marginalized Gender Groups in Disaster in Nepal and Peru*. We strongly recommend that both reports be read and consulted together.

# Literature review

Literature on gender and DRR illustrates the ways in which gender affects the experiences of women and other marginalized gender groups in preparation for, during, and in the aftermath of disasters. This section provides a summary of key findings from a review of the literature (Figure 5). For a longer, referenced overview of the literature please see the Annex and the References sections (at the end of the report).



## Vulnerability

- Gender inequality and social marginalization increases vulnerability
- Where gender inequality is high, marginalized gender groups are disproportionately more likely to die in disasters
- Locations with high gender inequality have “a glaring gender gap in mortality rates of men and women” in disaster
- Gender norms (e.g. girls not being taught to swim) and gender roles (e.g. women having care-giver roles) can increase the vulnerability of women and gender minorities
- Efforts to consider gender need to be intersectional – lack of political rights and social recognition, inequalities constructed on the basis of ethnicity, age, health, disability, marital status, gender, gender identity and sexuality play into individual and group experiences of vulnerability



## Participation

- Women and marginalized groups including gender minorities are often excluded from DRR policies, strategies and decision-making
- Proactive efforts are needed to include the needs, priorities and capabilities of women and gender minorities in analysis of disaster response and risk reduction strategies, policies and programmes and in all areas of the EWS
- Proactive efforts are required to hear and magnify the voices of marginalized individuals



## Dissemination

- Gender inequality in education/literacy impacts on capacity to receive early warning
- Gender inequality in economic capital and access to technology impacts on access to information
- Gendered behaviour patterns and information preferences, and gender dimensions of social exclusion, need to be considered for effective dissemination



## Response

- Gender roles affect response and evacuation
- Marginalized and gender minority groups face harassment in emergency response, and discrimination in access to shelter and relief
- Experience of Gender Based Violence may increase after a disaster



## Power and Decision-Making

- DRR initiatives take place in locations where some groups are weaker than others, or in some cases, deliberately marginalized
- Active participation of marginalized individuals can support transformative empowerment
- Overlooked groups including women and gender minorities can and do play important roles in fostering a culture of resilience

Figure 5 Summary of literature review

# Nepal

## Gender equality in Nepal

Social exclusion is 'entrenched in the political, economic, and social fabric of Nepal' (ADB, 2010). Nepal is ranked 111 out of 144 countries in the World Economic Forum's *Global Gender Gap Report* (2017) and 115 out of 188 countries in the UNDP's Gender Inequality Index (2018). Although Nepal has committed to a number of international agreements and conventions on non-discrimination, and is 'one of the top five climbers over the past decade' in the 2017 *Global Gender Gap Report*, implementation of non-discrimination policies remains weak and legislative discrimination is still present in controversial clauses of the 2015 Constitution relating to women's citizenship rights.

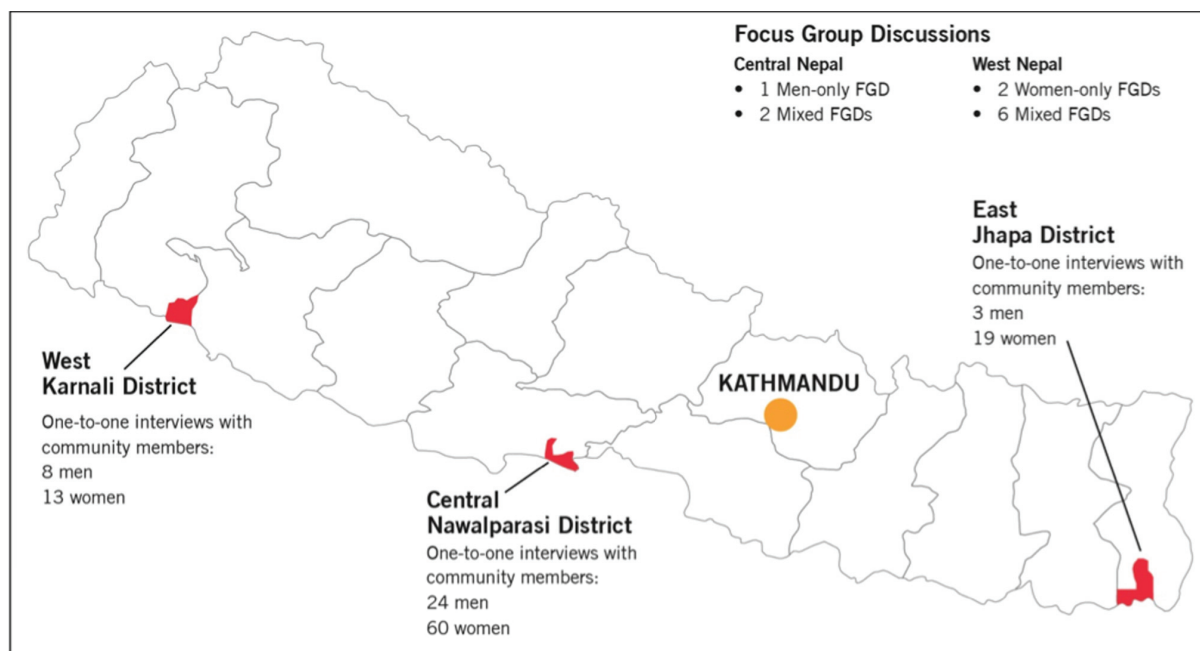
Key issues facing women in Nepal include heavy burdens of unpaid labour; the prevalence of patriarchal norms and practices which limit mobility and participation in public life; access, ownership, and control of assets and resources; and high levels of gender-based violence, including forced marriage and violations of sexual and reproductive health and rights (Bhadra and Shah, 2007). These factors contribute to the disproportionate representation of women and women-headed households below the poverty line, and the lower resilience of women to disasters (ActionAid, 2014).

## Flood risk and early warning in Nepal

Nepal is susceptible to a range of hydro-meteorological and geophysical hazards; regular flooding in Nepal results in significant loss of life, property, and livelihoods (NCVST, 2009; Kafle, 2017). The main EWS in operation is based on real-time monitoring of rainfall and river levels upstream of flood-prone areas. If the river level passes the danger threshold upstream, an automated SMS alert is sent to national and district authorities, local chairs of Community Disaster Management Committees (CDMCs), and community task force leaders. These warning messages are then disseminated to community members. Several non-governmental organizations (NGOs) are in operation in each district, providing awareness training and evacuation drills for community members. Since 2016, the Department of Hydrology and Meteorology (DHM), which is responsible for weather forecasting and the EWS, also sends mass SMS



**Photo 1** A woman reads the river gauge and records the water level



**Figure 6** Study sites in Nepal

push messages via telecom providers to all the mobile phones that are within areas likely to be flooded. These are simple ‘be alert’, ‘prepare to evacuate’, and ‘evacuate now’ messages.

## Nepal data

Data was collected across three sites in east, west, and central Nepal, selecting locations where EWS (of different forms and different levels of sophistication) are already operational; 127 one-to-one interviews and 11 FGDs were conducted at community level (Figure 6). Semi-structured key informant interviews (KIIs) were held with key personnel involved in the early warning system (six men and five women) from local civil society organizations (CSOs), municipal government, and the Nepal Red Cross Society. Detailed Missing Voices interviews were also conducted with 28 individuals. Of those interviewed in the one-to-one interviews, 23 per cent of women and 14 per cent of men reported having a physical disability.

## Key findings from Nepal



### Vulnerability

#### **Gender inequality and gender norms (including social roles, control of decision-making, and even clothing) can make women more vulnerable during and after a hazard event**

There was a strong consensus (100 per cent of men and 91 per cent of women) that women are more impacted by the negative effects of flooding than men. Men attributed women’s vulnerability to a lack of knowledge about the early warning system and how to respond to a warning; physical vulnerability and a comparative lack of physical strength, and vulnerabilities (or perceived vulnerabilities) related to pregnancy and menstruation; and to the social roles typically fulfilled by women in Nepali society, involving care of children, elderly relatives, and household possessions.

Women did not attribute their vulnerability to the same factors. Women mentioned two main reasons for their vulnerability that were not considered by men: the restrictions of their traditional clothing,



and gender norms that prioritize male decision-making in the event of a flood. Fifty per cent of women in west Nepal mentioned that their clothing makes it hard for them to respond as it restricts their movement; no men mentioned this as a key reason for women’s vulnerability.

In KILs, male interviewees commented that men are more engaged in search and rescue and response training and roles during hazard events. Men perceived that women have difficulty moving quickly and are therefore considered vulnerable, although they did not make a link to the restrictions of women’s traditional clothing on their ability to move quickly. Women highlighted the challenges of evacuating once flood waters have already arrived, reporting that it was difficult to evacuate in flood water wearing traditional clothing, carrying possessions, and without the ability to swim.

This issue was also highlighted in the Missing Voices interviews:

“Men do not always understand things from the perspective of women. They seem to think we are just the same, only they are stronger, wiser. But the truth is we are not weaker, we are different. After the flood, when I told my husband I could not swim to go fetch help because of the clothes I was wearing, he seemed surprised. He had never considered it. Also, generally we aren’t encouraged to swim, so we never get a chance to become strong swimmers. I don’t know how to explain this to a man, even to my own husband (Durga, married mother of three children, eastern Nepal).”

More men than women were also aware of a safe route to use in the event of a flood (89 per cent men, 69 per cent women). However, 80 per cent of interviewees thought that evacuation routes are not suitable for vulnerable groups such as people with disabilities, the elderly, or pregnant women. Interviews also revealed that women make different decisions when they are responsible for young children and elderly relatives as well as themselves – they are less able to act independently and take on the risks associated with using these routes when it is not only their own safety that they need to consider:

“I am not a very good swimmer, but I think I would have risked trying to find a safe place had I been on my own. But I could not put my children’s lives at risk. So even when the water level kept rising, I chose to wait for help’ (Rama, single woman with young children, eastern Nepal).”



**Photo 2** Vulnerable groups face severe difficulty in evacuating during floods

People with multiple intersecting areas of marginalization are the most vulnerable during and after a hazard event. One of the participants in the Missing Voices interviews highlighted the additional challenges that physical disabilities present during a flood:

“During uncertain and chaotic times such as a flood, people are, rightly, focused on saving themselves. People like us who cannot see, cannot hear, and therefore cannot move around with ease and confidence, become even more vulnerable. We are left with no choice but to wait until somebody gets around to thinking of us. Until somebody is willing to help us’ (Hira, woman with visual impairment, far-west Nepal).



## Participation

### **Marginalized gender groups participate less in EWS initiatives due to domestic roles, lack of autonomy, mobility challenges, social isolation and persecution, and perceptions that their engagement is not relevant or welcome**

KIIs with men highlighted their belief that women are more engaged in DRR and preparedness due to their prescribed domestic roles – men believed that women are more concerned about children and possessions and therefore more focused on risk. Women in FGDs also thought that women are more proactive in preparedness than men.

These perceptions are clearly at odds with the levels of participation in community DRR and EWS initiatives: 91 per cent of men were aware of the EWS compared with 72 per cent of women. West Nepal was the only area in which more women than men knew about the EWS (100 per cent of women and 88 per cent of men); large gender gaps were observed in central (92 per cent of men and 69 per cent of women) and east Nepal (100 per cent (n = 3) of men and 61 per cent of women).

Across all locations, understanding of the EWS was limited to the alerting component of the system: respondents referred to warning systems as the EWS. The vast majority of those who said that they did not understand the EWS said that they would be interested in learning more about it.

In spite of the high levels of economic migration among men, and the strong likelihood that men will be away in the event of a flood occurring, women in central and east Nepal are much less likely than men to be trained in how to prepare and respond. More men than women (69 per cent men and 44 per cent women) have participated in vulnerability and capacity assessment (VCA). The disparity was greatest in central Nepal where 75 per cent of men have participated in risk mapping compared with 38 per cent of women.

Two issues were highlighted as critical barriers to the participation of vulnerable groups in DRR initiatives: vulnerable groups feeling their voices did not matter or were not welcome, and vulnerable groups feeling that DRR processes were not being designed with them in mind. It emerged that the participation of women may be limited to those who hold power in the community, and may not be representative of marginalized gender groups. Women from a range of backgrounds, with different experiences and vulnerabilities, emphasized that they did not feel included in DRR and EWS initiatives in their communities.

“I have never attended any meetings. They are mainly attended by men. They don’t often ask women to them, and when they do, it is only the educated women. Not women like me. I don’t think I would even understand what they’re saying, let alone learn anything (Maya, middle-aged widow with two children, mid-west Nepal).



**Photo 3** To be effective, EWS and DRR plans must be inclusive of different groups within the community and account for a diverse range of vulnerabilities and capacities

“ I have never attended any meetings around my village as I was never asked to join them. Until you just asked me, I never even thought they concerned me (Pyari, an elderly widow, mid-west Nepal). ”

“ Before the floods, I knew some people from my neighbourhood got together sometimes to talk about floods and ways to prepare ourselves. I never joined them. I was never asked to so I didn't think it concerned me (Rama, single woman with young children, eastern Nepal). ”

“ I have never attended any trainings or meetings regarding disaster preparedness. I never thought I would benefit from them, or others could learn or benefit from my contribution to them. If that was the case, I think, I would have been asked to participate, no? I don't think anybody would choose to listen to somebody like me (Hira, woman with visual impairment, far-west Nepal). ”

The Missing Voices interviews also revealed deep fears held by members of marginalized gender groups who face discrimination and harassment which prevents them from feeling comfortable, welcome, and safe to attend and participate in community preparedness activities and training.

“ ‘If you consider for a moment all the discrimination and name-calling [we] face the moment we step out our door, sharing our problems openly and suggesting solutions becomes next to impossible. How are any of us, especially those who are illiterate and with weaker social standing, going to find the right words and confidence to articulate it all, that too in front of hostile people?’ (Prerana Bista, transgender woman, LGBT activist and programme coordinator, Blue Diamond Society, western Nepal). ”

### Marginalized gender groups are sidelined in DRR policies and strategies and DRR initiatives are not designed to enable them to engage

During FGDs, participants in Nepal reflected that while they saw the benefits of participating in training and drills for the EWS and flood resilience, there were systemic barriers to their attendance and full participation. For men, this was due to being away from the household for work. For women, this was due to high levels of domestic activities which typically fall to them. Interviewees mentioned barriers to participation including issues of control, lack of autonomy, challenges of access, issues of social isolation and persecution, and assumptions that men represent a household.

“The biggest barrier for me to attend preparedness meetings is my family’s attitude. Unless they give me permission and offer support, I simply won’t be able to. At the same time, if they really understood what the meetings are about and how I would benefit from them, I don’t think they would try and stop me too often. The other thing to remember also is to give plenty of notice so alternative chaperones can be organized. My immediate family may not always be able to come with me. And then, there is of course money. Very few disabled people are financially independent. Even affording basic bus fare can be a challenge at times (Subina, woman with a disability, far-west Nepal).”

“Since I am on my own, I have very little time to spare and they seemed to meet at times when it suited them, not me ... Still, had I known attending the meetings might have helped me prepare better and keep my children safe, I would have made the effort or at least sent my eldest child [now 11]. It would also have been very helpful if people had taken into consideration the fact that I am a single mother doing everything on my own, and come to me with information instead of expecting me to go to them (Rama, single woman with young children, eastern Nepal).”

“My husband goes to meetings, he has more time, is worldlier, and more educated. I am mostly too busy with housework and the children. Also, it is generally asked that one person per family attend meetings. Even without discussing, it is assumed that it’ll be my husband representing us all. If it was specifically said that women need to be there, we might have been forced to rethink. If I was told attending meetings would help me keep my children safer, I definitely would have gone (Durga, married mother of three children, eastern Nepal).”

“Across Nepal, the expectation that widowed women live their lives devoted to housework, away from any social activities and public space, continues. Any engagement with anybody outside their homes can be seen as suspicious and overstepping an invisible line. This keeps them from participating in meetings, discussions, and even appearing in any public domain (Sumeera Shrestha, Executive Director, Women for Human Rights Single Women Group (WHR), mid-west Nepal).”

“I feel too shy and uncomfortable. I know the rest of the community distrust and dislike people like me. I would never willingly put myself in a position where I might be sneered at openly. Unless I know a meeting is organized specifically for people like me, I would never go sit and put my views forward when surrounded by [cisgender] men and women (Champa, transgender woman, western Nepal).”





## Dissemination

### Gender inequality in education, literacy, economic capital, access to technology, and social capital results in gendered differences in access to information and the capacity to receive and act on early warnings

There is a clear difference in how women and men receive warning information. The majority of men (71 per cent) reported that they receive warnings from a formal source (DHM, government official, gauge reader, I/NGO), while the majority of women (51 per cent) receive warnings through informal, social sources (family members, neighbours, community members, task groups).

Gender inequities in access to warning was highlighted, with information and knowledge often controlled by men. Many female respondents shared that even when male family members have migrated to other towns or places within Nepal, it is still the male family member who receives the warning and relays it back home to their families.

Just 2 per cent of women reported receiving a warning from a gauge reader, compared with 13 per cent of men. In KIIs, men and women both commented that in areas where cultural norms discouraging or penalizing interaction between men and women are very strong, there may be hesitancy for women to contact a male gauge reader, especially at night.

Women are most likely to receive warnings in person, either directly through neighbours or relatives, via community task forces and volunteers (often female) going door to door to disseminate



**Photo 4** The most popular method of receiving warnings in Nepal was direct from a known and trusted person in the community

a warning, or via a loudspeaker or sirens, which can be difficult to hear over the sound of heavy rain. These in-person or secondary communication sources mean that women often receive warnings later than men, which has implications for their ability to prepare and respond (see section on response).

KIIs with women found that men typically receive warning messages before women, and women are less able to travel or communicate at night-time due to restrictive gendered social norms, fears for security without lighting, and caring roles. Women at regional and national levels recommended that women in communities should be more involved in dissemination, and that women should be directly targeted in communication channels so they do not have to rely on men for warnings or information.

Across all study sites in Nepal, the most popular method of receiving warnings was directly from a person in the community who is known and trusted, because the warning will reach everyone. Clear gender differences emerged in the next most popular method of receiving warnings: more women preferred verbal communication (megaphone or voice messages received on a mobile phone) (47 per cent of women compared with 24 per cent of men). More men preferred text message communication (29 per cent of men compared with 13 per cent of women). Men were also more likely to prefer the use of mobile phones (voice or text messages) than women. However, FGDs highlighted the importance of communicating warnings in local languages: SMS warnings issued in English – and, in some cases, Nepali – are difficult for both men and women to understand.

“I had a mobile phone but because of poor eyesight I could not read the [early warning] messages. It also did not help that the messages were in English’ (Maya, middle-aged widow with two children, mid-west Nepal).”

The tendency for women to prefer verbal dissemination may be linked to lower levels of literacy (11 per cent of women interviewed in Nepal identified illiteracy as the main barrier to them taking action in response to a warning), and also lower levels of mobile phone ownership. In KIIs, literacy was mentioned as a particular barrier for elderly people. However, verbal warnings alone will not reach everyone. Vulnerable women, particularly those who are marginalized, may not have access to platforms of verbal communication.

“I only realized water had entered our home at three in the morning. I had no phone or radio then so I received no early warning’ (Rama, single woman with young children, eastern Nepal).”

Of the women surveyed, 50 per cent said that they own a mobile phone, compared with 66 per cent of men. Lower rates of mobile phone ownership can be attributed to a number of barriers. Lower levels of enrolment in education among women, as well as a lack of decision-making power in the household, affect women’s earning potential and mean that women are less likely to have the financial resources to be able to afford their own mobile phone. Therefore, they will need to rely on male members of the household to provide them with access to one; linked to this, women are more affected by illiteracy, which means that text message-based warning systems may be less likely to meet their needs (Antonio and Tuffley, 2014).

KIIs with women also noted that men have access to more information about DRR and EWS because they can access online materials and women can’t (less than 20 per cent of internet users in Nepal are women; this is linked to inequalities in literacy, education, mobility, and income as well as social norms (Antonio and Tuffley, 2014)).





## Response

### Groups with higher vulnerability may have different preferences in preparedness and response, including a preference for earlier evacuation

There was consistency across study sites regarding the main roles that men and women are likely to assume in response to an early warning: women tend to focus on packing things like clothing and important documents, while men focus on the relocation of families and livelihoods, are engaged in search and rescue operations, and are responsible for helping vulnerable groups.

During FGDs there was an overwhelming response that women need more time than men to prepare and evacuate because of these roles and need more time to physically evacuate because of the challenges of helping dependents, carrying possessions, and moving in traditional clothing. These responses highlight the importance of early warning and timely evacuation for women.

Women highlighted the difficulty they face in responding to warnings alone, when male family members are away from home for work or school. Migration of men for seasonal work has led to an increase in women's workloads, further restricting the time they have available to participate in training and community resilience and preparedness activities. At the same time, the absence of men is also increasing the roles women undertake during floods, in spite of the lack of training they receive to prepare for these roles.

### Disaster exacerbates discrimination faced by marginalized groups

As well as often determining the roles that women assume in an emergency, social norms exert strong influence over how women are viewed and treated, which is exacerbated in a disaster setting. Vulnerable groups reported challenges in emergency shelters.

“The biggest challenge at the shelter was keeping my toddler safe and out of people's way. Being so little, she knew nothing about personal boundaries, and because she would relieve herself whenever she felt the need to, and because of course I could not always see, people shunned us. Also, we were on the second floor and along with having no railings, there were also no toilets there. Overall it was a very difficult and uncomfortable experience. It was not far from being traumatic as I felt shunned by people around [me], even though there was little else I could do to help myself (Hira, woman with visual impairment, far-west Nepal).”



**Photo 5** Search and rescue training is typically conducted for men and boys, even though these are the groups most likely to be away from the community for work in the event of a flood

A lack of separate bathroom facilities was a concern for 17 per cent of men and 10 per cent of women. In KIIs, men commented that old shelters have not considered gender, but new shelters are being constructed with separate facilities for men and women, and consideration of access for people with disabilities. They commented that the specific needs of pregnant and lactating women have not been considered.

“When it started becoming clear we would be flooded and we had to leave, along with being anxious for our safety, I was also worried because I was due my monthly period. My concern was, in case my brothers decided to seek shelter in the temple grounds like in the previous years, I would not be able to stay with the rest of the family [because menstruating women are considered ritually impure and are not able to enter temple grounds]. In the previous years, many women stayed outside temple premises, separate from their families and they later talked about being scared of snakes and also other people (Sandhya, teenage girl, eastern Nepal).”

The needs of gender minorities have also not been considered, which is particularly relevant given the legal recognition of third gender people in Nepal.

“As I started heading to a higher ground with the rest of my family, the name-calling started almost immediately ... I am used to being jeered at and called derogatory names. But to be treated like this even during such a precarious time made me feel terrible. Nobody thought to offer any help, even though my mother is very old and my nieces and nephews are young. Instead they tried to avoid us. When the jeering and taunts continued for days even where we were taking shelter and people did their best to seclude us, I sometimes thought about jumping into the water and ending it all once and for all (Champa, transgender woman, western Nepal).”

### **Vulnerable groups are at increased risk of sexual harassment and assault in emergency situations**

Women reported being hesitant to evacuate when a warning is issued at night due to fears about security in the dark, highlighting the prevalence of gendered violence and the choices women are forced to make, even in emergency situations.

One per cent of women (0 per cent of men) talked about a risk of sexual assault – given the taboos associated with this topic in Nepal, this cannot be taken as an indication of low levels of concern. However, the Missing Voices interviews shed more light on the reality of what vulnerable women experience in shelters which are supposed to provide safety.

“At night, most women remained alert for fear of rape and unwanted attention. Many men drank at night. Especially as a disabled person, already reliant on others for everything, if anybody was to behave badly with me, I know I would hesitate to complain for two reasons: first, I did not want to cause any more trouble for my family. And second, when disabled women have been abused in the past, people have been dismissive when complaints were made. It was as if having a disability meant her life and feelings didn’t matter as much. All these things made me feel very vulnerable (Subina, woman with a disability, far-west Nepal).”

“At the shelter and afterwards when in a temporary tent, my family wanted me to keep to myself and not even step out of the small space designated to us unless strictly necessary. I knew this was because they wanted to keep me safe; we have personally known of incidents where young women who got separated from their families got taken away by human traffickers (Sandhya, teenage girl, eastern Nepal).”

“ People like us, transgender people, learn to live with being followed, called derogatory names and even sexually harassed, as others in society still associate being transgender as being promiscuous and sexually available. This is worsened during times of disaster by the fact that people feel unable to report any form of abuse for fear of being further exposed and ridiculed (Prerana Bista, transgender woman, LGBTI activist and Programme Coordinator at Blue Diamond Society Regional Office, Kapilvastu). ”

“ When I was in the shelter alone with my children, that is when things got difficult. Increasingly I began to face more and more unwanted sexual advances (Maya, middle-aged widow with two children, mid-west Nepal). ”

In FGDs men recommended that issues of gender-based violence should be incorporated into EWS training.



### Power and Decision-Making

#### **Marginalized gender groups lack power and influence over decision-making, meaning that DRR and response plans are not tailored to their needs and priorities, increasing their vulnerability**

At the household level, most men and women reported that they would prepare for evacuation as a response to hearing a warning. Most people said they would stay at home until the flood enters the houses before they actually evacuate – but men and women had different reasons for this.

Women reflected that they wanted to evacuate sooner than men, but that they are dependent on men for the evacuation and men control the decision on when to evacuate. Men are hesitant to evacuate due to fears of loss of livelihood and possessions due to flood damage or theft. There is also a tendency to wait until the warning is confirmed, either by going to check the river level or waiting for confirmation from neighbours. This results in evacuation being delayed until the last minute, increasing women’s vulnerability to flooding as they experience more difficulty evacuating when flood waters have arrived compared with before they arrive.

“ ‘The rains had been heavy and we knew a flood was very likely. When they (male family members) decided women, children, and elderly in the family should wait at home while they went out to consult community members and assess the situation, there was little we could do but wait’ (Maya, middle-aged widow with two children, mid-west Nepal). ”

In FGDs, all groups spoke positively about the involvement and participation of women in community and household decision-making, and the growing confidence of women.

Additionally, women cited gendered barriers to acting including higher rates of illiteracy, a lack of decision-making power (and, consequently, experience), and a greater burden of household and caring-related roles in evacuation.

At the community level, women were considered to not be as engaged in planning and decision-making processes as men. During KIIs, respondents confirmed that men and women are engaged in CDMCs and that some CDMCs are led by women (providing estimates of 10 per cent to 30 per cent of CDMCs). Some interviewees observed that women-led CDMCs are more effective and active because women take issues of flooding more seriously.



**Photo 6** CDMCs play a key leadership role in the community EWS and DRR; women’s participation in these groups is essential

FGDs found that evacuation guidance is typically provided and overseen by CDMCs; however this guidance is informal, and while women’s traditional roles are considered (for example preparing emergency bags and packing away possessions), less traditional but increasingly common roles (e.g. women leading evacuation) are not considered, nor are gendered vulnerabilities or needs (such as prompt evacuation).

Men and women reported that they actively engaged in yearly training and drills held by the CDMC. However, one group fed back that knowledge was not socialized throughout the community – individuals (mostly men) were trained who then migrated out of the community, leading to loss of knowledge.

Stakeholders shared a perception that women participate in CDMCs; however representation drops off significantly in leadership roles, with few women engaged in district, regional, or national DRR structures and departments. KIIs showed consensus across all interviewees that male economic migration has led to an increase in workload and roles for women, with women being more engaged and trusted by communities in prioritizing risk as a result.

### Representation matters – there is a need for transformational change and empowerment of marginalized gender groups in all elements of EWS

“Girls aren’t always permitted by their families to attend meetings. So in many ways, running sessions at schools during school hours is the best approach as we are already there. We might not always speak up, but we are listening. Besides that, having more women working as field mobilizers and running women-only sessions might encourage more families to allow their daughters to join in (Sandhya, teenage girl, eastern Nepal).”

“At least one woman who is single should be present in all meetings, at least at the local community level. To specifically ask for them, to seek them out and to recognize them and their voice, so that they themselves begin to realize they have rights and need to share their concerns so something can be done about them. We will only need to [do] this a handful of times until society will begin to learn not to ignore and quieten them [widows] and they themselves begin to feel empowered to voice their thoughts (Sumeera Shrestha, Executive Director, Women for Human Rights Single Women Group (WHR), mid-west Nepal).”

“Until we find ways to change the general mindset and until we make people, especially the younger generation, understand that housework is not just the responsibility of women, increasing women’s participation will remain a challenge (Chinta Mani Kandel, President of the Bardia Branch of Nepal Association of the Blind).”

## Summary of findings from Nepal



### Vulnerability

- Gender inequality and social marginalization increases vulnerability to hazard events
- Gender norms relating to social roles, control of decision-making, and even clothing increases the vulnerability of marginalized gender groups to disaster-related risks
- Efforts to consider gender need to be intersectional – lack of political rights and social recognition, differences constructed on ethnicity, age, health, disability, gender, gender identity and sexuality play into individual and group experiences of vulnerability



### Participation

- Marginalized gender groups participate less in EWS initiatives due to domestic roles, lack of autonomy, mobility challenges, social isolation and persecution, and gendered assumptions (e.g. that men represent a household)
- Marginalized gender groups feel their voices do not matter or are not welcome in EWS discussions and DRR initiatives
- Marginalized gender groups are sidelined in DRR policies and strategies and DRR initiatives are not designed to enable them to engage
- Proactive efforts are needed to include the needs, priorities and capabilities of marginalized gender groups, and magnify their voices at every stage of the Early Warning System



### Dissemination

- Gender inequality in education and literacy impacts on capacity to receive and act on early warnings
- Gender inequality in economic capital, access to technology and social capital results in gendered differences in access to information
- Gender norms shape communication preferences, which must be considered for early warning to be effective



### Response

- Groups with higher vulnerability may have different preferences in preparedness and response, including a preference for earlier evacuation
- Response plans may not be designed according to the needs and preferences of vulnerable groups
- Disasters exacerbate discrimination faced by marginalized gender groups
- Vulnerable groups are at a higher risk of sexual harassment and assault during and after a disaster



### Power and Decision-Making

- Marginalized gender groups lack power and influence over decision-making, meaning that DRR and response plans are not tailored to their needs and priorities, increasing their vulnerability
- When marginalized gender groups are included, they can and do play an important role in fostering a culture of resilience and championing DRR
- Representation matters – there is a need for transformational change and empowerment of marginalized gender groups in all elements of EWS

Figure 7 Summary of key findings from Nepal



# Peru

## Gender equality in Peru

Peru performs moderately well on international gender equality indices, ranking 86 out of 188 in the UNDP (2018) Gender Inequality Index and 48 out of 144 countries in the World Economic Forum *Global Gender Gap Report* (2017). Peru is one of the most improved countries in the Latin America and Caribbean region between the 2016 and 2017 World Economic Forum reports. However, women in Peru continue to face disproportionate difficulties in accessing education and secure economic opportunities. Fewer girls than boys complete secondary education (UNICEF, 2012). Women in Peru tend to be involved in employment which is less productive, riskier, and lower paid, leading to significant income inequality and a lack of access to labour rights and social security for women. Violence against women is a major and widespread factor, with the World Health Organization (WHO) estimating that one in two women in Lima experience physical and/or sexual violence throughout their life, and that the figure rises to two out of three women in rural areas.

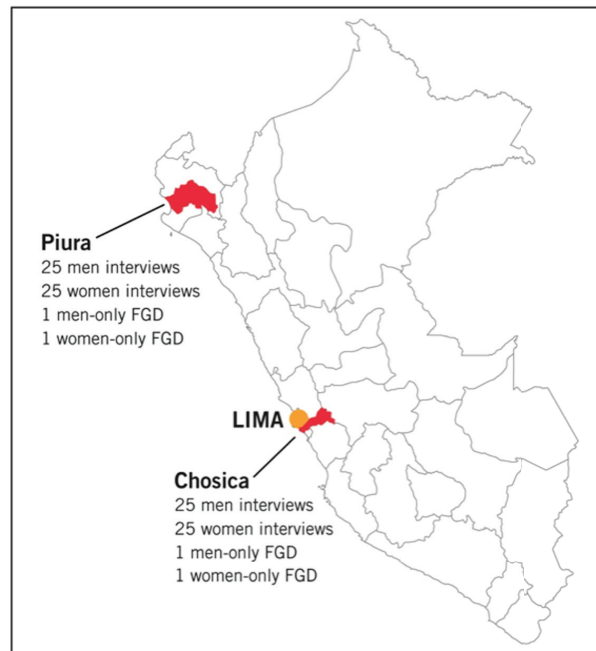
## Flood risk and early warning in Peru

Peru is highly prone to floods and landslides. El Niño oscillations typically result in torrential rains, with serious implications for the 23 per cent of the population who are estimated to live in flood-prone areas (GFDRR, 2010). Flooding is most commonly very intense along rivers where the river flows towards the coast, in areas such as Piura and Chosica, which are typically dry. These rainfall events result in massive floods, landslides, and debris flows, exacerbated by the hilly topography and lack of vegetation (Takahashi and Woodman, 2014). In 2017, the country experienced its worst flooding since 1998; the National Institute of Civil Defense (INDECI) reported that 1.8 million people were affected, with 442,400 homes damaged, 505 people injured, and 164 people killed (IFRC, 2017). In 2016, Practical Action installed electronic sensors to take photos of the river level every two to five minutes in Chosica; this locally-gathered data informs the community response platforms, Emergency Operation Centre, and the local government. Community brigades and platforms then warn the community in the event of danger levels being reached through a variety of methods including sirens, megaphones, and whistles.

## Peru data

Data was collected across two sites in Peru, selecting locations where EWS (of different forms and different levels of sophistication) are already operational. One hundred interviews and four FGDs were carried out with men and women in peri-urban communities in Chosica and Piura (Figure 8). Key informant interviews were held with six women and ten men from a range of national organizations and NGOs, as well as with three women and four men from regional institutions. Detailed Missing Voices interviews were conducted with nine individuals.

Of the respondents, 12 per cent of men and 14 per cent of women reported having an illness or disability that affects their ability to respond in the event of a disaster.



**Figure 8** Study sites in Peru

## Key findings from Peru



### Vulnerability

#### Gender inequality affects vulnerability, with marginalized gender groups more physically and economically impacted by flooding

In FGDs, women focused on two ways in which flood impact is gendered. They thought women were more likely to be economically affected by flooding as their income is more likely to rely on home based businesses (such as small shops). National stakeholders concurred, stating that women are less engaged in the formal employment market, with informal livelihoods that are more fragile than men's.



**Photo 7** A woman and her child in their home, surrounded by floodwater

In FGDs, women also highlighted the severe emotional impacts from debris flows (dry mudslides) – anxiety, depression, and the stress of displacement. It was not possible in this research to confirm whether men were genuinely less emotionally affected than women, or less able to disclose the impact on their mental health due to patriarchal norms discouraging male discussion of mental health.

Women as a group were not widely recognized as being vulnerable. Instead, respondents in Peru highlighted the distinct needs of vulnerable or marginalized groups including pregnant women, elderly people, persons with disabilities, and single mothers.

“ [During the rain] the noise from the corrugated roof made me nervous as I was pregnant. When the thunders started, I got even more nervous. Even now, it just starts to rain and I get nervous [...]. Every day that passed, my fear grew (Emilia, 18-year-old woman with a young baby, Piura, Peru). ”

“ Before there were any sirens, we did not have megaphones and at night when the lights went out, there was more fear. You could not sleep and as children we were very scared because our parents were away, standing guard to watch the river at night (Andrea, teenage woman, Chosica, Peru). ”

Interviews highlighted the impact of limited early warning time for those unable to evacuate quickly, with seasonal migration adopted as a coping mechanism for the most vulnerable.

“ During the flood season I always leave Chosica. When the rainy season is the most intense, I cannot leave my house to a higher area behind my house because my body is not so strong (Alicia, elderly woman, Chosica, Peru). ”

“ The warning does provide some time to evacuate but as the *huayco* [debris flow] happens too fast, time will always be short. Not everybody can evacuate in time. Because now I have my baby I will definitely evacuate to some other district the whole rainy season. This is what other mothers with small children do and they have advised me to do the same (Maria, young woman with small baby, Chosica, Peru). ”

This risk mitigation strategy has implications for access to resources, with those who have seasonally migrated denied post disaster assistance.

“ ‘Most of the help and donations from the authorities are given just to the ones present at their homes, so I had to be there’ (Emilia, 18-year-old woman with a young baby, Piura, Peru). ”



## Participation

### Women are more active in the EWS than men, but are less likely to receive technical training

During FGDs, respondents said that women were well represented, sometimes in the majority, in community training, discussions, and decision-making regarding EWS. More women than men have participated in risk mapping, especially in Chosica (48 per cent of women and 40 per cent of men in Piura; 60 per cent of women and 0 per cent of men in Chosica). (Note: Although the men in our

interview sample did not attend risk map training in Chosica, attendee list data shows 41 per cent of attendees at 2015 contingency trainings in the area were men.)

In FGDs in Chosica, community members noted that level of commitment and interest is a key barrier to participation in community EWS training. They found that the people most affected by mudslides and floods are the most active, and that women are more likely than men to prioritize attendance.

Participants speculated that perhaps women are more willing to make time for EWS related training activities due to their greater prioritization of risk. Other suggestions included that men are more focused on political topics such as land ownership, with women more likely to (be able to) engage in topics less prioritized by men, such as EWS.

National stakeholders in Peru were aware that involvement in EWS is a role typically carried out by women, recognizing that this is an additional burden. In FGDs, women agreed that their existing workloads made it difficult to take on additional responsibilities in the EWS. However, women also highlighted that involvement in the EWS can be empowering: respondents mentioned that women who are educated about disasters feel more confident to make decisions or take action in a crisis.

During FGDs, men generally shared that they found it difficult to attend because of work and timing of training sessions, and that male engagement levels are low because of a lack of leadership and commitment.

Interviewees referred to three key types of DRR training: response training; risk mapping training; and gauge reading training. The number of men who participated in each of these three types of training remained consistent at around 20 per cent, whereas women reported varying levels of training: 75 per cent had been trained in how to respond to a warning; 54 per cent had participated in risk mapping; and 38 per cent had been trained to use a rain gauge. It is striking that although men are much less involved in the EWS, those that are trained are trained in all aspects, whereas women, who are significantly more involved in the EWS, receive less comprehensive training relative to their involvement.



**Photo 8** Women in Peru reported high levels of participation, although their existing workloads make it difficult for them to engage in training

The comparative lack of technical skills for women was considered a problem by respondents, particularly when men are away for work. When describing different roles in response, for example, respondents specified that men are responsible for using sandbags, and women did not know how to use these.

It is important to note that it is not theoretically necessary for everyone trained in the EWS to know how to read a rain gauge in order for the system to be effective to save lives: all community members should know how to evacuate; a smaller group should understand how the EWS functions; and within that group, a selected number should be trained on technical aspects such as gauge reading. However, the figures suggest that training is affected by gendered norms, expectations, and perceptions surrounding the capacities and roles of men and women.

“The invitations [from the local government] come in the man’s name but women are the ones that participate the most’ (Claudia, woman with a physical disability, Chosica, Peru).”

**Proactive efforts are needed to include the needs, priorities, and capabilities of marginalized gender groups, and magnify their voices at every stage of the EWS design and implementation**

Discussions were gender aware, acknowledging that women and men typically have different levels of risk prioritization and highlighting gender-related challenges to attendance. Participants typically suggested gender sensitive solutions to the challenges, but not gender transformative approaches. They suggested, for example, that women needed to find extra time on top of their current household activities to engage with the EWS, rather than suggesting ways to shift or share household activities, or considering ways to proactively design meetings and trainings to fit alongside household activities.

There is a high level of interest in the EWS; women highlighted examples of women who are effective leaders in DRR, and the majority of women expressed strong commitment to take an active role. However, despite high interest, marginalized or vulnerable women interviewed through the Missing Voices interviews had not participated in EWS or DRR trainings.

“I have not received training, nor my daughters either. I could not participate because I had to work (Esther, woman in her 50s with difficulty walking, Piura, Peru).”

“Although I knew about the training before the flood, I could not participate because it happened during my class schedule ... [after the flood] I wanted to form a group of young people to help the elderly and affected people ... but it was not achieved (Diana, 15-year-old girl (14 during the disaster), Piura, Peru).”

“I wasn’t able to go to the meetings because of the schedules [during the afternoons]. I wasn’t prepared for the riverine flood or the rain. I knew about the messages from the loud speakers but didn’t know what to do. [...] Only after the emergency I came to know about the evacuation routes and the safe areas outside the neighbourhood (Emilia, 18-year-old woman with a young baby, Piura, Peru).”

“The same year of the flood, just when the rain started, I received special training at my house from Civil Defense (Rita, 33-year-old woman, who is blind, with three children, Piura, Peru).”



### Gender-based violence impacts engagement with EWS initiatives

The issue of gender-based violence was raised by some respondents, with references to some women being afraid of their husbands and consequently not able to participate in community initiatives. (It is noted that this is the type of risk that isn't typically drawn on a risk map, indicative of how approaches can unintentionally erase certain gendered risks.)

The references to gender-based violence align with findings from the literature; the World Health Organization (WHO) has estimated that one in two women in Lima experience physical and/or sexual violence throughout their life, and that the figure rises to two out of three women in rural areas (WHO, 2012). A 2018 study conducted in 27 countries by Ipsos MORI found that women in Peru are highly concerned about violence: sexual violence, sexual harassment, and physical violence are cited by 67 per cent, 58 per cent, and 49 per cent, respectively, of women surveyed in Peru.



### Dissemination

#### There are gendered differences in access to early warning, access to technology, and access to information

NGOs, including Practical Action, are the main source of risk information for women in Peru (for 52 per cent of women in Piura and 72 per cent of women in Chosica). This may be a result of proactive targeting of women in NGO programming, as well as the above noted higher levels of women's participation in EWS and preparedness training activities which are implemented by NGOs. The importance of NGOs as a source of information underscores the importance of sustainability and exit strategies for DRR initiatives, including consideration of strategies for sustainability of approaches that proactively target women.

*Asembleas* (regular community meetings which address key issues raised by community members) are the main source of risk information for men (for 36 per cent of men in Piura and 56 per cent of men in Chosica). Although women attend these meetings, fewer women listed them as a key source of risk information (only 12 per cent of women in Piura and 8 per cent of women in Chosica).



**Photo 9** Women are less likely than men to own a mobile phone in Peru

In Peru, more women have received an early warning (84 per cent of women compared with 48 per cent of men). The gender difference was more pronounced in Chosica, where 100 per cent of women compared with 44 per cent of men had received an early warning. This is likely due to the typical timing of debris flows, which tend to occur in the afternoon when men are away for work.

Social contacts are the most significant source of early warning for both men and women, with 58 per cent of women and 59 per cent of men reporting that they receive early warnings from a neighbour.

The main single source of early warning for women in both sites was megaphone or loudspeaker (50 per cent of women in Piura and 60 per cent of women in Chosica), whereas men reported receiving warnings from official sources via mobile phones (91 per cent of men in Chosica and 14 per cent of men in Piura, the most significant channel in both sites). Women's access to warning is constrained by lower levels of mobile phone ownership than men (36 per cent vs. 68 per cent in Piura and 68 per cent vs. 100 per cent in Chosica).

Men were more likely than women to receive a warning from an official source in both areas, despite women having higher levels of involvement in the EWS. Fourteen per cent of men compared with eight per cent of women reported receiving a warning from a government official.

There were examples of technology improving access to information and access to community leaders. 'During the rainy season I always check the [weather forecasting and early warning] information with my neighbours and the leader of the community through a group chat in WhatsApp or by [Facebook] Messenger' (Maria, young woman with small baby, Chosica, Peru).



## Response

### **Women and men have distinct roles in response, with men tending towards leadership and decision-making roles and women focusing on care-giving roles**

At the national level in Peru, the majority of national stakeholders interviewed in the KIIs agreed and recognized a gender difference in perceptions of risk: women are more concerned about risk and more likely to prioritize engagement with risk reduction and planning activities.

There is often a gendered division of roles in response in Peru, with men typically protecting the home, and carrying people and heavy items, while women care for vulnerable people including children and the elderly. When men are away at work, women undertake all these roles. Around a quarter of women in Chosica gave some examples of men taking leadership roles, including telling families to leave, telling families where to go, and protecting houses with sandbags.

Regional and national stakeholders highlighted that, immediately following evacuation, women have very little power in the context of safe shelters (constructed shelters in Piura, areas of raised land in Chosica), and tend to be restricted to menial roles rather than being included in decision-making or influencing.

The lead time available to evacuate following an early warning varies significantly between the study sites in Peru. In Piura, the more gradual evolution of flooding provides up to 15 hours of advance warning; however the time available in Chosica is currently just 15 minutes because of steep mountainous geography, lack of data, and limited forecasting and warning capabilities.

Women in both locations in Peru felt that they wanted earlier warning than men to prepare for evacuation: women in Chosica felt that they needed earlier warning to keep family members safe, and women in Piura felt that they needed earlier warning to take appropriate action. A noteworthy distinction is that while women reported needing earlier warning, men did not think that women needed earlier warning.



**Photo 10** Evacuation routes are signposted, but delays in evacuation make them less safe to use in an emergency

National stakeholders reported a gender difference in perceptions of risk, noting that women are more likely to prioritize risk and more likely to want to evacuate early, whereas men are more likely to leave evacuation to the last minute.

Men at community level reported that a key impediment to prompt evacuation was fear of losing possessions (fear of possessions being damaged if left unsupervised at home or fear of being stolen if taken to a shelter), a concern also raised by regional stakeholders.



### Power and Decision-Making

#### **Women's participation in DRR planning and decision-making is strong, but their influence is limited**

Respondents noted that men are critical to decision-making on evacuation. Some respondents noted that men were unwilling to take action based on warnings, leading to slow or late evacuation (though there were exceptions to this pattern, incidences of more equal decision-making). Regional stakeholders interviewed in KIIs report that the comparative unwillingness of men to evacuate then impacts on women's ability to evacuate and increases their vulnerability as they have to wait for approval or permission from men.





**Photo 11** Women are active in their community EWS and are confident in contributing to decision-making, but may not have equal influence over decisions

In Piura, women reported being involved and sometimes leading in decision-making. Examples of gendered perceptions were found; for example in one area respondents thought that men were able to make decisions faster. In Chosica, FGDs found that community groups take responsibility for decision-making rather than individual households.

FGDs found clear consensus that women participate actively and equally in the EWS in Peru. National stakeholders thought that women participate equally alongside men in decision-making, without any need for intentional efforts to address patriarchal norms. Men thought that women's participation alone would enable equal influences over decision-making. However, there were some reflections that suggest attendance, and even active participation, does not necessarily equate to equal influence.

FGDs indicated that decisions or suggestions from men are taken up more readily than inputs from women, indicating cultural norms which prioritize male leadership overlooking the knowledge and experience of women. Men in Piura considered that women needed to become more assertive, citing their lack of confidence in speaking as a barrier to their engagement. This again points to a tendency to place responsibility on the actions of women rather than on the adaptation of men and wider systems to enable and empower women.

There was no clear consideration of gender transformative approaches, for example the restructuring of existing institutions and processes to enable women's participation and influence.

National level stakeholders also observed that, though women were very involved in the EWS at community level, there are very few women involved in technical areas or in high level decision-making in the EWS in Peru.

Women's low level of influence on EWS decision-making matters. Women in both areas were significantly more likely than men to feel that EWS decision-makers had not specifically considered women's needs; 79 per cent of women said that gender was not considered in the EWS, compared with 53 per cent of men. This was particularly pronounced in Piura, where 96 per cent of women (and 58 per cent of men) said that women's needs had not been taken into consideration.

Furthermore, men tended to have a shallow understanding of what women's needs are; for example men in Piura said that women's needs were taken into account through provision of hygiene products. There was also a conflation of women's typical roles and their needs, with 40 per cent of men in Piura saying that decision-makers did effectively consider gender by providing women with food and cooking materials.

Across all interviewed stakeholders in Peru there was agreement that the current system does not always consider the differences between men and women and that there is a gap between awareness of these differences and responding to them in practice; that the current system is not gender aware, sensitive, or transformative.

### **When marginalized gender groups are included, they can and do play an important role in disaster preparedness, disaster risk reduction, and resilience**

There were numerous examples of women championing DRR. ‘The siren is managed by a woman and families trust women more as they are more responsible than men. Also, women advocate for their needs when authorities visit, arguing for investment in flood protection. They speak to the authorities directly, and do not need their leader or spouses to talk on their behalf’ (Claudia, woman with a physical disability, Chosica, Peru).

However, respondents also highlighted patriarchal norms with assumptions that men are community leaders, and shared examples of female leaders being challenged, sidelined, or ignored.

“The authorities always look for the [male] leaders. But women are better leaders. They talk directly and demand what is needed. When women are together, we do not let ourselves get pushed around and cheated by the authorities. Women are more honest and care more about everybody’s wellbeing. Most men care more about themselves. And old men even more. They always create problems and pointless discussions with the neighbourhood council because of nothing. I think they behave like this because most of the members of community council are women. Maybe they still do not think that women are capable of fulfilling that kind of work for the community and taking decisions (Cecilia, woman with visual impairment, Chosica, Peru).”

“I trust women more as they share more time with their neighbours. They are more often at home and know what is happening to everybody. I talk with them and we share our needs and what we think. They know how to help me and they are careful with me. I think a female leader is better (Claudia, woman with a physical disability, Chosica, Peru).”

“The authorities do not take into account the opinion of women. The mayor prefers to talk directly to men. Although women of the neighbourhood have the intention to speak their mind and communicate their needs, the authorities do not listen to them (Andrea, teenage woman, Chosica, Peru).”

Representation matters – there is a need for transformational change and empowerment of marginalized gender groups in all elements of EWS. Respondents highlighted the importance of encouraging and supporting women to engage in DRR initiatives and to take on a leadership role.

“If a woman learns more about disasters, they can have more control over their emotions. They can respond faster compared to men. So I tell my [female] neighbours to participate, especially the young (Alicia, elderly woman, Chosica, Peru).”

“As now I am at home more to take care of my baby, I’d like to participate in the brigades [groups of community members trained to support the community in responding to an early warning, for example by leading evacuations and sharing warnings]. I’ve seen more young people and women participating in them and I want to do as they do and be more active (Maria, young woman with small baby, Chosica, Peru).”



## Summary of findings from Peru



### Vulnerability

- Gender inequality affects vulnerability, with marginalized gender groups more physically and economically impacted by flooding
- Vulnerable gender groups, including those with mobility challenges, use seasonal migration as a risk mitigation strategy
- Efforts to consider gender need to be intersectional – lack of political rights and social recognition, differences constructed on ethnicity, age, health, disability, gender, gender identity and sexuality play into individual and group experiences of vulnerability



### Participation

- Women are more active in the EWS than men due to their prioritization of risk and increased responsibilities resulting from male economic migration, however training remains gendered and uneven, with women less likely to receive technical training
- Women are not equally active in the EWS – women who are affected by gender based violence, who have heavy workloads and less flexible time, and who bear most of the burden of domestic labour, are less able to engage in EWS initiatives
- Proactive efforts are needed to include the needs, priorities and capabilities of marginalized gender groups, and magnify their voices at every stage of the EWS design and implementation



### Dissemination

- Marginalized gender groups face challenges in receiving and understanding early warnings due to inequality in education and literacy
- Access to information is affected by inequality in economic capital and access to technology, resulting in gendered differences in sources of information
- Gender norms shape communication preferences, which must be considered for early warning and risk information dissemination to be effective



### Response

- Women prioritize hazard risk more than men
- Women and men have distinct roles in response, with men tending towards leadership roles and women focusing on care-giving roles
- Women prefer earlier warning and evacuation, due to their domestic and caring roles, but men don't think that women need more time to prepare and evacuate



### Power and Decision-Making

- Women's participation in DRR planning and decision-making is strong, but marginalized gender groups lack power and influence over decision-making, meaning that DRR response plans are not tailored to their needs and priorities
- When marginalized gender groups are included, they can and do play an important role in disaster preparedness, disaster risk reduction and resilience
- Representation matters: there is a need for transformational change and empowerment of marginalized gender groups in all elements of EWS

Figure 9 Summary of key findings from Peru

# Reflections

This research has explored the relationship between gender and EWS, providing examples and some recommendations for policy and practice. Here we reflect on some of the issues that have emerged, before ending the report with a checklist for gender transformative early warning systems.

**Gendered power imbalances increase vulnerability:** Women reported gendered barriers to decision-making, with gender norms prioritizing male decision-making. There were also situations where women are more engaged with the EWS at community level, yet men are still considered key decision-makers, even where men have had less training or have migrated to other locations for work. In these scenarios men are taking decisions with less information, increasing the vulnerability of all affected. There are also examples where EWS have not only failed to challenge harmful gender norms, but instead have actively reinforced or institutionalized gender inequality. For example, meeting invitations are extended to a man in each household (or to just one person per household where cultural norms may assume the most senior man is the default household representative) or warning messages are sent by default to one phone (typically a man's phone) per household, with an assumption that the 'head of household' will relay messages to other family members. Gender unaware approaches have a likelihood of perpetuating and compounding gender inequality, formalizing men as decision-makers (and erasing non-traditional households).

**Gender-based violence:** Issues of domestic violence, harassment, and sexual assault affect marginalized gender groups. From a DRR perspective, as well as the obvious violations of the rights of women, girls, and gender minorities, this can increase vulnerability by reducing engagement with EWS initiatives, delaying evacuation at night, and increasing fear, stress, and trauma during evacuation. Risk assessments that only focus on natural hazards ignore a significant gendered risk that disproportionately affects women and gender minorities. This misses an important dimension of individual risk assessment, fails to predict gendered responses to disaster, and also reinforces the taboo around discussions of gendered violence.

Issues of gender-based violence (GBV) need to be considered in DRR initiatives, but consideration of GBV, as with issues seeking to challenge gendered power imbalances, needs to be designed with thought, consultation, and care. There is a risk that violent men may see discussion of GBV or strategies to empower women as a challenge to their authority. This can lead to a 'backlash' of GBV against women. There is evidence that in communities where women's power is in transition, and where women are pioneering change, there is serious risk of violence (GSDRC, 2012). Empowering marginalized gender groups through DRR or EWS training needs careful planning to avoid negative repercussions.

**Consider stereotypes and cisnormative assumptions:** The research uncovered a number of themes where respondents revealed stereotyped perceptions of men and women. Findings revealed cases of both men and women perceiving women as more emotionally affected by flooding than men (in Peru), and a perception that women find decision-making difficult under stressful situations (in both countries). Where perceived barriers or challenges align with embedded gender stereotypes, it may be appropriate to explore further. It is important to understand whether the issue is a genuine gendered issue, where one gender group is differently affected, or whether perception is itself shaped by gender norms (e.g. perhaps men are just as emotionally affected in disaster as women, but unable to discuss the impact on their mental health due to gender norms that penalize male emotion and impede care for male mental health). Similarly, approaches are often informed by a cisnormative approach; that is, an approach where it is assumed that everyone is cisgender, an approach that marginalizes and penalizes gender minority groups.

**Context-specific, people centred, intersectional:** There was variation in responses between Peru and Nepal, and within each country. Gender issues, challenges, and methods to address them are contextually specific and therefore must be investigated and understood before appropriate action is taken. An intersectional approach is vital, acknowledging that gender does not just mean women,

and women in any case are not all uniformly vulnerable. It is important to adopt an inclusive, people-centred approach, and acknowledge the diversity of gendered experiences, identities, and lives. Factors such as socio-economic status, caregiving roles, level of education, (dis)ability, gender identity, sexual orientation, and marital status can all affect challenges, needs, and capacities of individuals and communities in relation to EWS.

**A gender transformative approach** to EWS can increase the effectiveness of the EWS, while simultaneously using an EWS as an entry point or opportunity to support or showcase gender equality in action.

**Marginalized gender groups championing DRR:** The literature review and examples from this research highlighted the important roles that marginalized gender groups can and do play in DRR and EWS. Women are more likely than men to prioritize risk reduction, and marginalized groups are eager to learn and participate. Yet respondents in both countries noted social, cultural, and political barriers to women taking decisions, holding positions of authority, or having their voices heard in decision-making. There was limited representation of women or gender minorities in technical roles, or at senior levels of the EWS (or wider governance). Marginalized gender groups are an under-valued resource, capable of improving EWS, DRR, and resilience. This under-used potential can be harnessed through a gender transformative approach to EWS, acknowledging gender as an integral facet of our households, communities, and institutions, and taking proactive steps to reform the way EWS work, to achieve gender equality and to build EWS that are effective for all.



**Photo 12** Women and marginalized gender groups have a key role to play as champions of DRR in their communities

# Overall findings



## Vulnerability

- Gender inequality, gender norms, and social marginalization increases vulnerability to disasters
- The less economic, political and cultural power women and gender minorities have before an event, the greater their suffering during and in the aftermath
- Efforts to consider gender need to be intersectional – lack of political rights, low social capital, ethnicity, age, health, disability, gender, gender identity and sexuality influence individual and group experiences of vulnerability and capacity to respond to early warning



## Participation

- Marginalized gender groups participate less in EWS initiatives due to the demands of domestic roles, lack of autonomy, social isolation and persecution, gendered assumptions, and perceptions that their contributions are not relevant or welcome
- Proactive efforts are needed to include the needs, priorities and capabilities of marginalized gender groups, and magnify their voices at every stage of the EWS
- Inclusion may require transforming the systems, processes and ways of working that have led to exclusion



## Dissemination

- Gender inequality in education, literacy, economic and social capital, and access to technology impacts on capacity to receive and act upon early warning
- People of different genders may have different levels of access to formal and informal dissemination channels, have different communication preferences (shaped by gender norms), and face different challenges in accessing and being able to act upon early warning



## Response

- Groups with higher vulnerability have different preferences in preparedness and response, including a preference for earlier evacuation
- Women and men traditionally have distinct roles in response, though changing mobility and migration patterns mean women increasingly need to cover a wider range of roles
- Gendered cultural norms, marginalization, and gender based violence reduce the security of vulnerable groups, exacerbate existing discrimination, and increase the risk of sexual harassment and assault during and after a disaster



## Power and Decision-Making

- Marginalized groups (often including women and gender minorities) lack control over decision-making in disaster situations, with social norms prioritising male leadership
- Participation in EWS initiatives does not equate to influence or power over decision-making, so the gendered needs, priorities and capabilities of marginalised gender groups are rarely identified or prioritized
- When marginalized gender groups are included, they can and do play an important role in fostering a culture of resilience and championing DRR and EWS.
- Representation matters: there is a need for transformational change and empowerment of marginalized gender groups in all elements of EWS

**Figure 10** Summary of key findings from Nepal and Peru

# Recommendations for a gender transformative approach to early warning

The first critical step is **acknowledgement** that gender is a critical consideration, including consideration of the likely impacts of gender norms, gender stereotypes, and cisnormative assumptions, with repercussions that marginalize women and gender minorities and identification of the ways in which gender (and other intersectional vulnerabilities) interacts with any initiative.

Gender **analysis** is another critical component to understanding gender inequality in a given context and the ways in which gender norms, gender roles, and gendered power structures shape the families, communities, and institutions in a given location. At this point it is important to **examine** and question gendered assumptions (including stereotypes and cisnormativity) informing the analysis.

Proactive effort is needed to reach out to, partner with, and **listen** to the voices of marginalized gender groups, with careful consideration of which voices are missing. In this research project we heard from marginalized women including those who are elderly, those with disabilities, single mothers, transgender women, those who are pregnant or with young babies, those with young children, and women with visual impairments. Consideration of other marginalized gender groups is also needed, including other gender minorities (including but not limited to trans men, third gender people, non-binary people) and sexual minorities (e.g. lesbian and bisexual women).

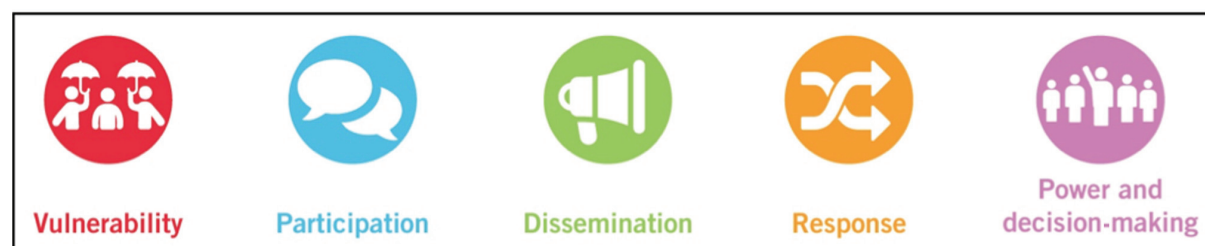
In the context of an EWS, it is important to explicitly consider gendered impacts on **vulnerability, participation, dissemination, response, and power and decision-making** (Figure 11).

Women and gender minorities are not all equally and uniformly vulnerable, and therefore an inclusive and **intersectional** perspective is critical, understanding and considering how multiple intersecting marginalized identities of vulnerabilities can increase vulnerability. For example, a widow living with a disability from a minority ethnic group may have higher vulnerability than an individual facing only one area of marginalization. It is important in an intersectional approach to acknowledge the interaction of gender with other socially excluding factors including disability, socio-economic status, gender identity, marital status, and sexual orientation.

An important achievement is moving to a **gender aware** EWS, where there is explicit consideration and understanding of the specific ways in which gender affects a particular EWS (in a particular context), and any differential impacts of the EWS on different gender groups.

A next step can be moving to a **gender sensitive** approach, with some adaptations to activities to improve the negative impact on marginalized gender groups.

A more ambitious EWS is **gender transformative**, aiming for an improvement over the status quo so that people of all genders benefit from effective early warning. Gender transformative approaches to early warning must respond effectively to the nuances of different gendered experiences, vulnerabilities, and capacities, recognizing that marginalized groups are heterogeneous and consist of diverse populations with varying degrees of power.



**Figure 11** Gendered differential impacts are observed across these five key areas of EWS



# Checklist for gender transformative early warning systems



**Figure 12** A checklist for gender aware, sensitive, and transformative EWS practice

## Annex: a review of the literature

This section provides a summary of key findings from the literature review outlined in the Methodology section.



### Vulnerability

Vulnerability to the impact of disasters is increased by gender inequality, gender norms, and social marginalization. The less economic, political, and cultural power is held by women and gender minorities prior to a disaster, the greater their suffering during and in the aftermath (Pincha, 2008; Gorman Murray et al., 2017; Gaillard et al., 2016b). In areas where gender inequality is high, and women and gender minorities have limited access to physical, financial, human, social, and natural capital (Enarson, 1998), the impact of disaster on women and gender minorities is disproportionately high (Neumayer and Plümer, 2007; Gorman Murray et al., 2017; Wisner et al., 2012; Mehta 2007).

Norms and roles which prevent girls from learning how to swim or climb, or which tend towards women being responsible for assisting children and elderly people, can also increase vulnerability (UNISDR, 2009; Neumayer and Plümer, 2007; Garcia and Zuniga, 2006; Genanet, 2004). This increased vulnerability can have devastating consequences, with Pincha (2008) observing a ‘glaring gender gap in mortality rates of men and women’.

The literature also highlights the need for intersectionality as women and gender minorities are not all equally vulnerable: considerations of the effect of class, caste, race, ethnicity, age, physical ability (Enarson and Meyreles, 2004), political status, gender identity, sexuality (Gorman-Murray et al., 2017), and, in some communities and cultures, marital status (IFRC, 2015) all affect individual and collective experiences of vulnerability in a disaster. As ever, context is the key – social vulnerability to disaster is ‘not uniform or universal whether we problematize gender or ethnicity or age’ (Enarson and Meyreles, 2004).



### Participation

Women and marginalized groups including gender minorities are often excluded from DRR policies, strategies, and decision-making due to unequal power relations, gender norms, and gendered socio-economic inequality (Gorman Murray et al., 2017; Dominey-Howes et al., 2014; Gaillard et al., 2016b; UNISDR, 2009). Gender minorities have been excluded, overlooked, and ‘discriminated against in both the assessment of disaster risk and DRR’ (McSherry, 2015; Dwyer and Woolf, 2018; Gaillard et al., 2017). A review of 11 NGO-led relief programmes in India after the 2004 tsunami found that none considered the circumstance or needs of *Aravanis* (third gender people) (Rumbach and Knight, 2014), and flood relief programmes in Pakistan (Rumbach and Knight, 2014) and Nepal (Knight and Sollom, 2012) were found to discriminate against transgender people.

The gender-specific capacities, vulnerabilities, needs, and concerns of women and men have not been adequately documented and evaluated (UNISDR, 2009). Good practice examples explicitly and proactively engage and include marginalized groups in DRR (McSherry et al., 2015). Building gender-sensitive early warning systems requires mainstreaming gender into early warning governance and institutional arrangements as a cross-cutting issue (UNISDR, 2009).

Few existing DRR policies are gender-sensitive. Programmes are often designed for cisgender men and women without explicitly considering the needs of trans men and women and often exclude non-binary and third gender people (IASC, 2016). Akerkar and Fordham (2017) recommend that analyses ‘must include a gender and diversity analysis’ noting the relevance of ‘gender differentiated strategies, policies and programmes in disaster response and risk reduction’. It is important to adopt proactive strategies to include women and gender minorities at every stage of the EWS, for example holding training courses at appropriate times to fit around work and home commitments (Twigg, 2015) and providing immediate childcare to enable women to lead during emergency response (World Bank report ‘Mainstreaming Gender into Disaster Recovery and Reconstruction’ [2007], cited in UNISDR, 2009).

It is important pay special attention to the voices and stories of populations which are marginalized, hidden, and vulnerable (Gaillard et al., 2016b; Ramalingam and Sanderson, 2015) to understand the specific needs, priorities, and perspectives of these groups, to ensure that the EWS is effective for them and that ‘no one is left behind.’ At the same time, when working with communities, there is an ethical imperative to uphold the rights of all members of that community: ‘Every individual has the right to information about climate related hazards. Indeed, access to information is not simply a liberty right but a welfare right. Early warning is necessary for the enjoyment of basic human rights including the right to life’ (UNEP, 2015).

A key challenge in realizing this aim is that vulnerable groups deemed ‘different to others in society’ (Sanderson et al., 2012) may not want to be found – research in urban Colombia found that the priority of marginalized groups there is to remain passive and invisible (Jakobsen, 2011).



### Dissemination

Early warning messages are less likely to reach women (Enarson, 2004) and other marginalized groups, directly impacting their chance of survival (UNEP 1997 in GCRSP, 2017). Any selected dissemination channel must be reviewed with a gender lens. In many cases, women do not receive hazard warnings because their behaviour patterns or information preferences are not taken into account, or because they are not targeted directly due to assumptions of equal access to public space (Genanet, 2004). Gender inequality in education and literacy affects women’s and gender minorities’ capacity to reduce risk or respond to early warning (UNISDR, 2009). Women’s limited access to information and knowledge ‘inevitably increases their disaster vulnerability and risk, and that of their families’ (UNISDR, 2009). GDN (2009) highlight that women’s access to information is obstructed by a lack of access to technology, with a digital divide in access to and control over communication technology.



### Response

It is important to recognize the role that overlooked groups including women and gender minorities can and do play in ‘fostering a culture of resilience’ (UNISDR, 2009). Research in developed countries, where gender inequality is less pronounced, shows women are more likely to receive and act upon warnings, and more likely to be active during emergent community disasters (Fordham, 2001 in UNISDR, 2009). The literature also highlights the under-valued capacities that women and gender minorities can bring, ‘their resources, skills, capacities, assets, experiences, and hard-won knowledge about how to make life safer and live with risk’ (Enarson and Meyreles, 2004). While gendered roles may increase people’s vulnerability to disasters, they may also have valuable, but different knowledge,

skills, experience, and coping methods. Once known, these can be incorporated into DRR methods (Kratzer and le Masson, 2016).

Community-driven DRR initiatives take place in locations where some groups are weaker than others, or in some cases deliberately marginalized (Twigg, 2015). Active participation of marginalized individuals can support transformative empowerment with vulnerable groups reclaiming space for political engagement by 'defining their own (DRR) needs and determining potential solutions' (Gaillard et al., 2016a). Twigg (2015) recommends using 'separate or safe spaces where (marginalized individuals or groups) are more confident to speak out'.

## References

- ActionAid (2014) *Making Disaster Risk Management Inclusive* [pdf] <[http://www.actionaid.org/sites/files/actionaid/actionaid\\_inclusion\\_paper\\_final\\_170614\\_low.pdf](http://www.actionaid.org/sites/files/actionaid/actionaid_inclusion_paper_final_170614_low.pdf)> [accessed 25 September 2018].
- Akerkar, S. and Fordham, M. (2017) 'Gender, place and mental health recovery in disasters: addressing issues of equality and difference', *International Journal of Disaster Risk Reduction* 23: 218–30 <<https://doi.org/10.1016/j.ijdr.2017.03.014>>.
- Antonio, A. and Tuffley, D. (2014) 'The gender digital divide in developing countries', *Future Internet* 6: 673–87 <<http://dx.doi.org/10.3390/fi6040673>>.
- Asian Development Bank (ADB) (2010) *Overview of Gender Equality and Social Inclusion in Nepal*, Mandaluyong City, Philippines: ADB.
- Bhadra, C. and Shah, M.T. (2007) *Nepal: Country Gender Profile* [pdf] <[https://www.jica.go.jp/english/our\\_work/thematic\\_issues/gender/background/pdf/e07nep.pdf](https://www.jica.go.jp/english/our_work/thematic_issues/gender/background/pdf/e07nep.pdf)> [last accessed January 2018].
- Dominey-Howes, D., Gorman-Murray, A. and McKinnon, S. (2014) 'Queering disasters: on the need to account for LGBTI experiences in natural disaster contexts', *Gender, Place & Culture: A Journal of Feminist Geography* 21(7): 905–18 <<http://dx.doi.org/10.1080/0966369X.2013.802673>>.
- Dwyer, E. and Woolf, L. (2018) *Down by the River: Addressing the Rights, Needs and Strengths of Fijian Sexual and Gender Minorities in Disaster Risk Reduction and Humanitarian Response* [pdf], Oxfam Australia <[https://www.edgeeffect.org/wp-content/uploads/2018/02/Down-By-The-River\\_Web.pdf](https://www.edgeeffect.org/wp-content/uploads/2018/02/Down-By-The-River_Web.pdf)> [last accessed January 2018].
- Enarson, E. (1998) 'Through women's eyes: a gendered research agenda for disaster social science', *Disasters* 22(2): 157–73 <<https://doi.org/10.1111/1467-7717.00083>>.
- Enarson, E. and Meyreles, L. (2004) 'International perspectives on gender and disaster: differences and possibilities', *International Journal of Sociology & Social Policy* 24(10): 49–93 <<http://dx.doi.org/10.1108/01443330410791064>>.
- Fordham, M. (2001) *Challenging Boundaries: A Gender Perspective on Early Warning in Disaster and Environment Management*, United Nations International Strategy for Disaster Reduction (ISDR) <<https://www.unisdr.org/we/inform/publications/8264>> [last accessed January 2018].
- Gaillard, J.C., Fordham, M. and Sanz, K. (2016a) 'Culture, gender and disaster: from vulnerability to capacities', in F. Krüger, G. Bankoff, T. Cannon, B. Orłowski, and E.L.F. Schipper (eds), *Cultures and Disasters: Understanding Cultural Framings in Disaster Risk Reduction*, Abingdon, UK and New York, NY: Routledge.
- Gaillard, J.C., Sanz, K., Balgos, B., Dalisay, S., Gorman-Murray, A., Smith, F. and Toelupe, V. (2016b) 'Beyond men and women: a critical perspective on gender and disaster', *Disasters* 41(3): 429–47 <<http://dx.doi.org/10.1111/disa.12209>>.
- Gaillard, J.C., Gorman-Murray, A. and Fordham, M. (2017) 'Sexual and gender minorities in disaster', *Gender, Place & Culture* 24(1): 18–26 <<https://doi.org/10.1080/0966369X.2016.1263438>>.
- Garcia, C. and Reyes Zuniga, L. (2006) *Desastres naturales y vulnerabilidad de las mujeres en Mexico*, Mexico: Instituto Nacional de las Mujeres, PNUD.
- Gender and Disaster Network (GDN) (2009) *Women, Gender and Disaster Risk Communication* [pdf] <[https://www.gdnonline.org/resources/GDN\\_GenderNote5\\_RiskCommunication.pdf](https://www.gdnonline.org/resources/GDN_GenderNote5_RiskCommunication.pdf)> [accessed 23 October 2018].
- Gender Environment Sustainability (Genanet) (2004) 'Mainstreaming gender into the climate change regime', *Tenth Session of Conference of Parties (COP 10), Buenos Aires, 14 December 2004* <[http://www.wecf.eu/cms/download/2004-2005/Gender\\_climhange\\_COP10.pdf](http://www.wecf.eu/cms/download/2004-2005/Gender_climhange_COP10.pdf)> [accessed 3 July 2018].
- Gender Minorities Aotearoa (2017) *Glossary of Gender Related Terms and How to Use Them* [pdf], 3rd edn, Wellington: Gender Minorities Aotearoa <<https://genderminoritiesaotearoa.files.wordpress.com/2016/06/gender-minorities-aotearoa-glossary-gender-minority-words-and-how-to-use-them.pdf>> [last accessed September 2018].
- Gender Spectrum (no date) *Understanding gender* [online] <<https://www.genderspectrum.org/quick-links/understanding-gender/>> [accessed 24 September 2018].
- Global Crisis Response Support Programme (GCRSP) (2017) *Good Practices for Gender in Early Warning Systems* [pdf] <<https://gcrsp.eu/assets/uploads/Good%20Practices%20in%20EWS.pdf>> [last accessed January 2018].



- Global Facility for Disaster Reduction and Recovery (GFDRR) (2010) *Disaster Risk Management in Latin America and the Caribbean Region: GFDRR Country Notes – Peru* [pdf], Washington, DC: GFDRR <<https://www.gfdr.org/sites/default/files/publication/drm-country-note-2010-peru.pdf>>.
- Gorman-Murray, A., McKinnon, S., Dominey-Howes, D., Nash, C.J. and Bolton, R. (2017) 'Listening and learning: giving voice to trans experiences of disasters', *Gender, Place & Culture* 25(2): 166–87 <<https://doi.org/10.1080/0966369X.2017.1334632>>.
- Governance and Social Development Resource Centre (GSDRC) (2012) *Helpdesk Research Report: Economic Empowerment and Violence against Women and Girls* [pdf] <<http://gsdrc.org/docs/open/hdq790.pdf>> [last accessed January 2018].
- Inter-Agency Standing Committee (IASC) (2016) *Gender Handbook Review* [pdf] <[https://interagency-standingcommittee.org/system/files/final\\_report\\_from\\_handbook\\_consultations\\_april\\_2016\\_\\_0.pdf](https://interagency-standingcommittee.org/system/files/final_report_from_handbook_consultations_april_2016__0.pdf)> [accessed 21 November 2017].
- International Federation of Red Cross and Red Crescent Societies (IFRC) (2015) *Unseen, Unheard: Gender-Based Violence in Disasters: Global Study* [pdf], Geneva: IFRC <[https://www.ifrc.org/Global/Documents/Secretariat/201511/1297700\\_GBV\\_in\\_Disasters\\_EN\\_LR2.pdf](https://www.ifrc.org/Global/Documents/Secretariat/201511/1297700_GBV_in_Disasters_EN_LR2.pdf)> [last accessed July 2018].
- IFRC (2017) *Six Months Update: Peru: Floods* [pdf] <<https://reliefweb.int/sites/reliefweb.int/files/resources/MDRPE0126m.pdf>> [last accessed July 2018].
- Ipsos MORI (2018) 'International Women's Day: Global misperceptions of equality and the need to Press for Progress' [online] <<https://www.ipsos.com/ipsos-mori/en-uk/international-womens-day-global-misperceptions-equality-and-need-press-progress>> [accessed 27 June 2018].
- Jakobsen, S. (2011) 'How to behave: advice from IDPs', *Forced Migration Review* 37: 23–4.
- Kafle, S.K. (2017) 'Disaster early warning systems in Nepal: institutional and operational frameworks', *Journal of Geography and Disasters* 7(2): 196–207 <<http://dx.doi.org/10.4172/2167-0587.1000196>>.
- Knight, K. and Sollom, R. (2012) 'Making disaster risk reduction and relief programmes LGBTI inclusive: examples from Nepal', *Humanitarian Exchange* 55(September): 36–9 <<https://odihpn.org/magazine/making-disaster-risk-reduction-and-relief-programmes-lgbti-inclusive-examples-from-nepal/>>.
- Kratzer, S. and Le Masson, V. (2016) *10 Things to Know, Gender Equality and Achieving Climate Goals*, Climate and Development Knowledge Network (CDKN) [pdf] <[https://cdkn.org/wp-content/uploads/2016/05/10-things-to-know\\_Gender-equality-and-achieving-climate-goals\\_WEBfinal.pdf](https://cdkn.org/wp-content/uploads/2016/05/10-things-to-know_Gender-equality-and-achieving-climate-goals_WEBfinal.pdf)> [accessed 3 July 2018].
- McSherry, A., Manalastas, E., Gaillard, J. and Dalisay, S. (2015) 'From deviant to Bakla, strong to stronger: mainstreaming sexual and gender minorities into disaster risk reduction in the Philippines', *Forum for Development Studies* 42(1): 27–40 <<http://dx.doi.org/10.1080/08039410.2014.952330>>.
- Mehta, M. (2007) *Gender Matters: Lessons for Disaster Risk Reduction in South Asia* [online], AGRIS, FAO <<http://agris.fao.org/agris-search/search.do?recordID=QZ2013000067>> [last accessed July 2018].
- Nepal Climate Vulnerability Study Team (NCVST) (2009) *Vulnerability through the Eyes of Vulnerable: Climate Change Induced Uncertainties and Nepal's Development Predicaments*, Kathmandu: Nepal Climate Vulnerability Study Team, ISET-International.
- Neumayer, E. and Plümpner, T. (2007) 'The gendered nature of natural disasters: the impact of catastrophic events on the gender gap in life expectancy, 1981–2002', *Annals of the American Association of Geographers* 97(3): 551–6 <<http://doi.org/10.1111/j.1467-8306.2007.00563.x>>.
- Pincha, C. (2008) *Indian Ocean Tsunami through The Gender Lens*, Oxfam America and Mumbai: NANBAN Trust.
- Ramalingam, B. and Sanderson, D. (2015) *Nepal Earthquake Response: Lessons for Operational Agencies* [pdf], London: ALNAP/ODI <<https://www.preparecenter.org/sites/default/files/nepal-earthquake-response-lessons-paper.pdf>> [last accessed July 2018].
- Rumbach, J. and Knight, K. (2014) 'Sexual and gender minorities in humanitarian emergencies', in L. Roeder (ed.), *Issues of Gender and Sexual Orientation in Humanitarian Emergencies*, Switzerland: Springer International Publishing.
- Sanderson, D., Knox Clarke, P. and Campbell, L. (2012) *Responding to Urban Disasters: Learning from Previous Relief and Recovery Operations*, London: ALNAP <<https://www.alnap.org/help-library/responding-to-urban-disasters-learning-from-previous-relief-and-recovery-operations>> [last accessed July 2018].
- Takahashi, K. and Woodman, R. (2014) '¿Por qué no llueve en la costa del Perú (salvo durante el Niño)?' *Generación De Modelos Climáticos Para El Pronóstico De La Ocurrencia Del Fenómeno El Niño* 1(2): 4–7, Instituto Geofísico del Perú.

- Twigg, J. (2015) *Good Practice Review 9: Disaster Risk Reduction* [pdf], ODI – Humanitarian Practice Network <<https://goodpracticereview.org/9/>> [accessed 21 November 2017].
- United Nations Development Programme (UNDP) (2018) *Human Development Indices and Indicators: 2018 Statistical Update* [pdf] <[http://hdr.undp.org/sites/default/files/2018\\_human\\_development\\_statistical\\_update.pdf](http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf)> [last accessed July 2018].
- United Nations Environment Programme (UNEP) (2015) *Early Warning as a Human Right: Building Resilience to Climate Related Hazards* [pdf] <[https://wedocs.unep.org/bitstream/handle/20.500.11822/7429/Early\\_Warning\\_as\\_a\\_Human\\_Right\\_1.pdf?sequence=5&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/7429/Early_Warning_as_a_Human_Right_1.pdf?sequence=5&isAllowed=y)> [last accessed June 2018].
- UNICEF (2012) 'Secondary education' [online] <<https://data.unicef.org/topic/education/secondary-education/>> [accessed 10 September 2018].
- United Nations Office for Disaster Risk Reduction (UNISDR) (2006) *Developing Early Warning Systems: A Checklist* [pdf] <<http://www.unisdr.org/2006/ppew/info-resources/ewc3/checklist/English.pdf>>.
- UNISDR (2009) *Making Disaster Risk Reduction Gender-Sensitive: Policy and Practical Guidelines*, Geneva: UNISDR [last accessed June 2018].
- Wisner, B., Gaillard, J.C. and Kelman, I. (2012) *Handbook of Hazards and Disaster Risk Reduction and Management*, Abingdon, UK and New York, NY: Routledge.
- World Economic Forum (2017) *The Global Gender Gap Report 2017* [pdf] <<https://www.weforum.org/reports/the-global-gender-gap-report-2017>> [last accessed July 2018].
- World Health Organization (WHO) (2012) *Violence against Women in Latin America and the Caribbean: A Comparative Analysis of Population-Based Data from 12 Countries*, Geneva: WHO.



## About the Zurich Flood Resilience Alliance

The Zurich Flood Resilience Alliance is a cross-sector collaboration which focuses on building community flood resilience in both developed and developing countries. We help people measure their resilience to floods and identify appropriate solutions before disaster strikes. Our vision is that floods should have no negative impact on people's ability to thrive. To achieve this we are working to increase funding for flood resilience; strengthen global, national and subnational policies; and improve flood resilience practice. Find out more: [www.floodresilience.net](http://www.floodresilience.net)

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Contact Sarah Brown for information  
[sarah.brown@practicalaction.org.uk](mailto:sarah.brown@practicalaction.org.uk)



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Practical Action, 25 Albert Street, Rugby  
Warwickshire, CV21 2SG, UK

[www.practicalaction.org](http://www.practicalaction.org)  
+44 (0) 1926 634400

