

Gender, Women and Community Environmental Education for Sustainable Development: Evidence from Rural Madagascar

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ABSTRACT

Objective : This article examines the links between gender, community-based environmental education, and sustainable development through a concrete case study in a rural community in Madagascar. It focuses on the role and participation of women, building on the work of Mukoni (2015), Momsen (2004, 2007), and Dankelman (2002, 2012).

Method : The study is based on qualitative field research conducted with 150 participants across ten rural localities in Madagascar. Data were collected through 120 semi-structured interviews with rural women, ten focus group discussions, and field observations. The analysis draws on the theoretical framework of feminist political ecology and the Gender and Development (GAD) approach.

Results : The findings show that, in line with observations by Kraub (2011) and UNEP (2008), women play a central role in the daily management of natural resources and food security, yet remain marginalized in formal community-based environmental education initiatives. However, when women are genuinely included, environmental education strengthens their adaptive capacities in the face of environmental change (Sen, cited in Elliot, 2007), enhances the recognition of women's local knowledge, and improves community practices for the sustainable management of natural resources.

Conclusion : The article concludes that sustainable development in rural Malagasy communities cannot be achieved without meaningful consideration of gender and the active participation of women in community-based environmental education. In line with Agenda 21 (UNEP, 1992) and UNESCO guidelines (2004), it recommends the implementation of gender-sensitive programs aimed at reducing inequalities in access to information, resources, and decision-making.

Context

In Madagascar, environmental and sustainable development issues are closely linked to the living conditions of rural populations, where women play a central role in the day-to-day management of natural resources. In many regions of the country—particularly in Antananarivo (rural peri-urban areas), Antsirabe, Ambositra, Fianarantsoa, Morondava, Mahajanga, Toamasina, Manakara, Ambovombe, and Fort Dauphin (Taolagnaro)—women are directly involved in agricultural activities, water supply, the use of fuelwood, and household food security (Momsen, 2004; Dankelman, 2012).

At the international level, recognition of the link between women and the environment dates back to the 1985 World Conference in Nairobi, organized to assess the United Nations Decade for Women. This connection was

reaffirmed by Principle 20 of the Rio Declaration on Environment and Development, which highlights the essential role of women in environmental management (UNEP, 1992b). However, many studies show that this role remains underestimated and insufficiently reflected in environmental policies and programs (Mamphele, 2004; Momsen, 2004).

In Madagascar, this marginalization is evident in the limited integration of women into formal environmental management systems and community-based environmental education, despite their strong dependence on natural resources. Their interests, needs, and local knowledge are rarely incorporated in a systematic way into development strategies and climate change adaptation efforts, echoing findings widely reported in the international literature (Khaledi et al., 2012; Dankelman, 2012; Mwangi et al., 2011).

Moreover, many environmental initiatives aimed at mitigating the effects of climate change—such as reforestation projects, soil conservation, or water management—remain weakly gender-sensitive. As noted by Kasama (2008) and Misiaszek (2011), technological tools and climate adaptation strategies often overlook gender relations, which limits women's access to information, technologies, and decision-making spaces. This situation increases their vulnerability to environmental risks, particularly in regions affected by chronic drought in southern Madagascar, cyclones along the eastern coast, and deforestation in the Highlands and the western part of the country (UNEP, 2008; Kraub, 2011).

Denying women access to community-based environmental education reduces their ability to develop skills, knowledge, and adaptation strategies in response to environmental change. Yet women make up a large share of the rural workforce and are responsible for most household survival strategies in Madagascar. Their exclusion from environmental education not only undermines their empowerment but also poses a major challenge to achieving sustainable development (Mukoni, 2015; Sen, cited in Elliot, 2007).

It is within this context that this article seeks to analyze, through a concrete case study in rural Malagasy communities, the links between gender, community-based environmental education, and sustainable development. Drawing on feminist political ecology (Rocheleau, 1995; Rocheleau et al., 1996) and the Gender, Environment, and Development (G.E.D.) approach (Dankelman, 2002), the study adopts a definition of development as a process that enables individuals to fully realize their potential (SIDA, 2005). At the same time, in line with Insanally (2003), it recognizes that development without equity remains incomplete and unsustainable. The article thus highlights the need to strengthen women's individual and collective capacities through community-based environmental education in order to address Madagascar's ongoing environmental challenges.

THEORETICAL FRAMEWORK

This study draws on feminist political ecology to analyze the relationships between gender, the environment, and sustainable development in rural Malagasy communities. This approach views gender inequalities as a structuring factor in access to natural resources, knowledge, and decision-making spaces, affecting women and men in different ways (Rocheleau, 1995; Rocheleau et al., 1996). It helps explain why women, despite being heavily involved in the day-to-day management of natural resources, remain marginalized within formal environmental education systems.

The Gender, Environment, and Development (G.E.D.) approach is used as an analytical tool to examine how gender relations shape women's participation in community-based environmental education and their capacity to adapt to environmental change (Dankelman, 2002). In the Malagasy context, this approach highlights disparities in access to information, training, and environmental decision-making at the community level.

Community-Based Environmental Education

Community-based environmental education is understood as the set of educational activities carried out within local communities, outside the formal school system, aimed at strengthening people's knowledge, skills, and engagement in addressing environmental issues (UNESCO, 1978). In rural communities in Madagascar, it represents a key lever for valuing women's local knowledge and promoting sustainable natural resource management practices, particularly in contexts of vulnerability identified in our study sites (Table 1).

METHODOLOGY

Type of Study

This research adopts a qualitative approach based on a multiple case study conducted in rural communities in

Madagascar. This approach makes it possible to highlight the practical relationship between women and the environment, as well as the gender dynamics that structure access to natural resources and community-based environmental education (Dankelman, 2002; Rocheleau, 1995).

Study Sites

The study was carried out in ten rural localities representing the environmental and socio-economic diversity of Madagascar, namely: Antananarivo (rural peri-urban areas), Antsirabe, Ambositra, Fianarantsoa, Morondava, Mahajanga, Toamasina, Manakara, Ambovombe, and Fort Dauphin (Taolagnaro).

These sites were selected because of:

- the strong dependence of rural populations on the environment;
- the active participation of women in agricultural and domestic activities;
- the presence of specific environmental challenges (deforestation, drought, cyclones, food insecurity).

Details of the specific environmental issues and the local actors involved at each site are presented in Table 1.

Table 1. Overview of the study sites, environmental issues, and local actors involved

Region / City	Type of setting	Main environmental issue (local reality)	Local actors involved
Antananarivo – peripheral rural zones	Peri-urban	Soil erosion on slopes, water pollution (domestic waste), land pressure	Local farmers’ associations, water management committees (COGE), local NGOs
Antsirabe	Highlands	Degradation of agricultural soils, water erosion, overexploitation of cultivated land	Agricultural cooperatives, rural women’s associations, communal agricultural services
Ambositra	Rural (Highlands)	Deforestation for fuelwood, slash-and-burn agriculture (<i>tavy</i>), soil depletion	VOI (local community associations), <i>fokonolona</i> , community reforestation associations
Fianarantsoa	Rural (southern Highlands)	Seasonal food insecurity, land pressure, deforestation	Women farmers’ groups, food security NGOs
Morondava	West (dry zone)	Deforestation, bush fires, degradation of dry forests	VOI, community forest management associations, environmental NGOs
Mahajanga	Western coast	Degradation of mangroves, overexploitation of fisheries resources	Fishermen’s associations, women’s groups, mangrove management committees
Toamasina	Humid East Coast	Recurrent cyclones, flooding, degradation of agricultural soils	Humanitarian NGOs, community associations, rural women’s groups
Manakara	South-East Coast	Soil erosion, frequent flooding, agricultural vulnerability to climate hazards	Farmers’ associations, women’s groups, climate resilience projects

Ambovombe	Arid South	Chronic drought (<i>kere</i>), food insecurity, land degradation	Rural women’s associations, food security projects, local NGOs
Fort Dauphin (Taolagnaro)	South-East	Mining and urban pressure, degradation of coastal and forest ecosystems	Community associations, women’s groups, environment–mining projects

Source: Field survey, 2023.

COGE: Water Management Committee; **VOI:** *Vondron’Olona Ifotony* (local community group); **NGO:** Non Governmental Organization.

Population and Participants

The study involved a total sample of 150 participants, selected through purposive sampling in order to ensure that the lived realities of rural Malagasy women were adequately represented.

The distribution of participants was as follows:

- **decision-makers (10 participants):** Local leaders (*Sefo fokontany*) and opinion leaders, consulted to analyze **Rural women (120 participants):** Twelve women per locality (120 in total), including women from all age groups and female heads of household.
- **Community actors and local experts (20 participants):** Community facilitators and technicians involved in water management and agriculture.
- **Local authorities and** gender relations and decision-making processes at the community level.

The choice of this sample size was based on the principle of data saturation: interviews were conducted until the information collected became repetitive and no longer provided new significant insights into the analysis of women’s marginalization in environmental education.

Men and community actors (local leaders, community facilitators) were also consulted in order to better understand gender relations and decision-making processes at the local level, in line with the Gender, Environment, and Development (G.E.D.) approach (Dankelman, 2002).

Data Collection Techniques

To ensure triangulation and the scientific validity of the findings, three main data collection tools were used: • **Semi-structured interviews (120 sessions):** Conducted individually with rural women to explore in depth their gendered knowledge and the specific barriers to their participation.

- **Group discussions (10 focus groups):** One focus group was organized in each of the ten localities

(Antananarivo, Antsirabe, Ambovombe, etc.) to compare perspectives and observe collective dynamics related to sustainable resource management.

- **Field observations:** Direct observation sessions were used to analyze actual daily practices (water collection, use of fuelwood) in order to validate statements collected during interviews.

These tools made it possible to analyze gendered knowledge, environmental rights and responsibilities, as well as women’s participation in community-based environmental education initiatives, in line with the principles of feminist political ecology (Rocheleau et al., 1996).

Analytical Framework

Data analysis is based on feminist political ecology as the theoretical framework and on the Gender,

Environment, and Development (G.E.D.) approach as an analytical tool. This combination makes it possible to examine:

- gender inequalities in access to resources and information;
- forms of women’s marginalization within environmental education programs;
- the role of community-based environmental education in strengthening women’s adaptive capacities and participation in sustainable development (UNESCO, 1978; Mukoni, 2015).

Results: Women and Community-Based Environmental Education

The results are presented according to the three dimensions derived from feminist political ecology, based on data collected in the ten rural communities studied in Madagascar.

Gendered Knowledge

The findings show that women hold practical environmental knowledge related to agriculture, water management, the use of fuelwood, and food security. In the communities studied, this knowledge is mainly acquired through experience and intergenerational transmission, confirming the observations of Jewitt (2002), Howard (2003), and Momsen (2007) regarding the central role of women in traditional environmental knowledge.

However, the data indicate that this knowledge is rarely integrated into formal community-based environmental education programs, echoing the findings of Kraub (2011) and Momsen (2004), who note that the knowledge and strategies developed by women often remain underutilized. This situation undermines the effectiveness of environmental education and increases women’s vulnerability to environmental change, as also highlighted by Mukoni (2013).

Gendered Environmental Rights and Responsibilities

The results reveal that women’s participation in community-based environmental education remains limited, despite their daily involvement in natural resource management. This confirms that access to environmental information and decision-making spaces remains unequal, in line with the analyses of Dankelman (2002) and UNEP (2008).

Field data show, however, that in communities where women actively participate in environmental education initiatives, they develop a better understanding of environmental risks and a stronger capacity for collective action. These findings support the work of Braidotti et al. (1994) and Agarwal (1997), which recognize women as key actors in sustainable development and environmental management.

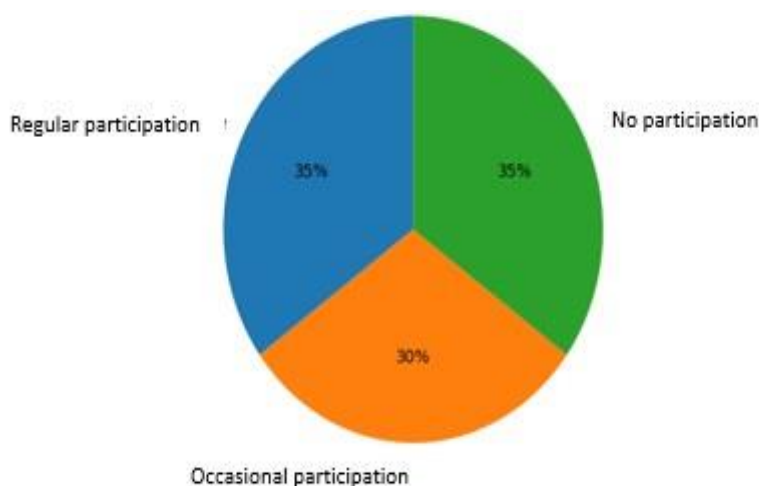


Figure 1. Women’s participation in community-based environmental education activities in the studied communities (n = 120)

Gendered Environment

The results confirm that women are responsible for the daily management of most rural households and play a central role in subsistence agricultural production, in line with the findings of Mogotsi et al. (2011) and Ericksen et al. (2009). Despite this major responsibility, women remain insufficiently targeted by environmental education programs and climate change adaptation initiatives.

However, the data collected indicate that when women benefit from community-based environmental education activities, they are more likely to adopt practices that support the sustainable management of natural resources. These observations confirm that the integration of women into environmental education is a key condition for achieving sustainable development, consistent with the analyses of Mukoni (2015) and UNESCO (1978).

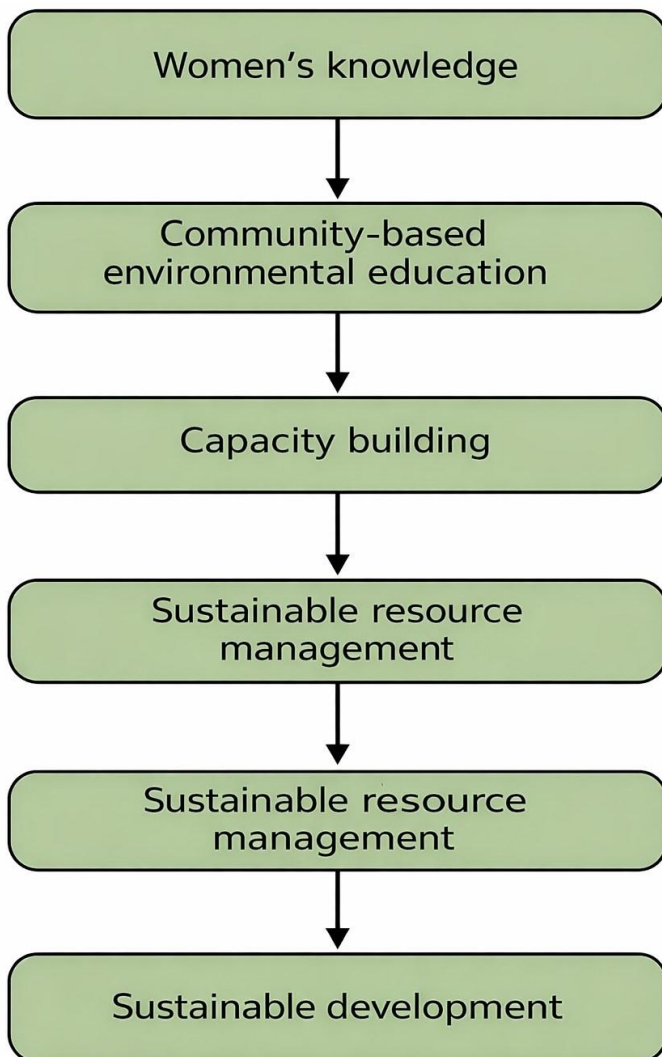


Figure 2. Linkages between women’s knowledge, community-based environmental education, and sustainable development 5. Discussion and Conclusion

Based on the results obtained in the rural communities studied in Madagascar, this article argues for the necessity of including women in community-based environmental education as a key pathway toward sustainable development. The empirical findings are consistent with a substantial body of literature highlighting the limited participation of women in environmental issues (Khaledi et al., 2012; Dankelman, 2012; Mwangi et al., 2011; Kraub, 2011; Ericksen et al., 2009). In the study sites, despite their daily involvement in natural resource management, women remain insufficiently integrated into formal community-based environmental education mechanisms, confirming trends observed in other contexts.

Field results show that this marginalization of women represents a barrier to ecological sustainability, which is nevertheless recognized as one of the fundamental pillars of sustainable development. By highlighting the

potential benefits of integrating women into community-based environmental education—particularly in terms of valuing local knowledge, promoting sustainable resource management, and strengthening adaptive capacities—the study opens up avenues for reflection for environmental policy planners and field practitioners in Madagascar, as also suggested by Kraub (2011) and Momsen (2007, 2004).

Sustainable development, as defined in Agenda 21, emphasizes that education, awareness-raising, and training are essential levers for enhancing people’s capacity to respond to environmental and development challenges (UNEP, 1992a). Observations from rural Malagasy communities confirm that the participation of women, alongside other social groups, is indispensable for the effective implementation of these principles. The Rio Declaration also recognizes that women play a vital role in environmental management and development, and that their full participation is essential to achieving sustainable development (UNEP, 1992b). Similarly, the Johannesburg Earth Summit reaffirmed that society, the environment, and the economy constitute the three interdependent pillars of sustainable development (UNESCO, 2004).

In the Malagasy context, the findings show that as long as women continue to be marginalized in community based environmental education initiatives, the objectives of education for sustainable development, as promoted by the United Nations Decade of Education for Sustainable Development (UNDESD), will remain difficult to achieve. As Tilbury (2010) notes, education for sustainable development is based on collaboration and dialogue and requires equitable participation by both women and men. Field observations also support the argument advanced by Wals and Keift (2010) that an emancipatory approach to education emphasizes the inclusion of marginalized voices and the recognition of diversity, thereby fully justifying the inclusion of women in community-based environmental education.

The article therefore argues that gendered practices and unequal participation within community-based environmental education constitute an obstacle to achieving sustainable development, particularly in a context of increasing socio-ecological risks. In Madagascar, the intensification of environmental pressures reinforces the need to promote the participation of all citizens in environmental education, including women. Moreover, gender equality and women’s empowerment are widely recognized as essential conditions for achieving the Millennium Development Goals (Mamphela, 2004; Shumba et al., 2008; Unterhalter, 2007), which form key foundations of sustainable development at the community level.

From Sen’s perspective, development corresponds to “the expansion of people’s capabilities” (Sen, cited in Elliot, 2007, p. 142). The results of this study show that community-based environmental education plays a crucial role in expanding the capabilities of both women and men in the face of socio-ecological risks. A gender sensitive approach thus appears indispensable for strengthening the scope of action of women and men through knowledge. Discrimination against women in environmental education limits their real freedoms and increases their vulnerability to environmental risks, thereby undermining sustainable development efforts.

Finally, equitable participation of women and men in community-based environmental education contributes to the development of capacities and attitudes that are conducive to sustainable development, such as the promotion of gender equality and social justice. In line with ADEA (2006), the article concludes that anything that hinders the full realization of human capacities constitutes a major obstacle to achieving sustainable development goals, underscoring the urgency of gender-sensitive community-based environmental education policies and practices in rural Malagasy communities.

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