



## Uncovering gender disparities in payment for forest environmental services (PFES): A feminist political ecology view from Vietnam

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### ARTICLE INFO

#### Keywords:

Feminist political ecology  
Payment for forest environmental services (PFES)  
Gender  
Vietnam

### ABSTRACT

Despite the Payment for Forest Environmental Services (PFES) program being recognized for its achievements in promoting environmental conservation and empowering forest-dependent communities, its vertical impacts require a more nuanced investigation, given the constantly changing policy landscape in Vietnam. In 2023, we employed the Feminist Political Ecology (FPE) approach to examine gender disparities in PFES participation, resource accessibility, decision-making power, and knowledge of PFES across 66 households in A Luoi district, Thua Thien Hue province, Vietnam. Our findings reveal striking gender gaps in PFES participation, resource accessibility, decision-making power, and knowledge, with men dominating meetings and training programs, and having their names predominantly listed in forest land certificates, while women's perspectives are often overlooked. These inequities are deeply entrenched in patriarchal ideologies and traditional social prejudices, which have systematically excluded women from development programs. Moreover, our research uncovered a significant lack of knowledge about PFES among both men and women in the study community, partly attributable to institutional factors and command-and-control structures. We argue that achieving gender-equitable governance requires a multifaceted and nuanced approach that recognizes the complexity and diversity of institutions at the household and community level. Gender equality is a constantly evolving process with a wide range of issues and debates at various levels. Therefore, a long-term, gender-sensitive approach that empowers women and recognizes their critical role in forest governance is imperative for promoting equitable and sustainable development.

### 1. Introduction

Over the past decade, there has been a noticeable shift in environmental protection and conservation practices. Previously, these efforts heavily relied on state-led regulatory measures. However, a wave of new policies has emerged, favoring decentralized and often privatized approaches to assess the value of environmental resources and secure funding for their preservation (Tuijnman et al., 2020). These policies, commonly known as 'neoliberal' or 'market-based' environmental governance, vary in their focus and scope but share a common goal of utilizing economic incentives to achieve more efficient and cost-effective outcomes (McElwee et al., 2014). One globally recognized approach that has gained prominence since the 1990s is the Payment for

Environmental Services (PES) model, which has been implemented worldwide (Thuy et al. 2022). PES programs essentially offer incentives, typically in the form of monetary rewards, to local communities such as landowners and farmers, in exchange for their responsible management of natural resources and provision of environmental services to interested parties (Gómez-Baggethun et al., 2010; Tuijnman et al., 2020). PES programs have gained significant traction and are now implemented across various sectors to address environmental degradation (To et al., 2012). Despite their well-intentioned nature, these initiatives can unintentionally impact communities in unforeseen ways (McElwee et al., 2021; Pham and Brockhaus 2005). Studies conducted by Andeltová et al. (2019) emphasize that while numerous global studies examine the effects of PES on local livelihoods, they often focus on income-related

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<https://doi.org/10.1016/j.indic.2023.100281>

Received 11 May 2023; Received in revised form 26 June 2023; Accepted 13 July 2023

Available online 16 July 2023

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consequences, social and cultural implications, and trade-offs between different livelihood aspects, with less attention given to inequality. Additionally, the social impacts of PES and environmental governance often remain ambiguous during debates (Haas et al. 2019). McElwee et al. (2021) argue that the outcomes of these impacts depend on how payment schemes interact with the specific circumstances of the country and local communities involved.

The PES program in Vietnam has garnered significant attention and has been implemented as part of the country's environmental governance efforts since the early 2000s (Trædal et al. 2016; McElwee et al., 2014). PES initiatives in Vietnam primarily target important environmental services like forest conservation, watershed management, and biodiversity protection, known as the Payment for Forest Environmental Services (PFES) program. Within the PFES program, downstream water users, including hydropower companies and water supply utilities, make payments to upstream forest owners to ensure the maintenance of healthy forests that regulate water flow, reduce erosion, and enhance water quality (Pham et al., 2016; To and Dressler 2019). These PES initiatives in Vietnam have demonstrated positive outcomes in terms of environmental conservation, improved forest cover, and the empowerment of local communities (Tran et al., 2016; Thuy et al. 2022). However, some authors have criticized the PFES program in Vietnam, highlighting deviations from its neoliberalization PES nature. For instance, McElwee et al. (2020) refer to this as "hybrid governance," which involves a combination of public and private actors in decision-making processes. Similarly, To et al. (2012) emphasize that political elites have gained control over the distribution of forestlands, regulations, and the flow of surplus. Tuijnman et al. (2020), in turn, consider this to be a top-down or "command and control" approach, where the government participates, regulates, and controls all aspects, rather than adhering to market-based mechanisms. Additionally, challenges such as limited funding, inadequate monitoring and enforcement, and conflicting interests among stakeholders can impact the implementation and long-term sustainability of PES initiatives in Vietnam. To ensure social inclusivity, it is crucial to involve agencies, organizations, and stakeholders in PES programs and address conflicts among social groups, land tenures, and existing inequalities (To et al., 2012). Studies have indicated that women's participation in PFES programs can increase their income, decision-making power, and access to resources (McElwee 2012; McElwee et al., 2020). For example, a study in Vietnam found that women who participated in a PFES program had increased their income and decision-making power within their households (Thuy et al. 2022). Other studies have found that PFES programs can reinforce gender stereotypes and exacerbate inequalities, particularly when women are excluded from decision-making processes and benefits distribution (McElwee et al., 2021; Pham and Brockhaus 2005; Tuijnman et al., 2020). It is worth noting that these results may vary depending on the community and region, emphasizing the need for further empirical evidence to explore the gender-related effects of PFES programs.

Although previous research has explored the relationship between PFES and gender issues, significant knowledge gaps still need to be addressed to ensure that PFES programs benefit all members of forest-dependent communities, regardless of their gender or other social identities. One knowledge gap is the limited understanding of how PFES programs can affect gender relations and dynamics within communities, particularly with regard to differential impacts on men and women (Phuong et al., 2023a; Tuijnman et al., 2020). Another is the lack of data on women's participation in PFES programs, particularly in decision-making processes and access to benefits (Huynh et al., 2020; Tran et al., 2023; Phuong et al., 2023). Finally, there is a lack of attention to intersectional gender issues, which can limit our understanding of how PFES programs can affect marginalized and vulnerable groups within forest-dependent communities (Tran et al., 2023; Agarwal 2009). To address these gaps, it is essential to explore the gendered impacts of PFES programs on forest-dependent communities in Vietnam and beyond, with a particular focus on women's participation,

decision-making power, and access to benefits and resources, using a feminist political ecology approach. This research will provide insights and recommendations for promoting more gender-equitable and sustainable forest governance policies and practices. The article will first provide an overview of the policy context of PFES programs in Vietnam, followed by a definition of concepts related to feminist political ecology and its implications in forest and gender studies. The methodology and research context will then be presented, and the results section will decipher the complicated connections between PFES, gender, and forest governance from a lens of Feminist Political Ecological (FPE). The ultimate aim is to contribute to a more comprehensive understanding of the gendered impacts of PFES programs and how they can be made more equitable and sustainable for all members of forest-dependent communities.

## 2. Research backgrounds and theories

### 2.1. The policy context: PFES programs in Vietnam

According to Hawkins et al. (2010), the PFES is a government-administered program in Vietnam that aims to address deforestation and promote the sustainable forest. The program was implemented nationwide in 2011 and is considered an innovative approach to the traditional PES model (To et al., 2012). However, the first initiatives emerged in the mid-2000s through small donor-supported campaigns that introduced the idea of compensating upland forest communities for protecting watersheds that benefit downstream water users (McElwee et al., 2014). In 2007, the MARD spearheaded a comprehensive effort to design an official PES policy for Vietnam, which included an extensive review of global PES experiences.

Vietnam, like many other developing countries, has encountered environmental issues, particularly after the implementation of the "Doi Moi" policy in 1986 (Ngu et al., 2023; Pham et al., 2021; Tan et al., 2023). The World Bank (2005) reported that this country lost around 4 million hectares of forest area between 1943 and 1990. The Vietnamese government has implemented several policies and programs to address the issue of deforestation, including Program 327 and Project 661 between 1990 and 2005. Forest protection contracts have been used to provide cash incentives to households and communities as part of these initiatives (Pham et al., 2021; Singer et al. 2014; Nguyen et al. 2017). Notwithstanding their initial implementation, these initiatives were ultimately deemed ineffective as a result of financial constraints, coupled with inadequate economic incentives for forest owners. Consequently, the government of Vietnam initiated a pilot PFES program in the provinces of Son La and Lam Dong beginning in 2008 (McElwee et al., 2014). This program aims to provide financial incentives to forest owners and managers for the protection and enhancement of forest environmental services. According to Decision 99 ND-CP, "On the Policy for Payment for Forest Environmental Services" passed in 2010, the PFES program permits five types of payments (McElwee et al., 2014; To et al., 2012; To and Dressler 2019). This decree mandates PES fees and obliges water and hydropower companies, industrial water users, tourism companies, and other entities to serve as buyers. It also permits direct contracts between buyers and sellers, as well as indirect contracts between forest owners (sellers) and intermediaries (McElwee, et al. 2020).

The PFES program has been successful in promoting sustainable forest management practices and improving forest quality. Forest cover in Vietnam increased from 32.2% in 1990 to 41.19% in 2020, according to the World Bank (2022a). Moreover, the PFES program has had a positive impact on local communities, particularly those who rely on forests for their livelihoods (Pham et al., 2021). According to the Vietnam Forest Protection and Development Fund (VFPDF, 2021), PFES has been implemented in 45 out of the 63 provinces in the country as of 2020. The total amount of PFES received nationwide between 2011 and 2020 is 16,746 billion VND, averaging over 1,600 billion VND per year.

This amount includes contributions from nearly 500 hydropower companies, 150 water companies, as well as approximately 300 tourism service companies and industrial production entities. The recipients of PFES can be categorized into five groups: (1) 215 protection forest management boards and special-use forest management boards have received 7,046 billion VND, accounting for 54% of the total amount of PFES; (2) 88 forestry companies received an amount of 1,617 billion VND, accounting for 12%; (3) 170,089 forest owners, including households and individuals, received 984 billion VND, accounting for 7%; (4) 8,067 community forest owners received 1,920 billion VND, accounting for 14%; and (5) 1,432 Commune People's Committees and other organizations received 1,837 billion VND, accounting for 13%.

Despite achieving notable success in promoting sustainable forest management practices and improving forest quality, the PFES program still confronts several pressing challenges. One of the most significant obstacles is striking a balance between environmental conservation and economic development (Tran, Zeller, and Suhardiman, 2016). The program must ensure that any economic activities within forested areas do not compromise the crucial environmental services that forests provide (To and Dressler 2019). Moreover, the PFES program diverges from conventional PES models as it is subject to stringent government regulation at all levels and does not exclusively rely on voluntary transactions between users and providers as a bottom-up 'from-to-market' mechanism (Suhardiman et al., 2013; P. McElwee, Huber, and Nguyê;n 2020). This presents its own set of challenges, including the need to ensure equitable and fair distribution of payments, especially to marginalized communities that may lack the resources or capacity to participate fully in the program (Tran, Zeller, and Suhardiman, 2016; To et al., 2012). To address these challenges, further research and surveys are critically needed to provide evidence-based insights and recommendations. This is especially vital to ensure that the benefits of the program are equitably distributed among all stakeholders, including disadvantaged groups such as the poor, ethnic minorities, and rural women. By prioritizing research and evidence-based decision-making, the PFES program can continue to evolve and enhance its effectiveness in promoting sustainable forest management and improving the livelihoods of local communities.

## 2.2. Framing through a feminist political ecology

Exploring the ecological relationship between gender issues and development studies entails a range of critical approaches, with FPE standing out as a prominent theory. FPE was officially introduced by Rocheleau and colleagues in 1996 and has since gained widespread use. In recent years, an increasing number of political ecology studies have addressed gender issues and analyzed the micropolitics of households and communities, as well as their connections to political economies at national and international levels (Rocheleau et al. 1996). Basically, FPE regards gender as a crucial factor in shaping access to and control of resources, interacting with other social identities such as class, caste, race, culture, and ethnicity to shape ecological change, sustainable livelihoods, and community development (Rocheleau et al. 1996). Gender-sensitive approaches to forest and natural resource management recognize that women's livelihoods differ from men's in terms of decision-making power, use and access to resources, and rights to land (Radel 2012). Power dynamics formed by several social identities such as gender or roles within families and communities shape gender-specific livelihood tactics (Tran et al., 2023; Phuong et al., 2023; Ty et al., 2023; Gay-Antaki 2016). Thus, feminist-focused analysis of forest governance focuses on how these households depend on forest access, use, and its products as main income sources and the gender dimension of this dependence (Harcourt and Nelson 2015; Elmhirst et al., 2017; Gay-Antaki 2016).

According to FPE scholars, gender inequality can be perpetuated through forest management policies and practices, as women's experiences and knowledge about forests are often overlooked or marginalized

in the context of forest governance (Tuijnman et al., 2020). The FPE approach is essential for examining the gendered impacts of PFES programs due to several reasons. Firstly, the approach recognizes gender as a socially constructed category that intersects with other dimensions of social differentiation (e.g., economic status, age, and ethnicity). These affects forest-dependent communities' access to and control over natural resources, using a feminist lens (Vardhan and Catacutan 2017). Secondly, an FPE approach recognizes the marginalization of participation of women and vulnerable others in environmental management, leading to improved forest conservation outcomes in many developing countries (Radel 2012; Nhem and Lee 2019; Hovorka 2006; Giri and Darnhofer 2010), provide an exemplification of the implementation of FPE in the assessment and recommended reorganization of a widely-adopted reforestation initiative in the Dominican Republic, grounded in an examination of gendered knowledge, labor, spatiality, and organizational association (Rocheleau et al. 1996). Thirdly, an FPE approach emphasizes the need to examine the political and economic context in which natural resource management takes place, including an analysis of power relations among various actors, which impacts the distribution of benefits and costs associated with PFES programs and affects forest-dependent communities differently (World Bank, 2022b).

In summary, the utilization of an FPE perspective in this study can provide insights into the gendered dimensions of PFES programs and their societal consequences by acknowledging the interrelatedness of gender inequalities with other social hierarchies and highlighting the importance of analyzing the political and economic context of natural resource governance. The study framework employs an FPE lens to grasp how power dynamics shape the allocation of advantages and drawbacks associated with PFES programs.

## 3. Methodology

### 3.1. The PFES context in the study site

In Thua Thien Hue province, the PFES payment mechanism is managed by the Fund for Forest Protection and Development (hereinafter referred to as the Fund), which is a state financial institution established in 2011 for non-profit purposes. In this province, PFES payment is exclusively implemented for 13 hydroelectricity and 2 freshwater companies in compliance with Decree No. 156/2018/ND-CP of the Government of Vietnam. The program covers over 157,808 ha/282,750 ha of forest in six districts and towns, including A Luoi, Nam Dong, Phong Dien, Phu Loc, Huong Thuy, and Huong Tra. Since its implementation, PFES has significantly contributed to the province's forest management and protection, especially in the direction of over 27,192 ha of forest allocated to communities and households. In 2012, the total revenue from PFES was 0.79 billion VND, while in 2022, it reached 82,086 billion VND. The PFES payment is applicable to a forest area of more than 157,808 ha/282,750 ha in the province's six districts and towns (People's Committee of Thua Thien Hue province - PCTTH, 2023). In 2022, 624 forest owners received payments totaling VND 71,107 billion, representing 99.6% of the total amount. PFES payments are implemented mainly in the form of non-cash payments via bank accounts and ViettelPay electronic payments, with cash payments made directly to forest owners who live far away. The Fund works closely with local authorities to ensure transparency, safety, and public awareness during payment disbursements.

This study focuses on the A Luoi area due to its significant payments and the high proportion of ethnic minorities as forest owners. It presents a unique research opportunity to explore the program's impact on the community from the viewpoint of gender and ethnicity. A Luoi is located in the West of the province and shares a border with Laos (see Fig. 1), where economic hardship and poverty rates are high, and people mainly depend on agriculture and forests for their livelihood. The majority of the population in this district comprises ethnic minorities, with more than 60% belonging to groups such as the Pa Ko, Ta Oi, and Ka Tu, who

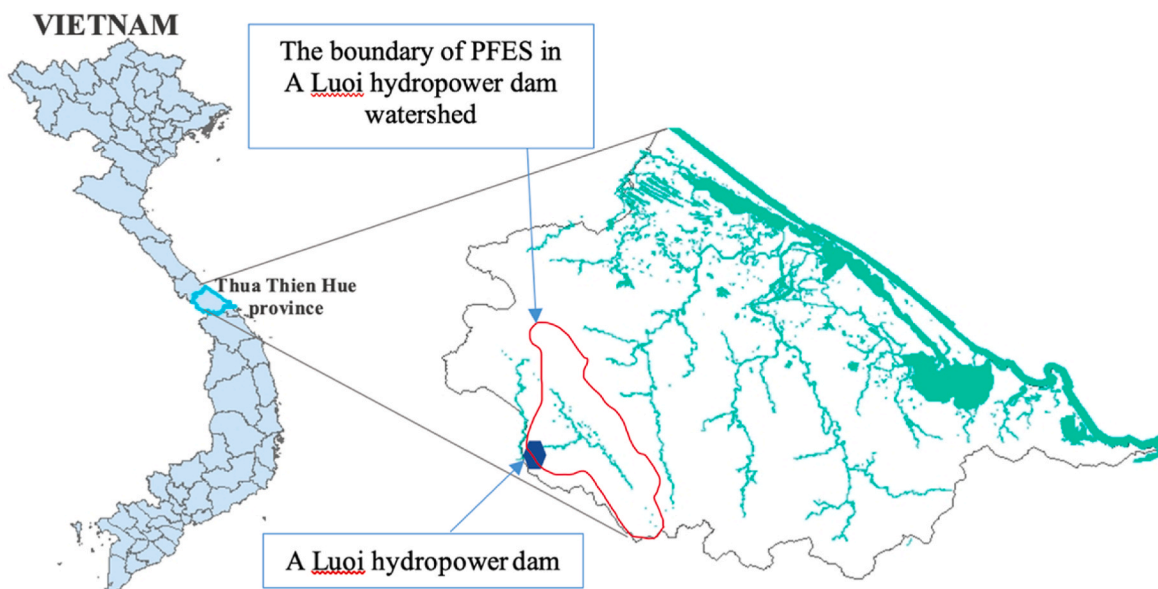


Fig. 1. Map of study site in A Luoi district, Thua Thien Hue, Vietnam.

often have limited access to education. A Luoi has a total area of 15,920.65 ha of natural forest that provides PFES, distributed among various forest owner groups (see Table 1). In this study, we only focused on the households (66 in total). In 2022, the PFES payment for A Luoi hydro power basin amounted to VND 12.25 billion with a payment rate of VND 920,000 per hectare of forest (PCTTH, 2023).

3.2. Data procedure and fieldwork

From September 2022 to March 2023, we conducted the study in the A Luoi area, which is a mountainous district in Thua Thien Hue province. Its primary objective was to interview forest landowners in the Huong Phong and Quang Nham communes, which had the highest proportion of households receiving money from PFES in the region, accounting for 56.06% and 18.18% of recipients, respectively (as shown in Table 2). The interviews were conducted in Vietnamese and were informal and semi-structured, lasting between 45 min and 2 h, with an average duration of 1 h. A local female assistant, who was a communal officer, accompanied the researchers for many of the interviews.

The study produced findings, with a team of 66 interviewers conducting interviews with 66 households participating in PFES in A Luoi district. Among these participants, 24 were women (36.36%), and 42 were men (63.64%), as depicted in Table 3, which also highlights the demographic characteristics of the surveyed households. Notably, nearly half of the participants were Kinh people, with the rest belonging to various ethnic minorities, among which Ta Oi people were the majority. It is worth mentioning that the study identified a high rate of illiteracy or lack of education among the participants, with an average of 10.6%. Furthermore, the poverty rate was alarmingly high, exceeding 30% (People’s Committee of A Luoi district - PCAL, 2022).

Table 1  
Current status of PFES in A Luoi in 2022.

No.	Forest owner groups	Areas (ha)	Post-normalized areas (ha)	Unit (VnD/ha)	Amount (VnD)	No. of owners
1	Phong Dien Nature Reserve	12.45	11.64	920,000	10,709,000	1
2	A Luoi Protection Forest Management Board	2,228.71	1,980.24	920,000	1,821,821,000	1
3	People’s Committees of Communes	5,637.63	4,955.01	920,000	4,558,609,000	1
4	Communities	1,652.28	1,364.98	920,000	1,255,782,000	20
5	Household groups	6,217.54	4,861.97	920,000	4,473,012,000	110
6	Households	172.04	130.91	920,000	120,437,000	66
	Total	15,920.65	13,304.75		12,240,370,000	

(Source: PCTTH, 2022)

Table 2  
List of households by commune participating in PFES in 2022 in A Luoi district.

Communes	Women owners	Men owners	Total of households
Huong Phong	2 (5.55)	34 (94.45)	36 (56.06)
Quang Nham	1 (8.33)	11 (91.67)	12 (18.18)
Trung Son	1 (14.28)	6 (85.72)	7 (10.60)
Hong Thai	1 (20.00)	4 (80.00)	5 (7.57)
Hong Thuong	0 (0.00)	3 (100.00)	3 (4.54)
A Luoi town	1 (50.00)	1 (50.00)	2 (3.03)
Lam Dot	1 (100)	0 (0.00)	1 (1.51)
Total	7 (10.60)	59 (89.40)	66 (100)

(Source: PCTTH, 2022)

Table 3  
The demographic characteristics of 66 survey respondents.

Characteristics	Units	Women (N = 24)	Men (N = 42)	Total (N = 66)
The head of the household	%	33.33	71.42	57.57
Age	Years	47	48	48
Ethnicity				
Kinh	%	37.50	52.38	46.96
Ta Oi		29.16	42.85	37.87
Others		33.34	4.77	15.17
No educated or illiteracy	%	29.16	0.00	10.60
Poverty rate	%	33.33	28.57	30.30
Total of forest areas	Ha	6.52	5.29	5.74

To ensure an unbiased sample, the researchers utilized a cluster sampling technique, visiting various areas of the commune, including forest sides, spatially distributed and conducting multiple interviews with PES participants and non-participants, respectively, as well as both male and female subjects. When potential interviewees were not available initially, certain neighborhoods were revisited repeatedly. This study employed a mixed-methods approach involving both qualitative and quantitative data. Qualitative data was collected through interviews with local villagers, who provided their opinions and experiences, which were recorded verbatim. Quantitative data was collected through calculated questions related to income, forest area, as well as field observations of infrastructure and community livelihoods. For sensitive and complex questions, a 5-level Likert scale was used to measure respondents' answers, especially to ascertain the extent to which PES contributed to household income. Due to the limited sample size, the quantitative results are predominantly presented using graphical representations and simple statistics such as percentage and Standard Deviation (SD). Certain analyses were found to be statistically significant through the use of t-tests. Moreover, we collected reports and local data from the main commune and village offices to establish a comprehensive background on the implementation process of PFES in the case study. The study also involved conducting in-depth interviews with 8 key informants, including: 1 district forestry officer, 2 commune officials responsible for forestry and agriculture, 3 village heads, and 2 leaders from the commune women's union. These interviews not only provided an overarching understanding of the case study's cultural, social, and political context, particularly concerning patriarchal systems, but also enabled cross-verification of information with the interview results.

#### 4. Results and discussion

This section presents an analysis of the perspectives of both men and women on PFES and its impact, with a particular emphasis on gender disparities in participation, resource access, decision-making power, and PFES knowledge. By incorporating diverse viewpoints and relevant literature, this section aims to provide valuable insights and contribute to a comprehensive and informed discussion.

##### 4.1. Gender and participation in PFES

The survey results indicate that PFES payments covered a forest area of 172 ha, totaling VND 120 million. Annually, each household receives an average payment of VND 1.8 million, typically provided in cash at Viettel stores, while only some receive their payment at the Commune

People's Committee. Regarding participation in the PFES program, both men and women demonstrated equal interest levels, with no significant differences observed. Despite this, an overwhelming majority of respondents (78.98%) expressed dissatisfaction with the payment amount, which fell short of their expectations (92.45%). As identified by both genders, the primary reasons for joining were to enhance family income (93.93%) and promote forest protection activities (90.90%). Fig. 2 illustrates these findings. Nevertheless, the study also revealed that a small minority of participants (7 men and 5 women) joined the program without a clear understanding of its objectives, instead following the instructions of local authorities or neighbors. For instance, one woman admitted that:

"I do not know much about PFES, my neighbor encouraged me to register ... because I own a forest so she (her neighbor) said that I can get money from the government" (Household interviews, 2023)

In addition, the study identified three critical criteria for evaluating PFES participation in terms of gender: the proportion of women to men enrolled in PFES programs, the level of involvement of women and men in meetings associated with PFES programs, and the extent of women's participation in training and capacity-building activities related to PFES programs. Fig. 3 presents a visual representation of these criteria. Our findings uncovered a stark gender disparity when it comes to family participation in forest protection and PFES activities. In fact, nearly 70% of men represented their families in these efforts, while the proportion of women and both genders were significantly lower, accounting for only 21.21% and 9.09%, respectively. Women expressed concerns about potential dangers associated with forest monitoring, such as encountering poachers, which could discourage them from participating. Another significant factor influencing the involvement of women in PFES activities is the prevailing perception of a gender-based division of labor within the family. Many respondents expressed the belief that tasks associated with "forestry" are primarily assigned to men, while women are typically responsible for sewing, childcare, meal preparation, and the collection of non-timber forest products (NTFPs). Household responsibilities were frequently cited as a barrier preventing women from participating in programs like PFES, and some women expressed the belief that their presence and involvement were unnecessary. A young woman echoed:

"Forest protection requires health and strong (physically), so men are more suitable than us ... moreover, forest protection often has to attend village meetings, where women are we rarely participate because of shyness (giggle)" (Household interviews, 2023)

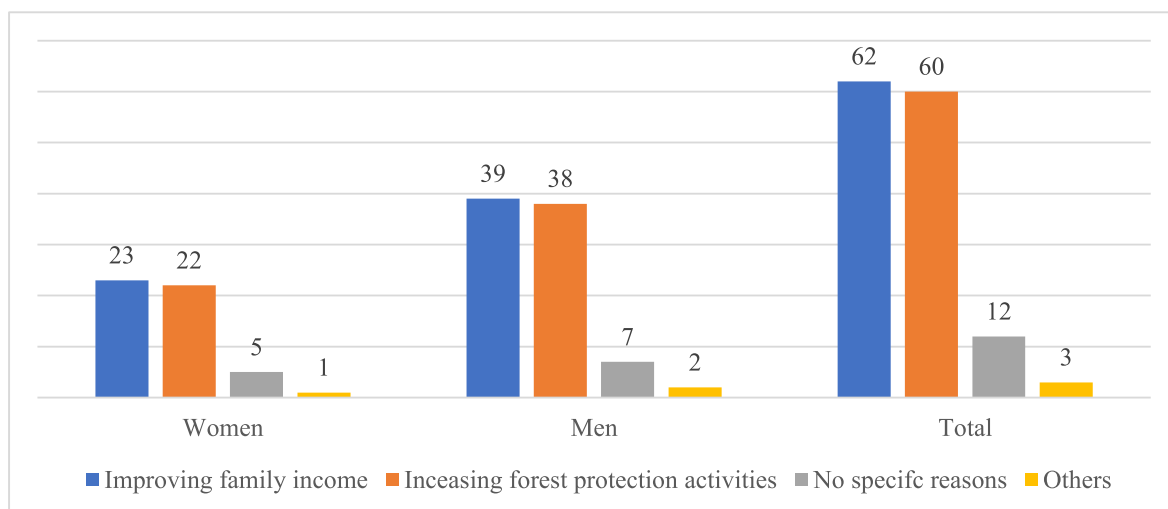


Fig. 2. The gendered differences in purpose of participating in the PFES program.

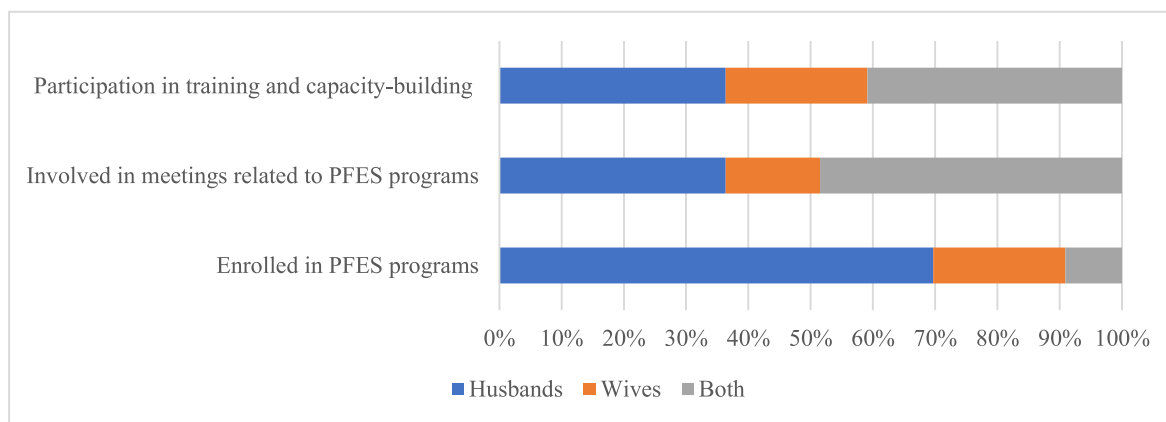


Fig. 3. The gendered differences of participation in the PFES program.

As a result of these perceptions, there is a notable disparity in the representation of men and women in village meetings and training courses related to PFES. Men are more likely to represent their families in these activities compared to women. Our findings are consistent with recent research by McElwee et al. (2021), who also observed a lower overall enrollment rate among female-headed households in certain provinces of Vietnam, with no significant increase over time. In our case, husbands often represent the family in village meetings and training programs related to PFES, while women report attending only when their husbands are unavailable. In these situations, Gay-Antaki (2016) argued that women may be expected to fill in for their husbands' roles in collective decision-making, which allows the male counterpart to conserve his status even from afar. This explains that some women replied:

"we just attend meetings if husband is busy, ...and always sit at the back, no opinion, go to be present." (Household interviews, 2023).

The perpetuation of patriarchal ideology and traditional social prejudices that limit women's role in the domestic sphere results in a concerning gender gap, which excludes them from development programs such as the current PFES in Vietnam. This exclusion has been highlighted in previous research that identifies the gendered nature of forest governance and management. According to some authors (e.g., Brandth et al. 2004; Brandth and Haugen 1998; Mohai 1992), forestry activities have been traditionally associated with masculinity due to the physical demands and risks involved, and the perceived need for attributes typically associated with men, such as physical strength and endurance. Unfortunately, the narrow definition of forestry, primarily concerned with timber production, has further marginalized women in this field, perpetuating masculine gender associations (Mohai 1992). Women were typically relegated to tasks requiring less physical strength, such as childcare and housekeeping, while timber extraction was considered a male task due to the assumption that it required manual labor (Brandth and Haugen 1998). These cultural norms prevented women from leaving their families for extended periods and further perpetuated their underrepresentation in forestry work. The exclusion of women from forest management and national institutions is still prevalent in many parts of the world (Wagle et al. 2017).

Be (2019) found that in Mexico, women's exclusion from forest governance is discursively driven, and their participation in the program is influenced by various factors such as the support of male community members, age, and land tenure status. This exclusion is further compounded by the limited access that younger and landless members have to these spaces. A similar situation is also observed in Nepal, where gender-differentiated outcomes in community forestry are discussed due to "women's exclusion" or lack of participation (Wagle et al. 2017). While it is crucial to recognize the burdens and challenges experienced by women, it is equally important to ensure that their involvement in

PFES activities is based on voluntary participation and aligned with their capabilities and preferences. When discussing the potential for future participation in PFES, numerous women expressed their willingness, elaborating on their perspective:

"I had an opportunity to participate in a training course on forest protection organized by a local non-governmental organization. I feel like I have learned a lot ... " (Household interviews, 2023).

The exclusion of women from development programs, including PFES and forest management, is a significant concern. An FPE perspective highlights the importance of recognizing women's knowledge, skills, and experiences in natural resource management (Bernadette and Rebecca 2021). Many research has shown that women's active involvement in forestry management can positively impact the well-being of their households and the environment. For instance, a study on the extent of women's dependence on forests in West Bengal found that women's participation in their own management unit was significantly higher than men's in the available joint forest management unit, and their greater physical involvement in forestry work contributed substantially to their household income (Das 2011). Similarly, in India and Nepal, According to Agarwal (2009), forest management boards with a higher proportion of women demonstrated more significant improvements in forest conditions. Women's empowerment is crucial to the success of conservation programs, as it brings together diverse perspectives and strategies to effectively maintain and protect natural resources (Phuong et al., 2023b). To address the gender disparities in PFES and forest management, it is crucial to involve women in decision-making processes and program planning from the outset (Benjamin et al., 2018; Dinh et al., 2021, 2023; Tan et al., 2023). Studies indicate that women's participation in leadership roles, coupled with capacity-building training and resources and a gender-sensitive approach, can help address gender disparities. It is also necessary to create an enabling environment that recognizes the value of women's participation in development programs. Coleman and Mwangi (2013) research has shown that women's participation in forest councils or attainment of leadership positions correlates with less disruptive conflict.

#### 4.2. Gender, access to benefits, and decision-making power in PFES

This study identified five critical criteria for analyzing access to benefits and resources and gender decision-making power in PFES, including (1) the person/people initiated and decided to join PFES; (2) the percentage of households with male and female names on the forest land use rights certificates; (3) the person/people named in the PFES contract; (4) the person holding a bank account and regularly receiving cash or transfers from PFES; and (5) the users of the money earned from PFES. Our findings, as illustrated in Fig. 4, reveal three significant

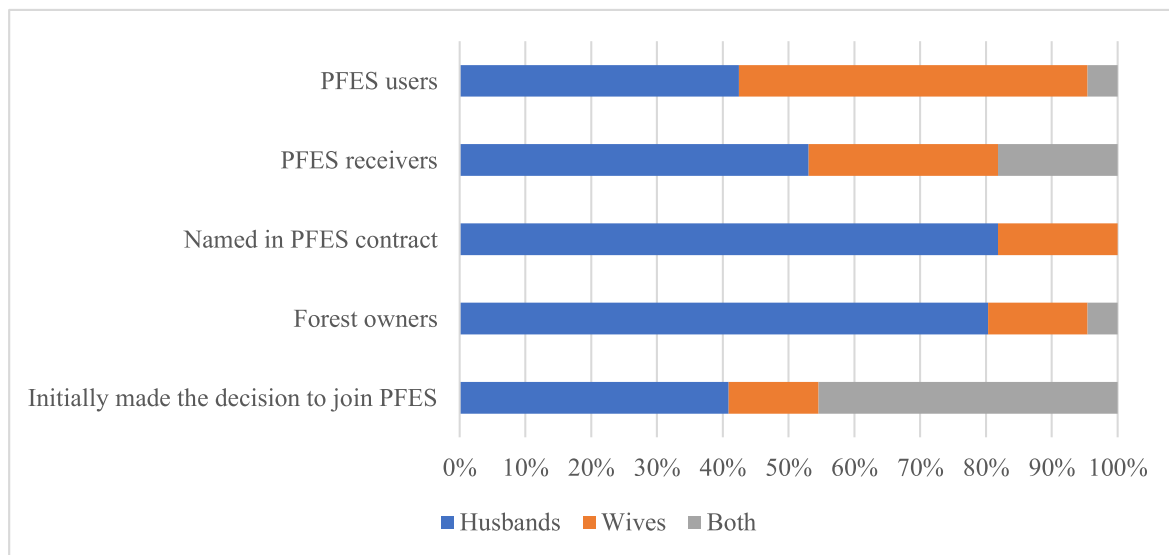


Fig. 4. The gendered differences in access to benefits and decision-making power in PFES.

trends.

The findings revealed significant gender gaps in these areas, particularly within the family unit. Specifically, men (husbands) dominate the percentage of those named on forest land use right certificates and are the representative of the family signing the PFES contract, accounting for 80.30% and 81.31%, respectively. During the process of cross-checking the information with commune officials, it was revealed that although the marriage and family law stipulates that property, including forest land, should be registered under both spouses' names, there are cases where forest land is solely registered under the husband's name. There appear to be two main reasons for this occurrence. Firstly, it is often a result of the husband acquiring the land prior to marriage. In many patriarchal societies, it is customary for males or sons to inherit property from their parents. Conversely, women undergo a practice known as "xuất giá tòng phu," wherein they leave their own household and follow their husbands after marriage. This is consistent with the findings of [Phuong et al. \(2023\)](#). Secondly, among "ethnic minority" communities, there is a prevailing lack of awareness, which makes it challenging to mobilize individuals to convert their land use certificates. This process also requires a considerable amount of time. Women or both genders have a meager chance of being named. Secondly, although both husbands and wives participate in the decision-making process for PFES, the husband is often the representative to receive payments or the bank account owner (if transferring). According to some women, the absence of their names on land tenure certificates may have resulted in men receiving the PES payments instead of them. Although no significant disagreements were reported between husbands and wives regarding allocating the payments received from PES programs, some women expressed concerns about the possibility of men diverting the funds towards purchasing alcohol or tobacco. In some cases, women were uncertain about the payment rates they were supposed to receive and felt that the full amount had not been returned to the household. One woman chuckled as she mentioned that:

"when he (referring to the husband) received money from the commune, he would sometimes purchase a case of beer and invite some of the male neighbors to come over for drinks." (Household interviews, 2023)

From the FPE viewpoints, our findings revealed that gender disparities in access to resources and decision-making power within PFES programs perpetuate the notion that men are the primary decision-makers in the family, undervalue women's contributions, and limit their ability to benefit from PFES and participate in decision-making

processes. These support to previous works. Studies conducted in Cameroon, Mexico, and Nepal all reported limited access to resources and decision-making power for women in forest management, resulting in their exclusion from community forest management and income-generating activities ([Giri and Darnhofer 2010](#); [Gay-Antaki 2016](#); [Evans et al., 2017](#); [Muradian et al., 2010](#)). Silencing women's voices in development schemes can result in the loss of gender-specific cognition, skills, and expertise in land management. In some indigenous communities of Nicaragua's Atlantic coast, women encounter significant challenges when it comes to participating in decision-making and forest resources, including pressure from their spouses who may feel their own power is being undermined. This further highlights how gender relations at the micro-level can impact women's participation in governance at the community level and even result in domestic violence ([Evans et al., 2017](#)).

We contend that a comprehensive approach involves acknowledging the potential conflicts arising from socially imposed gender roles and responsibilities. It is necessary to ensure that women have equal access to resources and decision-making power within the family and that PFES programs are designed to enable both men and women to participate fully and equally. [Leach \(1992\)](#) contends that to gain a comprehensive understanding of women's roles, it is necessary to view them within a socio-cultural context, rather than generalize them or take them at face value. It is important to acknowledge that men and women should not be viewed as two distinct groups with separate livelihood activities, as they often share their work and responsibilities ([Leach 1992](#)). [Elmhirst et al. \(2017\)](#) challenge the notion of a rigid gender division of labor, presenting empirical evidence from Indonesia that gender roles and livelihood responsibilities can be flexible and interchangeable, particularly in local contexts. This highlights the importance of addressing gender disparities in forest management and conservation and recognizing women's contributions and inclusive decision-making processes ([Elmhirst et al., 2017](#); [Bernadette and Rebecca 2021](#)). It involves addressing the underlying causes of socially legitimized gender inequalities that result in women's exclusion from decision-making processes ([Tyagi and Das 2017](#)). Gender roles and livelihood responsibilities play a significant role in shaping access to resources and institutions, which should be considered when developing policies ([Cecile 1993](#)). Therefore, policy interventions should be responsive to dynamic changes in gender roles and relations across time and space. Interventions at the household level are particularly crucial. By regarding gender as an analytical category rather than a biological one, we can concentrate on power dynamics in development plans and comprehend the extent to which women are at a

disadvantage relative to men (Gay-Antaki 2016).

### 4.3. Gender and perceptions of the impact of PFES

The study examines gender differences in perspectives on PFES. According to the results, a significant percentage of women (67.8%) tend to use their PFES money for daily necessities like food and eggs. In contrast, men appear to use it for various purposes, as indicated in Fig. 5. However, a sizeable proportion of men (15.03%) seem unsure of how to use their PFES funds, with one elderly man stating that:

“it depends on when the money is received. If my family owes money, we’ll use it to pay off the debt. If not, we’ll use it to buy food. And if it’s time for the children to go to school, we’ll use it to purchase clothes, etc. In general, I don’t know and depend on the timing.” (Household interviews, 2023)

Once again, this reinforces the notion that the idea of masculinity and the division of labor based on gender are firmly ingrained in the subconscious minds of both men and women in the study area. Men typically participate in physically demanding labor, whereas women assume responsibility for childcare, cooking, and managing household tasks. As a result, women tend to possess a greater understanding of household expenses. The study employed a series of 5-level Likert questions to investigate men’s and women’s perceptions of PFES and its effects. The results presented in Table 4 were subjected to a T-test for gender-based comparisons. While both men and women concurred that PFES could enhance their household income, they differed in their opinions on other aspects. Men exhibited high optimism and appreciation for PFES’s impact on forest conservation (4.8/5) and women’s empowerment (4.75/5). Conversely, women displayed lesser enthusiasm, with an average agreement level of approximately 3, suggesting their belief that PFES has little influence on forest protection and women’s empowerment. This contrast may be attributed to women’s limited participation in PFES and lack of knowledge about the program.

Furthermore, a significant proportion of respondents, both men and women, demonstrated a poor understanding of PFES. For instance, when asked whether PFES was government-funded or government-paid, 92.75% responded affirmatively. Similarly, when questioned about whether participation in PFES had led to improvements in forest protection, such as increased patrolling or awareness campaigns, most respondents (76.45%) admitted to being unaware or seeing no change, with 12.45% even indicating a decline in such activities. Our study revealed that both men and women in the study community had limited knowledge of PFES, indicating a need for a targeted and coherent approach to raising awareness about the program. This is particularly

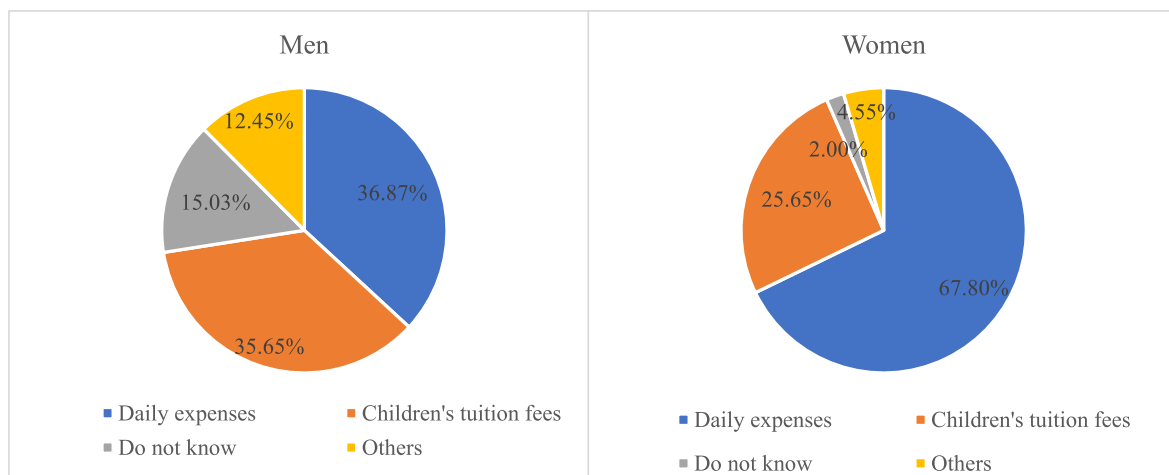
**Table 4**  
Gendered perceptions of the impact of PFES.

Roles of PFES <sup>a</sup>	Women (N = 24)	SD	Men (N = 42)	SD
Improving your income	4.75	1.07	4.72	1.12
Increasing the effectiveness of forest protection*	3.75	1.23	4.8	1.85
Poverty alleviation	3.05	0.63	3.42	0.57
Empowering women in forest management**	3.08	0.92	4.75	1.17

a from 1 to 5 indicate the degree of strongly disagree to strongly agree. \* and \*\* indicate denotes statistically significant difference (T-test) at the 1% and 5% levels, respectively.

critical in hard-to-reach areas and among ethnic minorities, such as those in A Luoi district, who may have limited access to information about PFES. Therefore, improving knowledge about PFES is essential to increasing participation in the program and enhancing its effectiveness (Luswaga 2023). Gender-sensitive and participatory ongoing training courses are vital (Dinh et al., 2023; Ha et al., 2022). Nevertheless, it is essential to recognize the intricate challenges associated with meeting the varied requirements and priorities of diverse societal groups. This encompasses the impact of informal social norms and gender-based discrimination on factors like wealth and sex (Tran et al., 2023; Phuong et al., 2023). The process of adapting to new behaviors, asserting one’s needs while accommodating others, debating publicly, and resolving conflicts can take time and requires sustained efforts to foster trust and social capital (Tan et al., 2023). Moreover, it is essential to recognize the significance of gender roles and relations in shaping participation and decision-making processes in the context of forest management (Tan et al. 2022). Therefore, We argue that development initiatives like PFES should not be limited to forest management only, but should also be viewed as a platform for promoting social change. This approach enables both men and women to explore new ways of interacting, identify common needs and aspirations, and ultimately strengthen social cohesion (Tan et al., 2023; Phuong et al., 2023; Dinh et al., 2021). However, this requires recognizing that these processes cannot be rushed and must be given adequate time and resources to develop (Giri and Darnhofer 2010).

Finally, our findings highlight that the implementation of PFES in Vietnam predominantly relies on a command-and-control approach (Tuijnman et al., 2020), potentially limiting awareness among most residents. In our study, a majority of respondents reported that PFES is funded by the central government, a departure from both the theoretical and practical aspects of PFES. Moreover, these limitations are intricately linked with political and financial barriers that hinder impoverished



**Fig. 5.** The gendered differences in the uses of PFES funds.



communities from benefiting from these programs (To and Dressler 2019). A notable challenge stems from the exploitation of PFES benefits and the monopolization of forestland access by local elites (To et al., 2012). This is a concerning issue as it aligns with the prevailing male-dominated ideology, further marginalizing women's role, rights, and responsibilities in forest management. Therefore, it is crucial to recognize that the establishment of markets for ecosystem services through PFES is deeply embedded within specific socio-political and historical contexts. To effectively support the sustainable utilization of forest resources and enhance local livelihoods, it is imperative to address these underlying structural issues alongside the implementation of PFES programs. It is essential to prioritize gender issues and link them to the local political and cultural context, ensuring a comprehensive approach that promotes equality and inclusivity.

## 5. Conclusions

Forest resources play a crucial role in both the livelihoods of rural communities and the macroeconomic landscape of forest-dependent communities in Vietnam. Therefore, it is imperative to consider factors such as gender, ethnicity, and class when designing and implementing forest programs like PFES. Focusing on the context of A Luoi district, our findings highlight the existence of gender differences in PFES participation and forest management, as well as gender disparities in resource access and decision-making power within families. Moreover, the study underscores the limited knowledge of PFES among both men and women in the community, underscoring the need for a targeted and cohesive approach to raising awareness. By examining the issue through the lens of FPE, we argue that achieving gender equality necessitates implementing strategies that promote women's participation in decision-making processes at multiple levels including supporting women's ownership of forestland.

Firstly, women's involvement in PFES can contribute to their empowerment and decision-making authority within households and communities. Research has shown that women's participation in PFES programs can increase their income, decision-making influence, and resource access (McElwee, 2012; McElwee, Huber, & Nguyễn, 2020). This offers them an opportunity to have a voice in natural resource management and economic activities. Secondly, women have traditionally played significant roles in forest-dependent communities and possess knowledge and expertise in natural resource management. By involving women in PFES decision-making processes, their perspectives, needs, and interests are taken into account, leading to more inclusive and sustainable outcomes (Pham and Brockhaus, 2005). Moreover, women's participation in PFES can bring unique perspectives and insights that can improve the design and implementation of PFES initiatives (Haas et al., 2019). Women can also contribute their indigenous knowledge, as one woman shared:

"Every day, I go about 3km into the forest to gather bamboo shoots and mushrooms to sell, so I know where there are abundant bamboo shoots with many mushrooms, areas prone to landslides, and frequent forest fires." (Household interviews, 2023)

While FPE views advocate for women's participation in PFES programs, an important consideration arises regarding their willingness to engage, particularly when they bear heavy family workloads. Some women responded positively to the aforementioned results, while others remained silent. However, we argue that this silence stems from a lack of complete understanding regarding the benefits of PFES, rather than a lack of interest. PFES is a commendable program designed to provide rights and benefits to indigenous communities. Nevertheless, the limited comprehension of these benefits contributes to the observed silence among some women. Furthermore, women face constraints imposed by patriarchal norms and traditionalism, which often lead to their hesitancy to participate, as evident from the findings above. It is crucial to redefine the notion of 'participation' beyond physical engagement solely

in forest patrol. In the context of PFES, participation encompasses a range of activities, including planning, implementation, and monitoring at various levels. This entails creating opportunities for women to actively engage in decision-making processes and ensuring their voices are heard in matters concerning forest management and PFES programs. By doing so, we can strive towards women's empowerment. Therefore, this research extends beyond feminism and the PFES context, emphasizing the significance of overcoming constraints associated with long-standing customs for both men and women. Such inclusive practices will not only contribute to the sustainable utilization of forest resources but also foster gender equality and empower women in the long run.

## Ethics approval and informed consent

We hereby state that the manuscript was prepared based on the ethical standard and regulations of the University of Agriculture and Forestry, Hue University and the Association of Japanese Geographers. This material is the authors' own original work, which has not been previously published elsewhere. The paper reflects the authors' own research and analysis in a truthful and complete manner. All sources used are properly disclosed (correct citation). Interviews with local respondents were conducted with their oral permission before starting interviews and followed by related guidelines by FPIC (Free, Prior and Informed Consent). All authors will take public responsibility for their content. I declare that this submission follows the policies of this Journal as outlined in the Guide for Authors and in the Ethical Statements.

## Funding

This research was supported by grants (#169430, #194004) from the Swiss Programme for Research on Global Issues for Development (R4D Programme) co-funded by the Swiss National Science Foundation (SNF) and the Swiss Agency for Development and Cooperation (SDC).

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

Data will be made available on request.

## Acknowledgments

This research was facilitated by grants (#169430, #194004) from the Swiss Programme for Research on Global Issues for Development (R4D Programme) co-funded by the Swiss National Science Foundation (SNF) and the Swiss Agency for Development and Cooperation (SDC). In addition, we express our thanks to University of Agriculture and Forestry, Hue University for facilitating the research team in carrying out research activities. Sincere thanks to the Forest Protection and Development Fund of Thua Thien Hue Province for your cooperation and providing relevant data. Thanks to Ms. Tran Thi Thu Phuong, local resident in A Luoi district, Thua Thien Hue province for her assistance in data collection.

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