

Women as Agents of Resilience: Roles in Community-Based Flood Risk Reduction in the Apayao-Abulug River Basin, Philippines

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ABSTRACT:

This study examined the roles of women as agents of resilience in community-based flood risk management (CBFRM) by re-analyzing the CBFRMP-AARB. A qualitative secondary analysis was done which indicated that women shouldered a lot of responsibilities in different ways: they were the first responders within households personally, they organized these activities both in terms of caregiving and relief at the community level, they got environmental stewardship involved, they made livelihood establishment possible through their involvement, and brought in their own indigenous knowledge set. However, women's involvement was limited due to socio-political factors that created systemic barriers. Such barriers included the low number of women in local disaster risk reduction and management (DRRM) councils, deep-rooted cultural norms, restricted training opportunities, and the weak localization of national gender-responsive policies. The analysis highlights the double vulnerability of women, who are disaster survivors and, at the same time, discharging the role of caregivers. Notwithstanding, there are opportunities to promote inclusion through the institution of women's representation at the decision-making level, capacity-building, supporting women's groups, and localizing national mandates such as RA 10121 and RA 9729 into municipal ordinances. Working this local aspect into the international commitments, particularly the Sendai Framework, and SDG 5 of the Sustainable Development Goals can provide a better way to gender-responsive governance. This puts women no longer as passive victims but as actors that can change the course of events and thus need to be implemented in disaster governance for better and long-lasting flood risk reduction programs..

Keywords: Women, Community-Based Flood Risk Management, Disaster Governance, Gender and Resilience, Apayao-Abulug River Basin.

INTRODUCTION

Flooding is one of the most frequent and most destructive natural hazards in the Philippines, as it causes the repetition of the destruction of human lives, property, and means of living. The country's situation along the Pacific Ring of Fire and the typhoon belt that it is part of, makes it highly exposed to very powerful tropical cyclones, heavy monsoon rains, and sea level rise, which consequently leads to floods being its recurring threat (Bankoff, 2003; Cinco et al., 2016). It is these rural river basins e.g. the Apayao-Abulug River Basin (AARB) that alone would be greatly threatened because of the mixture of hydrological characteristics, the process of deforestation and the socio-economic dependence of the local people on agriculture and fisheries. These weaknesses in turn are deepened by a vicious circle of poverty, which goes hand in hand with the deficiency of infrastructure and the limited access of the poor to adequate resources for reducing risks.

The dangers that accompany these risks have made the Philippine government to enact, through the legislative and policy measures, the institutionalization of disaster preparedness and climate resilience as a priority concern. The Philippine Disaster Risk Reduction and Management Act of 2010 (RA 10121) laid down a universal framework for disaster governance, while the Climate Change Act of 2009 (RA 9729) took the lead in climate mitigation and resilience. The two acts feature the role of community-based and gender-sensitive modalities of risk reduction. In line with the present times, the Philippine Development Plan (PDP) 2023–2028 had also expressed that the careful planning of inclusive resilience that, particularly, women and other oppressed groups, being the most affected by disaster situations and climate change, empower, and that, thereby, would become the key players in the attainment of sustainable development, would be the pillar that the latter finds support on (NEDA, 2023).

On a global scale, the Sendai Framework for Disaster Risk Reduction 2015–2030

acknowledges gender equality and women's leadership as promising success factors in effective resilience strategies (UNDRR, 2020). Several studies reported from widely differing areas highlight that women, besides being the victims of disasters are, in addition, supporters and promoters of the preparedness, response, recovery, and adaptation activities (Enarson, 2012; Ariyabandu, 2021). For instance, in South Asia, women have been instrumental in the development of community-based flood management through activities such as caregiving, environmental stewardship, and the transmission of indigenous knowledge (Ariyabandu & Wickramasinghe, 2003). In the same vein, in Vietnam, the association of women's leadership in household preparedness has been the main factor contributing directly to the better resilience (Nguyen et al., 2022).

In these terms in the Philippine situation, the valuable input of women is however totally underrated in the formal decision-making processes. Disaster risk reduction and management (DRRM) councils at the barangay and municipal levels are often composed of people who do not include women in their number and as a consequence, the integration of women's views into official plans is very limited (Israel & Briones, 2014). Moreover, cultural norms usually depict women as caregivers rather than leaders, hence, their roles are still largely confined to the informal and supportive spaces (Alam & Rahman, 2021). There is thus a persistent disconnect between policy and implementation that inclusivity is stressed in national and global frameworks but local implementation is frequently inadequate.

This study deals with assessing the input of women in community-based flood risk management (CBFRM) in the Apayao-Abulug River Basin. It really goes into depth about women's participation in the areas of safety, environmental protection, and recovery besides an investigation of the structural barriers and opportunities that decide their engagement. By way of the redefinition of women as sources of

power rather than beneficiaries of support, the inquiry seeks to expand the gender and disaster management discourse area-wide and to offer an idea to policies that promote the alignment between local and national and international commitments.

METHODS

Research Design

Study Area

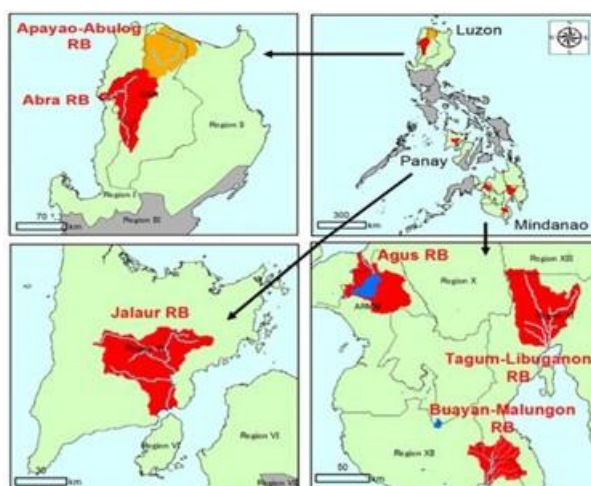


Figure 1. Location map of the AARB and the six (6) river basin.

The Apayao-Abulug River Basin (AARB) covers seven municipalities in Apayao and four in Cagayan, with an area of roughly 3,372 km² (see Figure 1). Among the causes of the flood are the basin's hydrological features, deforestation at the source, and widespread farming downstream. The local people mostly engage in farming, fishery, and petty trade; therefore, they are highly susceptible to floods and other related disturbances (CSU, 2019).

Data Source

The CBFRRMP-AARB was supported by the Asian Development Bank on the technical side, while Cagayan State University was the partner in the civil society organization (CSO). The CSU (2019) is a consolidation of the findings from community workshops, focus group discussions

Qualitative secondary analysis was conducted on the Community-Based Flood Risk Management Project in the Apayao-Abulug River Basin (CBFRMP-AARB) (CSU 2019) as a primary data source that mainly documented the activities of participation implemented in the basin's municipalities. The research is open-ended, women's inputs, problems, and prospects in community-based flood risk management (CBFRM) as theme were explored and then, synthesized.

(FGDs), stakeholder mapping, and environmental surveys.

Participants and Data Collection

The original project was the engagement of stakeholders from 11 municipalities, i.e., women, indigenous peoples, local officials, and barangay DRRM committees. At least one FGD was conducted in each municipality, with 10 to 15 participants per group, representing women from farming, fishing, and indigenous households. Besides, workshops also included problem-tree and objective-tree analyses to identify risks, coping strategies, and resilience practices.

Data Analysis

For re-analyzing the Final Report with a thematic focus, the report was first reviewed. The project objectives (preparedness, environmental protection, recovery, leadership, and barriers)

provided the deductive basis for codes while participant narratives offered the inductive basis. The themes were initially drafted through the process of triangulation and cross-checking with tables and case stories in the report. My emphasis in this analysis is on women's agency, constraints, and potential policy entry points.

Ethical Issues

Even though it is a secondary research, ethical guidelines were also adhered to. Application of CBFMP-AARB ensured there was informed consent from the study participants. For secondary analysis, data were anonymous with no personal information. There was gender-sensitive and culturally appropriate research-based re-analysis.

Limitations

This study has the drawback of relying considerably on secondary data, thus narrowing the area of possible instant verification of participants. Results are also very context-specific with the AARB in view and as such, the results cannot automatically and directly apply to all other flood-risk locations in the Philippines. Nevertheless, the highly participatory processes employed in the CBFMP offer a stable reference point from which women's contributions to community-based flood risk management can be determined.

RESULT AND DISCUSSION

Interpretation of the CBFMP-AARB CSU (2019) has led to three major outcomes: (1) women's differential contributions towards resilience, (2) their limitations to engage, and (3) challenges in making gender-responsive community-based flood risk management (CBFRM).

Women's Contributions in CBFRM

Women in the 11 municipalities of the Apayao-Abulug River Basin (AARB) did several

interconnected works which were the main source of the resilience in three spheres: household, community, and ecology. At the household level, women were the first responders of the community—through the organization of the food supplies, ensuring the security of the children and the elderly, and coordinating evacuation in floods. In eight of the 11 municipalities, women's involvement in evacuation centers' health and hygiene maintenance was highly reported, and thus a role that helped in the absence of disease outbreaks was that of women. At the community level, women were the main actors in evacuation and relief distribution, preparation of communal meals, and logistics. However, the organizations of the present activities were women's display of their organizing skills, even though they were usually presented as the natural extension of their household works, in the crisis situations. While in environmental protection, women actively took part in tree planting, mangrove rehabilitation, waste segregation, and clean-up drives. At least in six municipalities, women's ecological initiatives directly linked to flood risk reduction measures. For livelihood recovery, women started the process of reversing the downturn of household incomes caused by flood through food processing, small trade, and handicrafts. They also offered psychosocial support to affected families, particularly in the downstream areas such as Abulug and Ballesteros where the flood damage was the most severe. Eventually, women contributed in knowledge sharing and leadership. Women's groups in rural areas became instrumental in the improvement of communities as they organized sessions on social issues and distributed political information. They passed on traditional coping methods like water conservation and food preservation, whereas women's groups and cooperatives were community mobilization platforms in an informal way.

Table 1. Women's Contributions in Community-Based Flood Risk Management (CBFRM)

Role Category	Specific Contributions	Evidence/Examples (CBFRMP CSU, 2019)
Household preparedness	Safeguarding vulnerable family members; preparing food; organizing evacuation	8 of 11 municipalities cited women as primary household responders
Community response	Relief distribution; food preparation; health and hygiene maintenance in shelters	Women mobilized during barangay-level relief
Environmental protection	Tree planting; mangrove rehabilitation; waste segregation; clean-up drives	Women recognized as “actors of change” in community initiatives
Livelihood recovery	Food processing; handicrafts; small trading; psychosocial support	Women restored income and cohesion post-flood
Knowledge sharing	Passing on indigenous practices; hazard education	Documented in stakeholder workshops
Informal leadership	Mobilizing women's groups, cooperatives, religious organizations	Women influenced resilience outside formal DRRM councils

These contributions highlight women as indispensable actors in resilience, echoing Nguyen et al. (2022), who found similar caregiving-to-leadership roles in rural Vietnam.

Barriers to Women's Participation

While women made substantial contributions, their participation was still significantly limited by the presence of systemic barriers. Women's participation in community-based flood and resource management is still hindered by various systemic barriers. In all the municipalities, women accounted for less than 20% of the members of disaster risk reduction and management (DRRM) councils. They were less powerful in the planning and decision-making processes. The prevailing social and gender norms also reinforced this exclusion by confining women to the roles of care providers and by

preventing their desire for leadership. Additionally, women were reported by the focus group discussions to rarely access skills training in risk mapping and evacuation planning as they usually have domestic tasks that limit their participation. There are national mandates under RA 10121 and RA 9729 that require gender-responsive DRRM; however, no ordinances have been enacted in the AARB municipalities that would institutionalize women's participation, thus there is still a policy-practice gap. As a result, women were in a double vulnerable position, not only were they the ones who suffered the most from disasters but they were also given the additional responsibility of caregiving which led to their being overstressed and at the same time their engagement in governance and resilience-building was further limited.

Table 2. Barriers to Women's Participation in CBFRRM

Barrier	Description	Implication for Resilience
Underrepresentation in DRRM	Women <20% of council members	Women's perspectives excluded from planning
Gender role expectations	Caregiving framed as women's sole contribution	Reinforces stereotypes; limits leadership space
Limited training opportunities	Domestic roles restricted women's participation in technical training	Weak technical confidence and limited DRRM engagement
Policy-practice gap	Gender mandates not localized into ordinances	Missed opportunity to institutionalize inclusivity
Double vulnerability	Women face exposure + caregiving burdens	Increased stress; reduced leadership capacity

These findings mirror South Asian experiences where women's DRRM contributions remain informal and undervalued (Ariyabandu, 2021; Alam & Rahman, 2021).

Opportunities for Strengthening Women's Roles

The research has unraveled several new ways through which community-based flood management could be made more inclusive. First, women's representation could be institutionalized through the setting up of a women's seat in the municipal DRRM councils so that their ideas are channelled formally into planning and decision-making processes. Also, apart from this, women could be trained in technical as well as leadership skills through specially designed capacity-building programs which will be continuous in nature and are not limited to the care-giving roles. Moreover, the

existing groups of women, e.g., the cooperatives and the religious groups, need to be recognized as socially entrenched platforms of resilience-building, which would put them in a network that can be easily accessed and mobilized. At the level of policy-making, gender-responsive municipal codes, which are derived from national policies, would bring about the change that bridges the gap between laws and actual practice as they would take inclusivity off the pages of legislation and onto the ground in an operational platform. Besides, subnational plans that are in line with international ones such as the Sendai Framework for Disaster Risk Reduction and Sustainable Development Goal 5 would not only do more to enhance CBOS but also serve as a testament of the Philippines' renewed commitment to gender equity and disaster management at the international level.

Table 3. Opportunities for Strengthening Women's Roles

Opportunity	Strategy/Action	Policy/Framework Alignment
Institutionalized representation	Seats/quotas for women in DRRM councils	RA 10121; Local Government Code
Capacity-building	Training on early warning, hazard mapping, evacuation, leadership	PDP 2023–2028; Sendai Framework

Opportunity	Strategy/Action	Policy/Framework Alignment
Leveraging women's groups	Mobilize cooperatives, religious, civic associations for CBFRM	Gender and Development Budget
Localizing national mandates	Translate RA 10121/9729 into ordinances; integrate sex-disaggregated data	RA 9729; CEDAW; SDG 5
Global alignment	Integrate Sendai priorities in municipal DRRM plans	UNDRR Sendai Framework (2015–2030)

Discussion

The findings emphasize the indispensability of women in CBFRM, but their agency is still bounded by norms of culture and institutional voids. By positing women as actors of resilience instead of victims, this research confirms international results on gender and disaster management. At the household level, women acted as *de facto* first responders, recorded in rural Vietnam where care provision directly improved resilience (Nguyen et al., 2022). At the community level, women's engagement in relief delivery and eco-related actions confirms South Asian research placing women as ecological guardians (Ariyabandu, 2021). These results support UNDRR's (2020) observation on gender-responsive DRRM as a core aspect of resilience. The impediments present in the AARB—underrepresentation, gender norms, training voids, and poor policy implementation—repeat patterns found in Bangladesh and Nepal, where women's roles are common knowledge but institutionalized seldom (Alam & Rahman, 2021). This disconnect between nation policies (RA 10121, RA 9729) and municipal implementation reflects a persistent governance void. Opportunities found in this research present actionable avenues to reduce these voids. Institutionalizing women's representation guarantees their voices inform planning, while selective capacity-building changes women from informal facilitators to legitimate leaders. By using existing women's groups, one can create culture-based forums that are aimed at taking

action in the field of resilience. Interestingly, city regulations that turn national policies into practice deliver localization as a tool to overcome the policy-practice gap. Gender-responsive CBFRM (community-based fire risk management) leads the way globally to align with the Sendai Framework and the Sustainable Development Goals (SDGs) that both empower women and build resilience. The Airtel Africa Renewable Business (AARB) case, in highlighting women as the champions of resilient cities, acts as an example of how localised approaches can complement international commitments and still manage to overcome community vulnerabilities.

CONCLUSION

This paper leaves no room for doubt that the women from the Apayao-Abulug River Basin are actually the driving force behind the community-based management of flood risk, their contributions being not only the areas of preparedness, response, and recovery but also environmental protection. Yet, these contributions remain undervalued, and there is also under-representation of them through the formal governance due to the continuation of the mentioned cultural norms, institutional voids, and the non-existence of localized policies. The study, after being able to clearly identify the structural constraints and potential entry points for change, is now promoting that gender-sensitive CBFRM is not only a matter of rights but also an astute choice when it comes to communities overcoming challenges with full force.

RECOMMENDATION

As part of the flood risk reduction measures, local governments should empower women to increase their participation. They are required to institutionalize gender-inclusive representation in DRRM councils, encourage targeted capacity-building activities, and utilize the organizational traits of women's groups as one of the sources for the response. The whole converting process, starting from gender and disaster risk reduction

policies at the national level and going through local ordinances that can be implemented, is the best method to ensure that inclusivity is a practice and not only a mention in the documents. Besides, it would be simpler to demonstrate the country's compliance with disaster and gender issues when municipal strategies are aligned with global frameworks such as the Sendai Framework and SDGs. Such a step will enhance these levels of disaster governance.

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