



Research

# What would attract women to forest-based climate action? Learning from decades of female participation in an infant and maternal health system in Indonesia

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**ABSTRACT.** Low female participation in community-based forest actions for mitigating and adapting to climate change (i.e., “forest climate actions”) increases gender inequalities and could reduce intervention effectiveness. Factors preventing women’s participation in forestry are well-researched, while factors motivating women’s participation is comparatively lacking. We fill this gap by (i) identifying women’s motivations to participate in communal action in other domains; (ii) analyzing to what extent these motivations exist in forest climate actions; (iii) suggesting how forest climate actions can better motivate women’s participation.

Our paper presents an original mixed methods approach using data from two studies in different domains (health vs. forestry), objectives (feasibility study vs. impact evaluation), and data collection approach (key informant interviews vs. standardized surveys). Women’s motivations to participate in Posyandu (Pos Pelayanan Terpadu), a state-run infant and maternal health service system operated mostly by female collaborators (Kader), were contrasted with conditions shaping women’s participation in forest climate actions. Data were collected in the same period (2013–2014) in forested rural areas of Indonesia.

We find women are motivated by the following values they find lacking in forest climate actions: (1) altruistic values: improving other’s well-being through Posyandu, vs. limited benefits from forest climate actions; (2) social capital: enhancing own and family’s social status by participating in Posyandu, vs. limited social enhancement through forest climate action; and (3) identity enhancement: increasing own pride and competence when supporting an established organization like Posyandu, vs. no equivalent organization for women in forest climate action.

What would attract women to forest climate action? We suggest (1) tangible benefits from forest climate action for women and rural communities, so that women see forests are worth fighting for; (2) respected roles for women in public spheres related to forest climate actions; and (3) self-enhancement opportunities through village-level organizations and good employment opportunities aligned with forest climate actions.

**Key Words:** *cross-sectoral; forestry; gender; Indonesia; mixed methods; motivations to volunteer; multidisciplinary research; natural resource; participation; Posyandu; REDD+; Southeast Asia*

## INTRODUCTION

Forests play an important role in mitigating and adapting to climate change (Roe et al. 2019). At the same time, the minor roles of women and dominant roles of men in forestry is documented globally (Arora-Jonsson et al. 2019) and in several countries, including Indonesia, USA, Nepal, India (Agarwal 2010, FAO 2019, Colfer 2020, Wagle et al. 2020). This includes lower participation among women compared to the general village population in decisions about interventions to reduce emissions from deforestation and forest degradation (REDD+) or other forest-related processes at the village level (Larson et al. 2015, Samndong and Kjosavik 2017).

In this paper we move beyond identifying the importance of and challenges in women’s participation in forest-based actions to mitigate and adapt to climate change (i.e., forest climate action). We offer women’s perspectives on what they are seeking when deciding to invest their time and energy. What motivates women to participate in collective actions? To what extent do forest climate actions motivate women to participate? What could be done to improve women’s participation in forest climate actions?

To gain innovative insights, we contrast empirical data on women’s participation in two community-level activities, using Indonesian case studies: (i) Posyandu (*Pos Pelayanan Terpadu* Integrated Community Health Post), an infant and maternal health service system; these services are operated by millions of rural women; and (ii) forest activities related to REDD+, which draws limited participation from women (Larson et al. 2015). Studies in Indonesia have also shown the gendered aspects of forest conversion (Rowland et al. 2022), forest policies (Siscawati 2020), and forest land rights (Dewi et al. 2020). Indonesia is the third largest tropical forest extent in the world, and the forestry sector is important socially, economically, and politically.

We demonstrate a novel approach to adapt a framework to understand motivations of participatory monitoring across two sectors, i.e., health and forestry. It also provides a much-needed contribution for forest management in developing country settings, so that top-down discourses on gender in forestry can be complemented by bottom-up insights of what motivates women.

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### Women in forest management and climate action

As important resource users and managers, women's engagement is believed to be crucial in ensuring conservation successes (Agarwal 2000, 2009). There are persistent global calls for gender equality and participation of women in climate action in general (UNFCCC 2017), and forest-based climate actions in particular (UN-REDD Programme 2013). Decisions from the 16th Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC 2011) have affirmed that gender equality and effective participation of women are important for the effectiveness of climate action (1/CP16 para.7) and climate action should follow gender-sensitive and participatory approaches (1/CP16 para.12). Later, a Gender Action Plan (GAP) was adopted, so that decisions within UNFCCC are more gender-inclusive (UNFCCC 2018). REDD+ activities are specifically encouraged to promote and support social and environmental safeguards. As of November 2021, 22 countries including Indonesia have a safeguards information system for REDD+. Despite the discourse about more community participation to REDD+, women rarely participate in REDD+ design, decision, and processes (Larson et al. 2015, Satyal et al. 2019).

Challenges women face to participate in forest management is well-documented, but research on what would attract them to participate is lacking because of limited observed participation. The double work burden of heavy domestic and child-rearing responsibilities leave no time for women's public engagement or participation (Engida and Mengistu 2013, Musyoki et al. 2013, Tadesse et al. 2017). Cultural and social barriers to participate include gender roles and stereotypes in a particular society, women's low social standing in the community, and religious practices (Musyoki et al. 2013, Eneji et al. 2015, Yami et al. 2021). Among the most important factor determining women's participation is the existence of inclusive forestry institutions (Atmiş et al. 2007, Coleman and Mwangi 2013) and ability to organize among themselves (Evans et al. 2017). Better education and economic equality among genders also affect women's participation (Coleman and Mwangi 2013).

### Case comparison: women in the health sector in Indonesia

We contrast the low levels of participation of women in forestry with something that forestry activities can aspire to achieve: (i) the activity attracts high female participation in rural areas; (ii) participants are highly motivated; (iii) the activity has been sustained for long periods; and (iv) there is evidence of positive impacts of the activity. Posyandu meets these criteria. It is a national-level initiative established in 1986 at the village level in Indonesia as a way to decrease mortality rate among children under 5 years old mostly caused by malnutrition (Reis et al. 1990). The massive participation of mostly female community members, called "Kader Posyandu," was a key factor to Posyandu's achievements. Kaders implement many of the tasks related to health monitoring at the village level. Women have been participating in Posyandu for almost 40 years, with very little financial compensation, if any (Ekowati et al. 2016). They regularly meet to monitor the health of infants and expecting mothers. Their data is reported to the health ministry and used to make national decisions in health intervention, e.g., training, immunization campaign, medical treatments (Ekowati et al. 2016).

According to Agarwal's (2001) typology of participation, women's participation in Posyandu is activity-specific: they are asked to (or volunteer to) specific tasks. Posyandu activities focus on four programs: birth control, maternal and infant health, nutrition, and immunization. These activities include running a monthly health post (e.g., weighing, measuring, and providing nutrition supplements to infants) and performing follow-up visits. Kader Posyandu are supervised by village and/or sub-district (*kecamatan*) level health care specialists, who invite and train the best available candidates to participate (Ekowati et al. 2016).

Posyandu has been credited for immunizing three-quarters of all vaccinated children in Indonesia, improving the nutritional status of Indonesian children, and reducing infant mortality (Rokx et al. 2018). The number of Posyandu has grown from around 25,000 in 1986 to 229,457 in 2018 (Kemenkes 2019). The Posyandu represents a government initiative that successfully mobilized public health services for, by, and with women.

## METHODS

### Data collection

We use data from two independently implemented empirical studies to understand the motivations of women to participate in forest conservation and rehabilitation. We refer to them as the "Health Dataset" and the "Forestry Dataset." Both studies are part of the Global Comparative Study of REDD+ led by the Center for International Forest Research (CIFOR; <https://www.cifor-icraf.org/gcs>). Table 1 summarizes the characteristics of the two datasets.

### The Health Dataset

The Health Dataset was collected under a study on the feasibility of participatory monitoring, reporting and verification (PMRV) for REDD+ in Indonesia (CIFOR 2014, Boissière et al. 2017). This study compares the motivations of community members to participate in health and forestry monitoring systems in Indonesia. The Health Dataset was collected through interviews in seven villages in three provinces (West Kalimantan, Central Java, and Papua) in 2013 (see Ekowati et al. 2016).

Interviews were conducted with key informants participating in Posyandu, consisting of the following:

1. Kaders: 39 Kader Posyandu, who are predominantly female (36 of 39) village members selected for Posyandu duties because of their capacity, time, and willingness to work, although the health ministry does not define any "capacity" requirements. Each village has five to seven Kader; they receive token payment of less than US\$1 in Central Java to US\$26 per month in Papua. We attempted to interview every Kader in a study village.
2. Agents: eight health service agents, who are paid staff of the public sub-district healthcare clinics (*Puskemas*); one-to-two are assigned to each study village and were interviewed. They consist of village midwives (*bidan*) and nurses (*mantri*). They stay in the village and provide basic healthcare to villagers, run the Posyandu every month, mobilize Kader Posyandu to assist them, and report the Posyandu data to sub-district community center.

**Table 1.** Characteristics of the Health and Forestry Datasets used in this article.

	Health Dataset	Forestry Dataset
Source	Study on motivations to participate in Posyandu, part of study on participatory monitoring, reporting, and verification for REDD+	Study on impact of REDD+ projects on livelihoods and well-being
Motivation to participate question explicitly asked?	Yes	No
Motivation to participate in what?	As Posyandu kader	Forestry interventions, inside and outside REDD+ projects
Women asked to invest in protecting what resource?	Health of infants and nursing mothers	Forests
Motivation assessed for	Individual Kader/health care agents	Female-headed households; women's groups at village level
Year of data collection	Late 2013	Early 2014
Country	Indonesia	Indonesia
Provinces	West Kalimantan, Central Java, Papua	Central Kalimantan; East Kalimantan; West Kalimantan; Aceh
Number of villages	7 villages	45 villages
Aceh	0	8
Central Java	2	0
Central Kalimantan	0	20
West Kalimantan	3	8
East Kalimantan	0	9
Papua	2	0
Number of households interviewed	0	1340
Number of individuals	47	0
Village context	Rural, forested	Rural, forested
Data collection method	Semi-structured key informant interviews and focus group discussions;	Structured household and village surveys
Method to identify respondent	Posyandu Kader and healthcare service agents	24 villages inside + 21 villages outside REDD+ projects; In each village: random household sampling + Open invitation to women to participate in women's group discussion

### The Forestry Dataset

The Forestry Dataset is developed as part of a study that documents and evaluates the impacts of REDD+ projects in six countries and 22 sites, across three periods (CIFOR-ICRAF 2021). The data collection method uses household surveys, key informant interviews and village-level group discussions (see Sunderlin et al. 2016). This article uses household and village-level data from six REDD+ sites in Indonesia during Phase 2 (2014) data collection. Study villages are located within (24) and outside (21) REDD+ projects. Although our interpretation applies to forestry activities in general, probing questions related to REDD+ interventions were posed in 24 villages within REDD+ projects.

### General analytical approach

Our mixed method approach integrates qualitative and quantitative data and insights across two overlapping phenomena (participation in health and forestry interventions). The Health Dataset triangulates and complements the Forestry Dataset, to uncover gaps, contradictions, and new perspectives. Table 2 describes the study design based on characteristics of mixed-methods design, following (Green et al. 1989).

Our analytical approach comprised four steps:

#### Step 1: Identifying a common theoretical framework

Following a review of theoretical frameworks on motivations to volunteer (Clary et al. 1998, Clary and Snyder 1999, Ryan et al. 2001, Bruyere and Rappe 2007, Liarakou et al. 2011, Singh et al. 2014), we chose that of Clary et al. (1998; Table 3) as our starting point because of its demonstrated application in areas relevant to our study, including health, community involvement, and environmental behaviors.

**Table 2.** Characteristics of the study's mixed-methods and implementation.

Characteristic	Description
Mixed methods characteristics	
Methods	Different across phenomena: Qualitative (Health); Quantitative (Forestry)
Phenomena	Overlapping phenomena or different facets, dimensions of a single phenomenon (C) Health: Participation in health monitoring of infants and pregnant mothers in rural Indonesia (related to Posyandu) Forestry: Participation in forest conservation and protection in rural Indonesia (related to REDD+ initiatives)
Paradigms	All qualitative methods in one paradigm, all quantitative methods in another (A)
Status	Equal
Implementation characteristics	
Independence	Two studies independently conducted
Timing	Concurrent: one method implemented within the time frame spanned by implementation of the other
Study	Two studies, based on different research designs and locations

#### Step 2: Identifying motivational statements from the Health Dataset and indicators of prevalence

Motivations to participate were identified based on responses from Kaders and Agents for the following open-ended questions, according to the six motivational functions (i.e., Table 3):

For Kaders: What is your motivation to participate as a Kader Posyandu?

For Agents: What do you think is the motivation for villagers to participate as a Kader Posyandu?

To reduce bias, responses were coded using a grounded approach based on the responses, instead of starting with predetermined keywords representing motivational functions. For each interviewee, we identified phrases that denote motivation, aggregating similar phrases across interviewees. We represented each group of phrases by a motivational statement that synthesizes the phrases. Each statement was assigned to one of the six motivational functions. Three authors (Ekowati, Boissière, Atmadja) performed the coding sequentially for a final list of motivational statements. Coding disagreements were unanimously resolved. The number of respondents who mentioned a motivational statement was used to rank motivational functions among respondents.

*Step 3: Making analogous motivational statements and indicators from the Forestry Dataset*

We identified the extent to which motivations found in the Health Dataset existed in the Forestry Dataset by making analogous motivational statements in the Forestry Dataset and building indicators to measure their extent. This process represented the main innovation of our work. In the Forestry Dataset, motivation to participate was not explicitly asked. Household and village characteristics that served as proxy for each analogous motivational statement were identified and formulated as indicators. These indicators were primarily based on the perceptions of women's participation in decision making and forestry activities elicited from women-only discussion groups, characteristics of female-headed households, and village characteristics.

*Step 4: Comparing indicators*

Indicator values from both datasets were compared. Results from the Health Dataset were used as a benchmark to understand the opportunities and gaps of motivation found in the Forestry Dataset.

**RESULTS**

**Women's motivations to participate in Posyandu**

Among the six types of motivational functions we examined, the Value and Social functions were the most dominant. Five motivational functions comprising 13 elements were identified (Table 4). Of the 33 Posyandu Kaders, more than half mentioned they were motivated by Value functions (n = 32 or 82%) or Social functions (n = 27 or 69%), and slightly less than half mentioned Enhancement functions (n = 18 or 46%). Very few (n = 1) mentioned Career functions and none of the interviewees mentioned anything related to Protective functions (i.e., that participating in Posyandu helps them overcome guilt of being fortunate or personal problems). Motivations related to payments are included under the Values function, as Kaders mentioned it (n = 12) in relation to foregoing alternative activities yielding better income. Interviews with Agents confirm the importance of Value functions (75%) but showed lower agreement on the importance of Social and Enhancement functions (Table 4).

The Value function evoked by respondents is mainly based on altruism rather than other value systems (e.g., religion, legal compliance). Kaders and agents evoking this motivation (n = 32)

**Table 3.** Motivational functions used in this paper to categorize women's motivations to volunteer in social actions, and their definitions (based on Clary et al. 1998).

Motivational functions	Definition
1. Values	To express/put into action values related to altruistic and humanitarian concerns for others.
2. Social	To engage in an activity viewed favorably by important others (persons).
3. Enhancement	To center on personal development or to obtain satisfaction related to personal growth and self-esteem.
4. Understanding	To permit new learning experiences and the chance to exercise knowledge, skills.
5. Career	To obtain career-related benefits from participation.
6. Protective	To use the volunteer opportunity to cope with inner conflicts and stresses or guilt.

see Posyandu as a fight for the well-being of their community, family, other women, and children. The "fight" also refers to the lonely burden of maintaining Posyandu services when no one else would (n = 15) and foregoing better income options and idle time (n = 10).

Social functions, such as protecting or strengthening one's status in society, play a major role in women's motivation to participate in Posyandu. Kaders express this in terms of being invited by a village leader or health agent (n = 24, 62%) or showing support to, e.g., village leaders, husband, or the government (n = 8, 21%).

*[I] wanted to join in because I was invited by the wife of the hamlet's head (Ingin ikut-ikutan karena diajak oleh Ibu Kadus.) [R15, Kader for 13 years, Female]*

Kaders (n = 5, 13%) mentioned feeling bad to refuse, which suggests peer pressure or avoidance of the social harm of refusing. For example:

*I became a Posyandu volunteer because I was told by the village head's wife, and I felt bad to refuse. (Saya menjadi kader karena disuruh oleh Ibu kades, dan tidak enak mau menolak.) [R10, Kader for 13 years, Female]*

People who can motivate women to volunteer include, (1) insiders, e.g., village/hamlet head and their wives, religious leaders, teachers, and elders; (2) outsiders, e.g., health care agents and teachers.

Women attach positive meaning—pride and acknowledgment—to being selected as Kader. In the absence of clear metrics for recruitment, invited Kaders interpret their own competence based on the qualities of others (not) invited.

*The reason I was appointed is because I am dynamic and better than the others. (Alasan saya ditunjuk adalah karena saya lincah, dan lebih baik daripada yang lain.) [R01, Kader for 5 years, Female]*

Enhancing personal and communal interests is an important motivation for women. Unlike Clary et al.'s (1998) individualistic interpretation of enhancement values, the Kaders take pride from having Posyandu in their village (or shame if otherwise), because



**Table 4.** Motivational statements identified in the Health Dataset, frequency of agreement and disagreement among respondents for each motivational statement, by type of respondents (kader vs. health service agents).

Note: Indicator is the number of interviewees who mentioned a given motivational statement.

Motivational functions	Motivation statements	Quoted statements (examples)	Indicator values			
			Kader (n = 39)		Health service agents (n = 8)	
			Mentioned	Not mentioned	Mentioned	Not mentioned
1. Values	Overall: I fight for others by participating in Posyandu		82%	0%	75%	25%
	11. I want to protect, fight for, and help to the community by participating in Posyandu	“To fight for the health of the village community.” ( <i>Berjuang demi kesehatan masyarakat desa.</i> )	69%	0%	63%	0%
	12. We need to keep Posyandu services in the community. No one else will	“Because we have to help the community, to help all women and children.” ( <i>Karena kami harus membantu masyarakat, untuk membantu para perempuan dan anak-anak.</i> )	33%	0%	25%	0%
	13. I am contributing my resources (time, foregoing higher-paid activities) for my community	“Because in other village there is (Posyandu), but if no one wants to join then in our village there will be no (Posyandu)” (... <i>karena di desa lain ada (Posyandu), tetapi kalau semua tidak mau (ikut), nanti di desa kami tidak ada (Posyandu).</i> )	21%	0%	25%	25%
	14. I am fulfilling a moral obligation (e.g., religion) by participating	“Other people are too busy working in their garden or at home, while I have free time to become a Posyandu volunteer.” ( <i>Orang-orang lain terlalu sibuk bekerja di kebun atau di rumah, sementara saya memiliki waktu luang untuk menjadi kader Posyandu.</i> )	3%	0%	0%	0%
2. Social	Overall: I gain social status by participating in Posyandu		69%	0%	25%	0%
	21. I was assigned/invited to participate by respected person in the village	“Beside that, I also have to help the community because I am a Muslim.” ( <i>Selain itu, saya juga harus membantu masyarakat karena saya orang Muslim.</i> )	62%	3%	25%	0%
	22. I gain social standing by supporting the government or my family through Posyandu	“Because I was appointed by the village nurse.” ( <i>Karena ditunjuk oleh Pak Mantri</i> ); “I was invited to become a Posyandu volunteer by the wife of the village head.” ( <i>Saya diajak untuk menjadi kader oleh Ibu Lurah</i> )	21%	0%	13%	0%
	23. I am allowed by husband to participate in Posyandu	“Posyandu volunteers who were the wives of village heads were in general volunteers only during their husband assignment.” ( <i>Kader yang merupakan istri kades biasanya hanya aktif menjadi kader selama suaminya menjabat.</i> )	5%	0%	0%	0%
	24. I could not refuse to participate in Posyandu	“I was allowed by my husband to become a volunteer, and because I had free time, it was not a problem for me to become a volunteer.” ( <i>Saya diizinkan oleh suami saya untuk menjadi kader dan karena saya memiliki waktu luang, tidak masalah bagi saya untuk menjadi kader.</i> )	13%	0%	0%	0%
3. Enhancement	Overall: I feel acknowledged and proud to participate in Posyandu		46%	3%	25%	0%
	31. I am being acknowledged for my competence by participating	“I became a Posyandu volunteer because I was asked by the village head, and I felt bad to refuse.” ( <i>Saya menjadi kader karena disuruh oleh Ibu kades, dan tidak enak mau menolak.</i> )	31%	3%	13%	0%
	32. I want to keep village pride/prestige from having an active Posyandu	“The reason I was appointed is because I am active and better than others.” ( <i>Alasan saya ditunjuk adalah karena saya lincah, dan lebih baik daripada yang lain.</i> )	15%	0%	0%	0%
33. I get personal satisfaction from participating in Posyandu		“If the person who becomes a Posyandu volunteer is someone from outside (the village), then it will be shameful.” ( <i>Jika kemudian yang menjadi kader adalah orang dari luar sini maka akan malu.</i> )	3%	0%	13%	0%
		“Since I was still a single woman, I was happy to join Pustu <sup>†</sup> activities.” ( <i>Saya sejak masih nona-nona (belum menikah) senang bergabung dengan kegiatan-kegiatan di Pustu.</i> )				
4. Understanding	41. I want to learn more/exercise my skills through Posyandu	“I also wanted to know how to give medicine and to take care for children in the village.” ( <i>Saya sendiri juga ingin mengetahui caranya memberi obat dan merawat anak-anak di desa.</i> )	21%	0%	13%	0%
5. Career	51. I benefit from Posyandu services	“My child also needs to go to the Posyandu every month, he is 3 years old.” ( <i>Anak saya juga perlu ke Posyandu setiap bulannya, usianya 3 tahun.</i> )	3%	0%	0%	0%
6. Protective	[Not found in responses]					

<sup>†</sup> In some villages, Posyandu is also known as Pustu (*Puskemas pembantu* = auxiliary community health center).

it indicates the village’s development level or capacity. Enhancement values are therefore linked to women’s personal growth and self-esteem (e.g., from being recognized for their competence) and women as members of a proud community (e.g., from having an active Posyandu in the village).

*If then the person who becomes a Posyandu volunteer is someone from outside of here [the village] then it will be shameful. (Jika kemudian yang menjadi kader adalah orang dari luar sini maka akan malu.)* [R31, Kader for 1 year, Female]

**The influence of power in the perception of what motivates women: comparison between Health Agents (recruiter) and Kaders (recruited)**

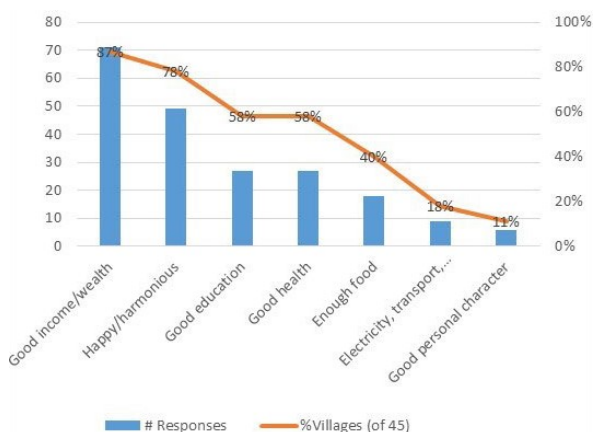
We compared the perceptions of what motivates women among two types of respondents in different sides of the power relations: the more socially powerful recruiter (Health Agents) and the less powerful recruited (Kader). Similar power relations exist in forestry, where project officers based in the district or village are often hired to implement activities with (and recruit) community members. The most notable divergence is on the influence of Social values in participation, mentioned by most Kaders (62%) compared to a minority of Agents (25%). Health service agents are likely to understate their own social influence because they are often the same people that invited Kaders to participate. Kaders and Agents also differ in their perception of the Posyandu as a form of acknowledgment of a Kader's personal capacity (31% of Kaders vs. 13% of Agents).

**Creating indicators to measure women's motivations to participate in forestry activities**

We translated motivational statements to participate in Posyandu (Column 2; see Table 5) into analogous statements in the forestry context (Column 4) and measurable indicators (Column 5). Indicators are expressed in terms of favorable motivations, i.e., higher indicator values mean stronger evidence that the motivation exists. Indicators for each statement are described in Appendix 1.

In the Forestry Dataset, high income or wealth is the most widely mentioned characteristic of a women's well-being (Fig. 1). Hence, we interpreted the Value function (i.e., altruism) in two ways. First, as actions supporting important income sources for the community (Statement 111, Table 5), which is agricultural income (Fig. 2). Second, as activities with positive impacts for women's well-being (statements 112–114, Table 5). We developed indicators based on women's perceptions of the impact of forest and REDD+ interventions on their well-being.

**Fig. 1.** Characteristics of women with high levels of well-being: Forestry Dataset.



Response to a question posed in women's group surveys: "In this village, what are the characteristics of a woman who has high well-being?" and coded into seven categories

Social functions identified in the Health Dataset were related to being invited or gaining social standing. In the Forestry Dataset, we translated this into women's perception of being invited into communal decision-making spaces related to forestry or REDD+ (statements 211–213, Table 5). Support from husbands is interpreted as perception of being invited into household decision making (statements 231, 232, Table 5). Enhancement functions were interpreted as the existence of women's organizations with forestry or environmental protection objectives (Statements 311, Table 5), as such organizations facilitate public acknowledgment of women's personal capacity toward shared goals.

**Reasons for forestry's lack of attraction for rural women**

Comparing indicator values from health (Column 3, Table 5) and forestry (Column 6, Table 5), we find that forestry is not an attractive investment option for women's time or efforts and extract several reasons why.

1. Forests are not worth fighting for: In forestry, all indicator values for the Value functions (statements 111–114) are less than 20%, compared to 69% in health. Forestry income is a significant income source for a minority (20%) of study villages. In women's discussion groups, women rarely felt that a decline in forest cover is detrimental for their well-being or that forestry interventions can improve their community's well-being. Participation in forestry activities is unlikely to make women feel they are "fighting" for their community.
2. No social gains from participating in forestry activities: In comparison to Posyandu, the available indicator values for the Social functions in forestry are lower, suggesting that the existing social space to contribute to forestry activities at the village level are not very inviting for women. Among the 45 women's discussion groups, very few have more than half of the participants who feel they actively participate in forest monitoring nor making forestry rules (8% for indicator 211, 17% for indicator 212). This may reflect the prevailing norms that this is not an area in which women participate. The exception to this is in REDD+ activity design and implementation, where women feel they are involved in deciding to implement REDD+ in 40% of villages. At the household level, most women we interviewed felt they can decide how household land and forests are used (indicator 231 = 80%). In contrast, less than half (43%) feel they have direct influence in decision making at the village level and must go through their husband (indicator 232).
3. No local institutions to recognize women's contributions in forestry: Among the 45 study villages, none had organizations with high female memberships that can bring personal enhancement for women interested in forest conservation or protection (Table A1.2, Appendix 1). Institutions that can recognize and encourage women with those interests are not present. Existing organizations are oriented to social or economic objectives, such as Quran reading groups (*Yasinan*), development programs (e.g., PNPM, PKK), revolving fund groups (*Arisan*), or credit unions. This issue is not limited to forestry; despite the preponderance of female farmers in surveyed villages (see Career section, Appendix 1), women we surveyed mentioned one farmer's organization with high female membership.

**Table 5.** Frequency of agreement among interviewees for each type of motivational statements identified in the Health vs. Forestry Datasets. Explanation of each indicator measure is provided in Appendix 1.

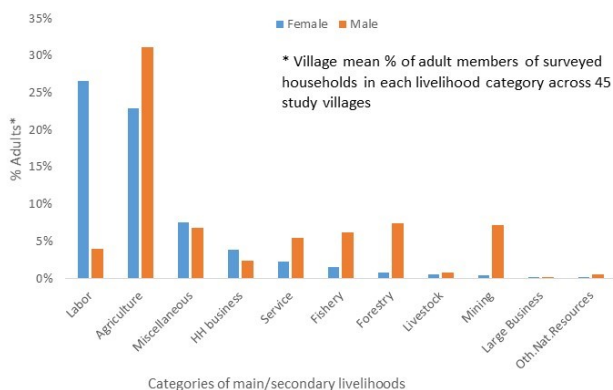
Motivational functions	Health Dataset		Forestry Dataset		
	Motivational statements <sup>†</sup>	Aggregated indicator values <sup>‡</sup>	Motivational statements: forestry	Indicator measure: forestry	Indicator values
1	2	3	4	5	6
1. Values	11. Want to protect, fight for, and contribute to the community by participating in Posyandu	69%	I protect, fight for, and contribute to the community by participating in forestry interventions because  111. Forestry income is valuable for the community and households in the village 112. Our well-being relies on avoiding forest loss  113. Our well-being relies on REDD+ interventions that restrict forest access 114. Our well-being is positively impacted by REDD+ interventions	111. % villages where (1) more than 50% of sampled households earn income from forests, and (2) the average income from forest per household is higher than income from agriculture  112. % villages where (1) forest cover has declined, and (2) women perceived that the decline has negatively impacted women's well-being 113. % interventions restricting forest access that women perceived to have any effect (negative or positive) on women's well-being in the community 114. % villages where (1) the overall effect of forest interventions on the well-being of the community is perceived by women as positive or very positive	20%
	12. I need to keep Posyandu services in the community. No one else will	32%	<i>Data not available</i>		
	13. I am contributing my resources (free time, foregoing higher paid activities) for my community	21%	<i>Data not available</i>		
	14. I am fulfilling moral obligation (e.g., religion)	2%	<i>Data not available</i>		
2. Social	21. I was assigned/invited by respected person in the village OR 22. I gain social standing by supporting the government or my family	62%	211. We (women) are invited to participate in decisions on monitoring forest use at village level  212. We (women) are invited to participate in making rules on forest use at village level 213. We (women) are invited to participate in REDD+ design and implementation 231. We (women) can decide about our household's land and forest use 232. We influence village decision making directly, without our husbands	211. The median proportion of participants in study villages that agree with statement "Women actively participate in monitoring forest use (for example, as park guards, observers, reporting on infractions)"  212. The median % of participants in study villages that agree with statement "Women actively participate in making rules for forest resource use in the village" 213. % of villages with REDD+ interventions, where women perceived they were involved in deciding to implement REDD+ 231. % of villages where the majority of women agree with the statement "Women participate in decisions about land and forest use at the household level" 232. The median % of participants in study villages that did not agree with statement "Women's primary influence on important village decisions is through their husbands"	8%
	23. I am allowed by husband to participate	5%	231. We (women) can decide about our household's land and forest use 232. We influence village decision making directly, without our husbands	231. % of villages where the majority of women agree with the statement "Women participate in decisions about land and forest use at the household level" 232. The median % of participants in study villages that did not agree with statement "Women's primary influence on important village decisions is through their husbands"	80%
	24. I could not refuse to participate (peer pressure)	10%	<i>Data not available</i>		
3. Enhancement	31. I am being acknowledged for my competence by participating OR 32. I get personal satisfaction from participating in Posyandu 33. I want to keep village pride/prestige from having an active Posyandu	32%	311. There are forest-related organizations in the village that can bring acknowledgement for competent women  <i>Data not available</i>	311. % organizations with high female membership that has activities related to forest or environmental conservation	0%
4. Understanding	41. To learn more on childcare/ exercise my skills	19%	411. Learning about the environment can impact women	411. % of environmental education interventions (25) where women felt it had impact (positive or negative) on women's land use behavior	12%
5. Career	51. I directly benefit from Posyandu services	2%	511. Many of us (adult females) benefit from forest-related occupations	511. Average % adult women in sampled households that had a primary or secondary occupation in forestry	1%
6. Protective	n/a	n/a	<i>Data not available</i>		

<sup>†</sup> Refers to motivational elements in Table 4.

<sup>‡</sup> Proportion of all respondents (n = 47) that agreed with (at least one, if multiple) corresponding motivational statements.

4. Limited career options or learning benefits for women: Indicators for Understanding and Career motivational functions show very low results. Few women felt learning about the environment has any impact on their well-being (statement 411 = 12%), and 1% of adult females in sampled households have primary or secondary occupations related to forestry (statement 511). These functions are also not prominent among respondents in the Health Dataset.

**Fig. 2.** Main and secondary livelihoods by female and male: Forestry Dataset.



## DISCUSSION

### What would attract women to forest climate actions?

Based on insights from Posyandu, Figure 3 summarizes factors that may attract women to forest climate actions. First, women need to feel forest climate actions are worth fighting for because these actions protect or advance their own well-being and that of their loved ones. Second, participating in forest climate action needs to provide social gains for women. Women may risk socially losing, rather than gaining, from participating in male-dominated forest climate actions. Pushing women to participate in such conditions would be counterproductive. Third, village organizations that recognize the communal value of women contributing to forest climate actions need to exist. We identified organizations with high female memberships in our combined 52 study villages, but none are related to forest or environmental protection. Fourth, (paid) employment or income sources related to forestry that are adapted to women's needs is required. The above factors imply communicating, planning, and negotiating directly with women on forest climate actions, supporting women to organize themselves around these actions, and socially integrating women into existing (often male-dominated) fora.

### Women in the house vs. out in the community: a legal perspective

The Forestry Dataset shows a striking difference between women's perception of their power and voice inside the home vs., lack thereof outside the home. From a legal perspective, Indonesia's marriage law (UU1/1974) views men and women as having equal rights and status in domestic life and in societal relations (Table 6). This same law, however, poses different roles and responsibilities for women (wife) and men (husband). The

**Fig. 3.** What would attract women to community-based forest actions?

What would attract women to community-based forest actions?
<p><b>1. Women need to feel forests are worth fighting for.</b></p> <p>Getting benefits that advance women's well-being (e.g., income they control, products they regularly use), and that of their family and community.</p>
<p><b>2. Social gains from participating in forest actions</b></p> <p>Feeling appreciated and respected when participating in any forest action.</p> <p>(As a social group) Not needing any invitation to participate. They just do.</p>
<p><b>3. Village-level organizations to recognize the value of forest actions</b></p> <p>Organizations that recognize women's AND men's contribution to their community via forest actions, and open to female membership and leadership</p>
<p><b>4. Good employment options for rural women</b></p> <p>Employment providing remuneration valued by women (e.g., income, health care, education), a sense of achievement, and working conditions that accommodates her needs.</p>

discrepancy between equal rights and legally differentiated (rather than negotiated) responsibilities gives way to differing interpretations on the household vs. communal processes women have access to. Our data shows village-level discussion spaces relevant to forestry are not particularly inviting for women. Posyandu, in contrast, targets women to participate. Very few Kaders mention they need their husbands' permission to take up that role and, on the contrary, wives of village/hamlet heads participate because of their husband's leadership position. In matters related to land and forest use, women's roles are limited to household-specific decisions or communal decisions via their husband. Because of the sensitivity of bringing women into communal decision-making spaces related to forests, women need these invitations to legitimize their actions and decisions.

### Reflections on findings from other studies

We reflect on previous studies and on how ours supports, contradicts, or complements their findings. Our Health Dataset confirms Nuggehalli and Prokopy's (2009) finding in India and Sri Lanka that women were motivated by altruism. They found that women were motivated by the prospect of receiving training, in their case, sewing and beauty training. In contrast, we find Kaders were rarely motivated by the opportunity to learn about or exercise their skills in monitoring children's health. Hence, our findings provide nuance: Posyandu training does not develop skills with immediate economic value compared to sewing or beauty training. Therefore, women may be more motivated to join training activities because of economic rather than learning motivations. Strengthening forest institutions (Coleman and Mwangi 2013) is indeed an important element for improving participation, mainly because they are non-existent in our study villages. We argue that the missing enabling conditions are norms that open communal roles to women rather than freedom of interaction between genders (Nuggehalli and Prokopy 2009), as the prevailing norms restrict women to roles outside the household. The importance of "being invited" to participate in Posyandu brings to question the disincentives for women to participate uninvited (e.g., in village decisions on forests). We do not have information on the implications of women who breach those boundaries, e.g., through social or physical sanctions against participating uninvited (see Evans et al. 2017).



**Table 6.** Rights, status, roles, and responsibilities of husband and wife under the 1974 marriage law.

	Husband	Wife
Rights and status	"The rights and status of the wife is equal with the rights and status of the husband in domestic life and social relations in society." ( <i>Hak dan kedudukan isteri adalah seimbang dengan hak dan kedudukan suami dalam kehidupan rumah tangga dan pergaulan hidup bersama dalam masyarakat.</i> ) Art. 31:1.	
Role	"The husband is the head of the family and the wife is a housewife." ( <i>Suami adalah Kepala Keluarga dan isteri ibu rumah tangga.</i> ) Art. 31:3.	
Responsibility	"The husband is obliged to protect his wife and provide all the necessities of household life according to his ability." ( <i>Suami wajib melindungi isterinya dan memberikan segala sesuatu keperluan hidup berumah tangga sesuai dengan kemampuannya.</i> ) Art. 34:1.	"The wife is obliged to manage household affairs as well as possible." ( <i>Isteri wajib mengatur urusan rumah-tangga sebaik-baiknya.</i> ) Art. 34:2.

### Advancing our understanding of the role of women's participation in forestry

Despite collecting data in forested areas, our study finds women perceive that forestry provides limited income and well-being benefits to households and communities. This is in contrast to findings that both women and men in Asia, Africa, and Latin America benefit significantly from forests and forest products (Sunderland et al. 2014). These same benefits were crucial in motivating women to participate in Posyandu, leading us to conclude that the lack of such benefits limit women's motivation to participate in forest management. Hence, increasing women's participation in forestry in Indonesia requires first addressing the underlying issue of generating and equitably sharing economic and well-being benefits from forests (Nuggehalli and Prokopy 2009, Coulibaly-Lingani et al. 2011).

### Limitations of the study

Both studies are extensive in terms of geographical scope and number of respondents interviewed but are not intensive because the data collection period was limited to one week on average per village. Despite the broad geographical scope for the Forestry Dataset (Sumatra and Kalimantan), it did not include Papua, a region in the Health Dataset where forest income is as important as farm income. In the Health Dataset, we lacked follow-up questions to cross-check responses, e.g., asking about factors that could de-motivate others (including men) from joining, and did not interview non-participant women and men. We realize motivations to engage in a community activity can be a socially delicate topic, as indicated by the importance of social motivations. Time in the field to build trust and understanding of the social contexts may provide more accurate insights into motivations. Nevertheless, all authors have (near) native understanding of Indonesian language and culture, with one author's life experience being close to Posyandu as a child and mother of children who attend Posyandu, and draw on their extensive field research experiences in rural Indonesia to understand the subtle nuances of the data.

### CONCLUSION

Comparing Posyandu with forestry activities may seem like comparing apples and oranges. Posyandu benefits from heavy public investments that the forestry activities do not benefit from, for example, the popular "Aku anak sehat" (I'm a healthy child) jingles as part of a long-term public campaign to remind parents to bring their kids to Posyandu, and the extensive institutional entrenchment of Posyandu into village social and political life. Additionally, forest climate action is full of controversy because of tensions between global benefits of climate change mitigation vs. local costs of foregoing alternative land uses. In contrast, there is no competing discourse on the merits of protecting the health of children and pregnant mothers. These public investments and clear discourse pave the way for general acceptance and support of women's participation in Posyandu. Is it fair to assume there should be the same level of women's participation in forestry by using Posyandu as a benchmark?

We argue yes and no. Yes, because participation in forestry activities represents participation in a larger public space that has been, but can longer be, reserved for men. Global challenges cannot be tackled by men alone. Our results show that although women may not be prevented to participate, all the cards are stacked against them participating. By and large, they do not feel invited to participate publicly, hence participation does not earn them social benefits nor enhance their self-esteem. No, because public investments are responsible for much of the benefits that has attracted women into Posyandu. Without these benefits, expecting the same level of participation in forestry may be disempowering, rather than empowering women

We reflect on our findings to answer our three research questions.

1. What motivates women to participate in collective actions? We found the following motivations are particularly important for women: (1) upholding (mainly altruistic) values of advancing the well-being of themselves and others; (2) advancing social capital for themselves and their family according to existing social norms. In domains where women are not usually involved or where men usually lead, such as forestry so far, participation does little to advance women's social capital; (3) self-enhancement, i.e., enhancing their sense of identity by engaging in activities that give them pride or acknowledge their competence.
2. To what extent do forest climate actions motivate women to participate? Forest climate actions that we studied provide limited motivations for women to participate. This finding is based on what most women in our study perceive, which are: (1) forest climate actions contribute little to their well-being and that of their families and communities; (2) women's participation in communal forest climate actions has been limited and sometimes must go through their husbands; (3) lack of social or institutional structures related to forest climate actions that provide positive opportunities for women, such employment opportunities and organizations at the village level with high female participation.
3. What could be done to improve women's participation in forest climate actions? We suggest (1) tangible benefits from forest climate action for women and rural communities, so

that women see forests are worth fighting for; (2) respected roles for women in public spheres related to forest climate actions, recognized by all members of the community; and (3) self-enhancement opportunities through village-level organizations and good employment opportunities aligned with forest climate actions.

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#### Author Contributions:

*Design of conceptual and analytical frameworks (SSA, MB); Management and coordination responsibility for the research activity planning and execution (SSA, MB, IAPR, DE); Writing - original draft (SSA, MB, IAPR, DE); Data collection (DE, IAPR, SSA, MB); Data analysis and interpretation (SSA, MB, DE); Writing - review & editing (SSA, MB, IAPR, DE); Writing - literature review (IAPR, DE, SA, MB).*

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#### Data Availability:

*The data/code that support the findings of this study are available in CIFOR's Dataverse repository (<https://data.cifor.org/dataverse/general/>), and include the following: - Center for International Forestry Research (CIFOR), 2020, "Women's dataset of the Global Comparative Study on REDD+ (GCS REDD+) Module 2," <https://doi.org/10.17528/CIFOR/DATA.00197> Center for International Forestry Research (CIFOR), V2 - Center for International Forestry Research (CIFOR), 2020, "Village dataset of the Global Comparative Study on REDD+ (GCS REDD+) Module 2," <https://doi.org/10.17528/CIFOR/DATA.00199> Center for International Forestry Research (CIFOR), V2 - Center for International Forestry Research (CIFOR), 2020, "Household dataset of the Global Comparative Study on REDD+ (GCS REDD+) Module 2," <https://doi.org/10.17528/CIFOR/DATA.00198> Center for International Forestry Research (CIFOR), V2 - Boissiere, M., 2016, "PMRV Database," <https://doi.org/10.17528/CIFOR/DATA.00010> Center for International Forestry Research (CIFOR), V1*

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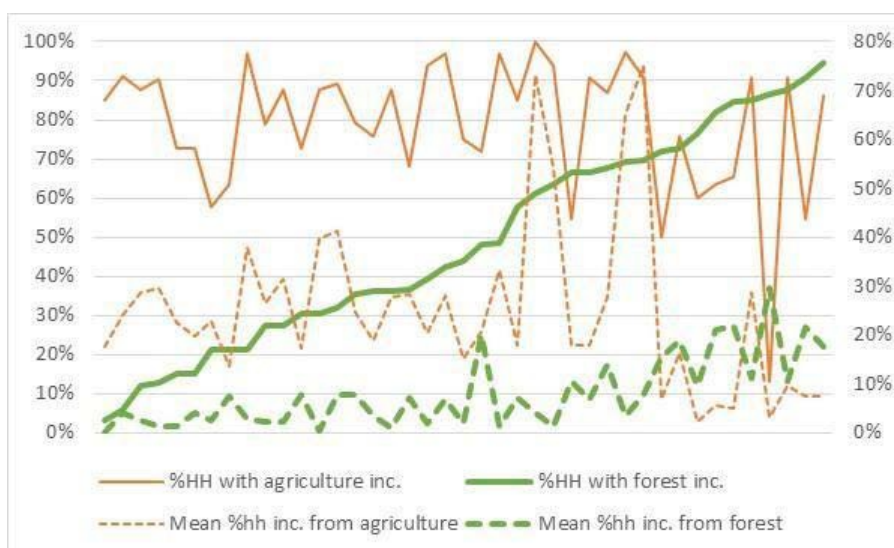
## APPENDIX 1. MOTIVATION STATEMENTS AND INDICATORS – FORESTRY

### Values

*Statement 111. Forestry income is valuable for the community and households in the village*

Given our finding that income is an essential component of women's well-being, we investigate the extent to which forestry contributes to household income. There is a positive relationship between the proportion of households in a village that receives income from the forest and environmental products and the average proportion of income derived from those products (See Figure A1.1). Villages studied range from those with almost no households with forest income (3%) to almost all (97%). Among seven villages with more than 80% of households with forest income, the proportion of forest income in total household income can vary greatly, ranging from zero to 1 with a median of 7%. This result suggests that while a few households whose incomes highly depend on forests, most do not.

We contrast this with income from agriculture. In most study villages (33 of 45), a higher proportion of households earn income from agriculture compared to forest. The average proportion of income earned from agriculture is higher than from forests in 32 of 45 villages, reaching as much as 70% of total income. 90% of villages have between 50% to 97% of households with income from agriculture. In contrast, these values are between 7% and 90% for income from forestry, suggesting that agriculture affects the income of more households more significantly than forests.



*Figure A1. 1 Comparison of income from agriculture and forest*

Unit of observation: Household Survey aggregated to the village (N=45 villages)

*Statement 112. Our well-being relies on avoiding forest loss*

We study the perceived impact of forest cover loss on the well-being of the community by asking two related questions:

Q1: "Overall, has the net area of forest cover in this village increased, stayed the same, or decreased since two years ago?"

IF DECREASED:

Q2: “If net forest cover in the village decreased in the last two years, what – if any – are the effects of this decrease on the well-being of women in the community?”

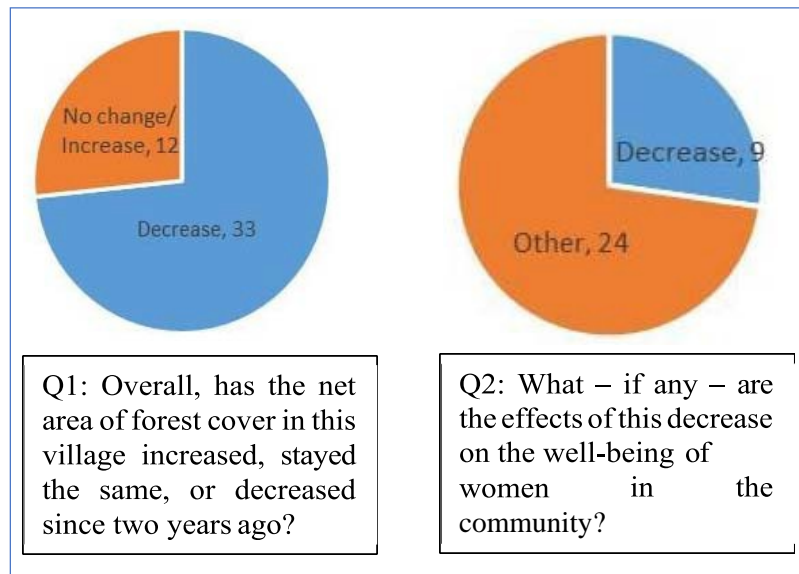


Figure A1.2. Perceived effect of decreased forest cover on women's well-being

Unit of observation: Women's Group Survey (N=45 groups or villages)

Most villages (33 of 45) experienced decreased forest cover. Of those, a minority (9 of 33, 27%) felt it decreased the well-being of women in the community.

*Statement 113. Our well-being relies on REDD+ interventions that restrict forest access*

To understand the extent to which women share the concern to prevent forest loss, we analyze the perceived impact of forest access restriction on well-being in 15 REDD+:

*Q: “Which of the following choices best describes the overall effect of the intervention on the well-being of women in the community?” [Interviewer must read only the choices 1-5 out loud and enter one code to the right.]*

1 = very negative; 2 = negative; 3 = no effect; 4 = positive; 5 = very positive

6 = both negative and positive; -8 = DNA (type of intervention not applicable in village); -9 = respondents do not know

The 15 villages received 23 interventions to reduce forest access (RFA). Of the 23 interventions, the majority (13) were perceived to have no impact on well-being; 4 had a positive impact. Respondents could not respond (i.e., Respondent Does Not Know/RDNK) for the remaining six interventions. The results suggest women do not perceive substantial (positive or negative) impacts of RFA interventions on their well-being.

*Statement 114. Our well-being is positively impacted by REDD+ interventions*

We asked respondents of women's group discussions in each village about the impact of REDD+ interventions using the following question “I will read to you a list of categories of performance. Please tell us how [ ] has

performed overall by choosing just one of the following ratings for each of these categories: very negative, negative, no effect, positive, or very positive.”

[Category of performance:] “Improvement of the well-being of the community.”

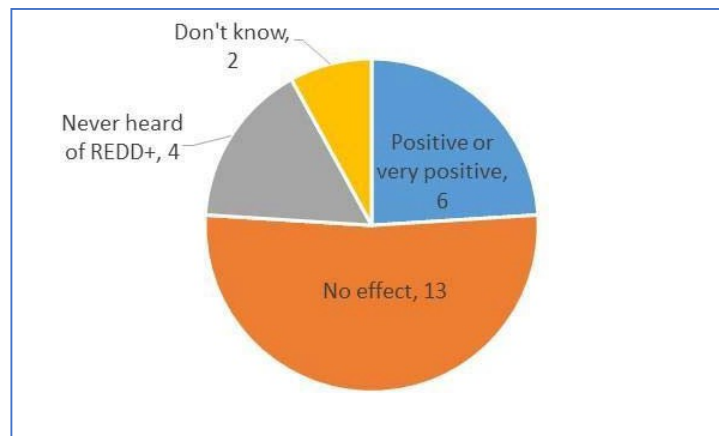


Figure A1. 3. Perception of the effect of separate REDD+ interventions on the well-being of the community

Unit of observation: Women’s Group Discussion in villages with REDD+ interventions (N=25)

Of the 25 intervention villages, 19 felt either no effect (13), never heard of the intervention (4) or did not know (2). The rest (6) felt the impact was positive (5) or very positive (1). Hence the majority (19 of 25) could not feel any positive or negative impacts. It suggests REDD+ interventions at the time are not perceived to influence women’s values in most villages due to their perceived attenuated impact on well-being.

### Social

To gauge whether there is an opportunity for women to be viewed favourably by others, we need to establish an existing acceptance that women contribute to village decision-making related to forest resources. We assume that if this space does not exist, then there are no social favours to be gained when women volunteer to participate in forestry activities. The results show limited social space for women, suggesting that those who actively engage in forest monitoring and regulation would find it to be a socially challenging endeavour. Women are even less likely to think it is their role to monitor forest use than decide on forest rules.

*Statement 211. We (women) are invited to participate in decisions on monitoring forest use at village level*

Our indicator is whether participants agreed or disagreed with the following statements:

“Women actively participate in monitoring forest use (for example, as park guards, observers, reporting on infractions).”

Forest monitoring: In more than half of the study villages (27 of 45), less than 20% of participants agreed with the statement; 16 of those villages had no one agreeing with the statement. The median proportion that agreed across the 45 villages was 7.7%.

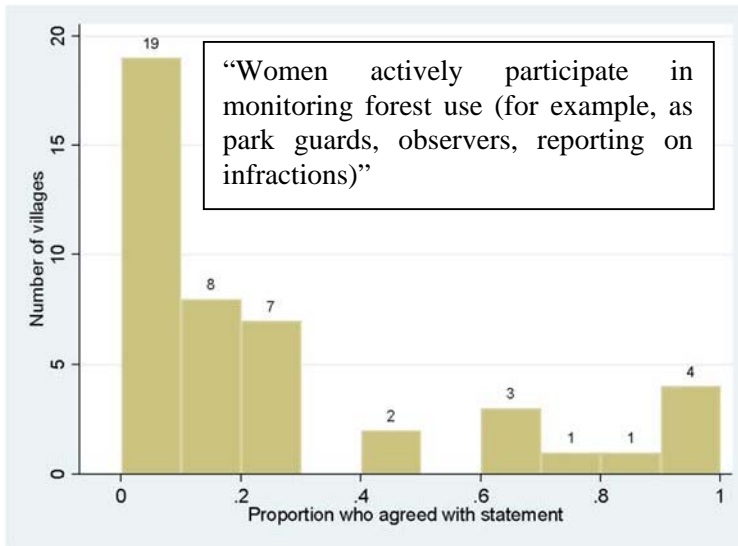


Figure A1. 4. Number of villages where respondents agreed that women actively participate in monitoring forest use, by proportion agreed

Unit of observation: Women's Group Survey (N = 45 groups or villages); Excludes RDNK responses or refused to respond.

**Statement 212. We (women) are invited to participate in making rules on forest use at village level**

Our indicator is whether participants agreed or disagreed with the following statements:

“Women actively participate in making rules for forest resource use in the village”.

Agreement with the above statement suggests women have more opportunities to gain favour from important village members by being active in forestry-related activities compared to otherwise.

In many villages (20 of 45), less than 20% of participants agreed that women were actively participating in making forest rules; 12 of those villages had no one agreeing with the statement. The median proportion that agreed across the 45 villages was 17.4%.

Figure 3. The proportion of respondents who agreed with statements about women's roles in forestry



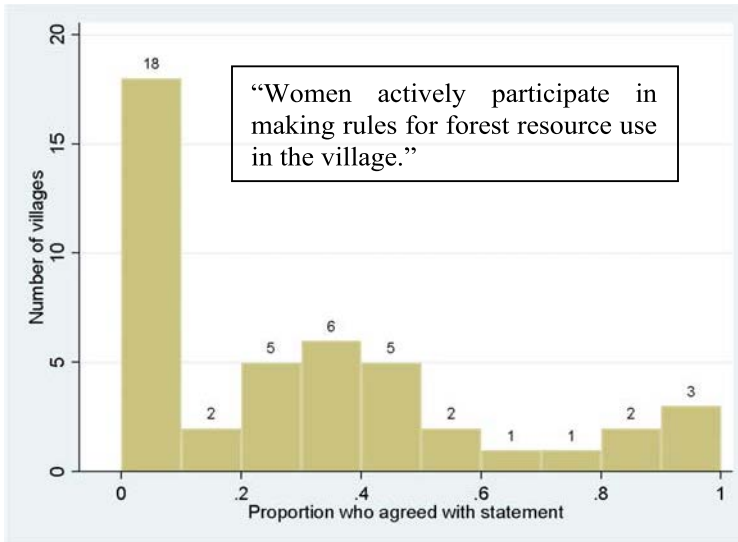


Figure A1. 5. Number of villages where respondents agreed that women actively participate in making rules for village forest use, by proportion agreed

Unit of observation: Women’s Group Survey (N = 45 groups or villages); Excludes RDNK responses or refused to respond.

*Statement 213. We (women) are invited to participate in REDD+ design and implementation*

Women may have a more substantial role in determining household-level decisions. We investigate this by using the indicator of whether participants agreed or disagreed with the following statements:

*“In most households, women play an active role in decisions about land and forest use (e.g. what products to grow, collect, from where, how much, when to clear forest, etc.).”*

The results are practically the opposite of those on women’s roles at the village level. In 36 of the 45 study villages, more than 80% agreed with the above statement, with all respondents agreeing in 17 villages.

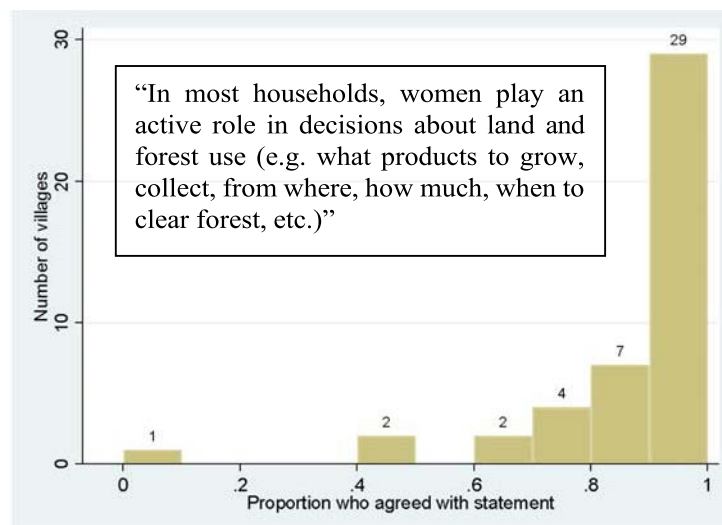


Figure A1. 6. Number of villages where respondents agreed that women actively participate in making rules for household land and forest use, by proportion agreed

Unit of observation: Women’s Group Survey (N = 45 groups or villages); Excludes RDNK responses or refused to respond.

This result suggests that women's role in controlling household actions and assets is perceived to be very strong, yet the opposite is true at the village level. The relationship between social norms acceptable at the household vs village level needs to be carefully understood. There seems to be a gap between women’s private and public roles in land use and forestry. The gap between private and public spaces may be filled by husbands serving as household representatives at the village level.

Statement 231. We (women) can decide about our household’s land and forest use

We use the *non-agreement* (i.e., disagree/abstain) of the following statement to indicate that women have influence.

“Women’s primary influence on important village decisions is through their husbands.”

Results show more than 80% of respondents agree with this statement in 18 of the 45 study villages, with a median proportion of 57.1%. From this, we conclude that husbands are generally perceived by women in the study villages as helping them influence village decisions. Still, there may be significant disagreement on whether they are the *primary* means to do so.

This data does not shed further light on how women bridge their active role in determining land and forest use decisions at the household level and their less active role at the village level.

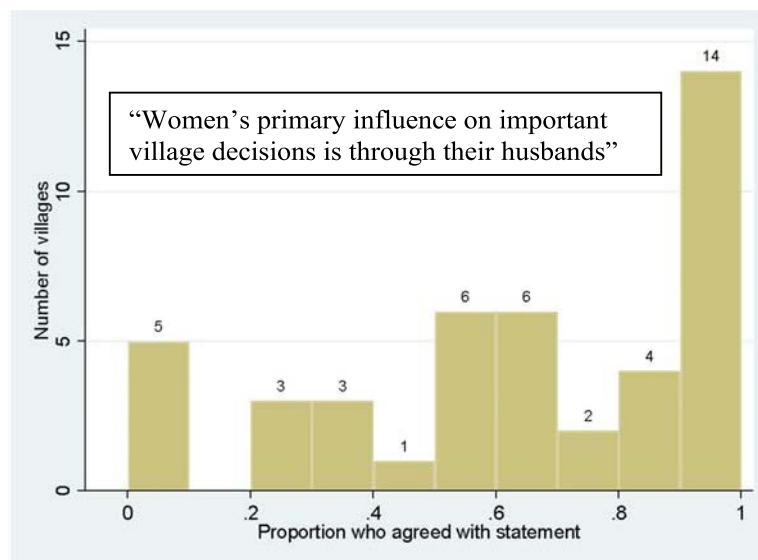


Figure A1. 7. Number of villages where respondents agreed that Women’s primary influence on important village decisions is through their husbands, by proportion agreed

Unit of observation: Women’s Group Surveys (N = 45 groups or villages); Excludes RDNK responses or refused to respond.

*Statement 232. We influence village decision making directly, without our husbands*

Another way of understanding the role of women in forest conservation is women’s participation in the decisions specific to REDD+ activities, including whether they have heard about and engaged with REDD+ initiatives. For this analysis, we focus on intervention villages. Due to the differing intensity of interventions felt across interventions, we contrast villages that felt the impact of REDD+ initiatives and those that did not. Of the 25 intervention villages studied, 21 women’s surveys have heard about the REDD+ initiative. Of these 21 surveys, the results are summarised in the table below.

*Table A1.1. Women’s perception of their involvement in REDD+ design and implementation*

Unit of observation: Women’s Group Surveys in villages with REDD+ interventions (N=21); Excludes villages where women’s group survey

Total (21)	Disagreed	Agreed	Total
Involved in deciding to implement	11	10	21
Involved in the design and implementation	10	11	21

**Enhancement**

*Statement 311. There are forest-related organizations in the village that can bring acknowledgement for competent women*

The Posyandu findings indicate that the existence of an institution is an essential aspect of gaining pride from pursuing a social objective. In line with this finding, we analyze the existing village organizations in study villages to see the extent to which they can support objectives related to forest conservation. Women’s organizations offer one avenue for gaining public acknowledgement from personal actions. We acknowledge there are other ways in which women can gain pride from their pro-forestry concerns, for which we lack data, such as receiving forestry-related awards, funding, or training outside the village.

We analyze the existence of women’s organizations in study villages. Most villages (30 of 45) have two to three organizations; two did not mention any organizations.

*Table A1.2. Membership and type of village organizations with high female membership*

Unit of observation: Women’s Group Surveys in (N=45); Excludes villages where women’s group survey. For villages with multiple organizations of the same type, we apply information from the organization with the highest membership. Grey cells indicate number of organizations with where more than 40% of women in the village are members.

Proportion of women in the village who are members*	Organization types			
	Religious	Development	Health	Natural Resource
No organisation	14	17	17	44
1-20%	6	11	11	0

21-40%	11	10	11	0
41-60%	7	3	4	1
61-80%	5	3	2	0
80-100%	2	1	0	0

One of the 45 studied villages has an organization related to natural resources (in this case, a farmer's group) that involves women. In contrast, most villages have at least one organization related to religion (31 of 45), economic development (28 of 45) or health (28 of 45).

Among the different types of organizations, women's membership is generally highest in religious organizations; in 14 villages, half or more of women are members of at least one religious organization, followed by organizations on economic development such as PKK and saving and loans groups. Membership in health organizations is relatively low due to the different nature of membership of these organizations: members are primarily service providers and administrators rather than participants or beneficiaries since the benefits and activities involve all community members. In contrast, religious and development organization members are mostly participants and beneficiaries rather than service providers.

## Understanding

### *Statement 411. Learning about the environment can impact women*

Women may be motivated to learn about forests when there are ample opportunities for such learning. We use data on implementing environmental education interventions in 18 of the 45 study villages to glimpse how women see such learning opportunities. In these 18 villages, we identified 25 interventions consisting of socialization (i.e., introduction and awareness raising about REDD+ or forestry programs, conservation, environment, or land management) and capacity building/training.

When asked about the impact of these interventions on women's land use behaviour, the answer is mostly 'no effect' (n=22) due to the following reasons: (i) there was only one woman who participated, or the training was for men (6 interventions); (ii) the topic was not important or of no interest to women (e.g., firefighting or cacao production); and (iii) respondents do not recall or know about this intervention (5 interventions). In the three interventions where there was a perceived effect, women found that education improved their environmental practices and motivated them to protect forests. In one village that received fire training, respondents felt safer knowing that the men in their village would be better prepared. At the same time, another village in the same project that received fire training felt it did not impact women directly since firefighting is a men's role.

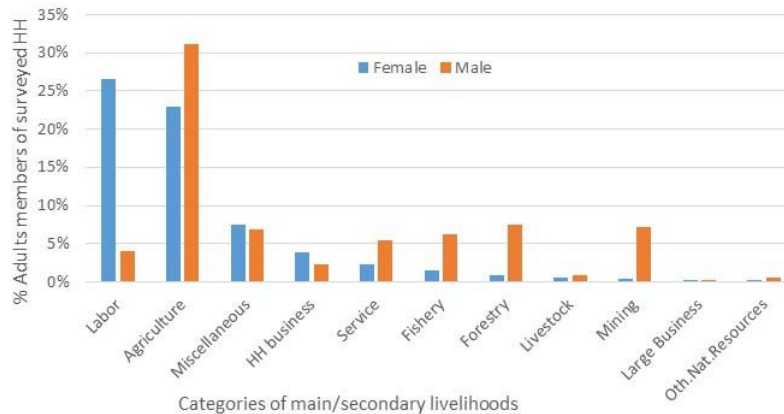
We conclude that in most cases, respondents have not viewed environmental education opportunities as attractive, memorable or practical. Gender was essential, as respondents thought women were not the target audience or had little interest in a male- oriented topic.



## Career

*Statement 511. Many of us (adult females) benefit from forest-related occupations*

Adult women may find more motivation to participate in forestry if it is a typical career path for women locally. We investigate the main and secondary livelihoods of adult women in surveyed households. Two occupational sectors engage a large proportion of adult women in surveyed households: (i) labour (primarily as unpaid domestic labour/housewife) (27%); and (ii) farm labour for own production (i.e., farmers) (23%). A much higher proportion of women are in the labour sector than men. Men are occupied in almost all other sectors, including forestry.



*Figure A1.8. The proportion of adult members of surveyed households by main or secondary livelihood*

Unit of observation: adults in surveyed households