



Understanding non-participation in local governance institutions in Indonesia

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ARTICLE INFO

Keywords:

Time
Incentives
Participation
Awareness
Community-based conservation

ABSTRACT

Community-centered approaches are crucial and impactful strategies for the global climate and biodiversity crisis. However, these approaches hinge upon participation for both pragmatic and ethical reasons. While there is a growing body of research in this field, most studies focus on those who opt in to these community-based approaches. Research focuses on how interventions do or do not achieve the intended cross-sectoral outcomes that are flagship among these strategies. Few studies seek to understand the objective and subjective constraints of non-participants. We investigated why community members chose not to participate in a community-centered conservation approach in West Kalimantan, Indonesia. We used snowball saturation sampling and semi-structured interviews across nine villages, surveying both non-participants and key informants. Our results show that non-material factors such as time, lack of understanding, and feeling uninvited drove non-participation. Non-participants did not identify a lack of interest in program activities or services as a primary reason for opting out. Key informants suggested that participation could be improved with better outreach around objectives, potential benefits, and data feedback loops that quickly communicated results to community members. These results have implications for conservation strategies around the globe as findings suggest investing in non-material factors (e.g., improved messaging and considerations of time burdens) are significant constraints to participation. Payment for ecosystem services and carbon finance schemes often invest considerable time and money in incentivizing participation with material benefits, and our results suggest a more significant consideration should be placed on time requirements, messaging/outreach, adaptive feedback loops, and democratizing data ownership.

1. Introduction

The question of how to balance global development with conservation has emerged as a key issue in response to the impacts, across multiple dimensions, associated with conservation activities on local communities (Cardinale et al., 2012; Miller, 2014), and the dependence of vulnerable resource-users on ecosystems (Coad, Campbell, Miles, & Humphries, 2008; Coulthard, Johnson, & McGregor, 2011).

Conservation programs are deeply concerned with both increasing and deepening local participation, to balance socio-economic dimensions with conservation objectives (Buchy and Hoverman, 2000). Conservation outcomes depend on complex interactions among institutional, socioeconomic, and personal characteristics (Tole, 2010), but high levels of local participation are often associated with positive environmental outcomes – especially when this involves “meaningful” forms of participation (Arnstein, 1969), such as control over decision-making,

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<https://doi.org/10.1016/j.biocon.2024.110605>

Received 23 February 2023; Received in revised form 5 April 2024; Accepted 15 April 2024

Available online 9 May 2024

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and influence over which values recognized and prioritized within conservation schemes (Persha et al., 2011; Zafra-Calvo et al., 2020; Novick et al., 2022).

Effective and inclusive participation can both facilitate positive social equity feedback and reduce conflicts (see Pascual et al., 2014); render interventions more locally salient (Zafra-Calvo et al., 2020); catalyze collective action (Ostrom, 2010; Mahajan et al., 2021), and increase skills and capacity of participating individuals to deliver conservation results (Evely et al., 2011). Emphasizing local participation and empowerment from the start of a conservation project tends to encourage local ownership, facilitating implementation and enhancing long-term success (Tallent & Zabala, *under review*). Moreover, there is growing consensus that participation is an important aim in and of itself (Buchy and Hoverman, 2000), especially in response to critiques of colonial, top-down conservation models.

The importance of participation informs conservation design in many contexts, notably models of Community-Based Conservation (CBC) that include a range of interventions framed as people-centric alternatives to top-down “fortress” conservation models. These CBC approaches tend to seek conservation outcomes in ways that also integrate and promote the residents' rights, stewardship, and wellbeing (Murphree, 2002; Tauli-Corpuz et al., 2020; Mahajan et al., 2021). They are often premised on meaningful local participation across a wide range of interventions, such as citizen-level action (Morgan-Brown et al., 2010); rights-based approaches (Tauli-Corpuz et al., 2020); community co-management of protected areas (Hajjar et al., 2021), and payments to communities for the ecosystem services their management delivers (Blundo-Canto et al., 2018). Across these contexts, and despite considerable diversity and the gaps between theory and practice, local participation is recurrently highlighted as crucial to successful social and environmental outcomes (see Buchy and Hoverman, 2000; Nilsson et al., 2016; Matarrita-Cascante et al., 2019).

1.1. Factors that influence local participation in conservation

Individuals' decisions about whether they/their households will participate in conservation interventions are shaped by various factors, explored across disciplines and contexts into a “growing and sometimes cumbersome literature” (Matarrita-Cascante et al., 2019). Across contexts, however, participation and non-participation have often been helpfully understood as shaped by constraints – both subjective (e.g., preferences, beliefs) and objective (e.g., prices, political processes, marginalization) that are often profoundly intertwined – and that limit behavior (Fig. 1, see Tanner, 1999). Many subjective and objective

constraints are affected by structural/institutional contexts (Matarrita-Cascante et al., 2019), including conservation interventions themselves. These can shape not only the distribution of resources, but also of power and opportunities among resource users, which further impacts the recognition of values and rights (see Arnstein, 1969; Larson and Ribot, 2004).

The barriers to participation can be framed as subjective constraints (e.g. preferences, beliefs, roles, responsibilities) and objective constraints (e.g. time, income, inclusion; Fig. 1; Tanner, 1999). Much of the literature to understand how conservation programs shape participation has focused on objective constraints such as incentives and their distribution, as well as the burdens of conservation (Fig. 1; Tanner, 1999; Morgan-Brown et al., 2010). Objective constraints are often framed in terms of perceived or anticipated material benefits and costs of conservation (Bennett and Dearden, 2014). Strategies to reduce these objective constraints focus on creating ‘better’ incentives, reducing opportunity costs, and creating tangible socio-economic benefits based on conservation outcomes or compliance how these are equitably distributed (Walpole and Goodwin, 2000; Sommerville et al., 2010; Gross-Camp et al., 2012). Further measures to reduce objective constraints consider household and individual variables such as household income, livelihoods, gender, and education levels (Mogomotsi et al., 2020; Zabala et al., 2022). There has been growing interest in incentive-based conservation schemes to widen participation so that they also address well-being, diverse values, equity concerns, and livelihood needs (Brooks et al., 2012; Mahajan et al., 2021; Tan, 2021).

However, despite the importance of addressing objective constraints (e.g. time, poverty, costs, incentives), recent studies also increasingly highlight that material services alone do not entirely explain how individuals participate in conservation programs: participation is also motivated by a range of subjective constraints (Fig. 1), such as social cohesion and a strong sense of place (Yuliani et al., 2022); the reflection of locally held relational values (Lliso et al., 2022); allegiance to new governance structures created by the conservation intervention (Silva and Mosimane, 2014); institutional and interpersonal trust among project stakeholders (Young et al., 2016), and fairness in the distribution of costs and benefits (Sommerville et al., 2010, Armstrong, 2019) and in decision-making (Kennedy et al., 2022). These non-material barriers can be binned into ‘subjective constraints’ to participation (Fig. 1). Strategies to reduce subjective constraints focus on co-creating programs that are grounded in local conceptions, values, and traditional structures, which are already often consonant with environmental outcomes (Garnett et al., 2018), they can leverage the power of social networks and shared social norms towards inclusive outreach and greater

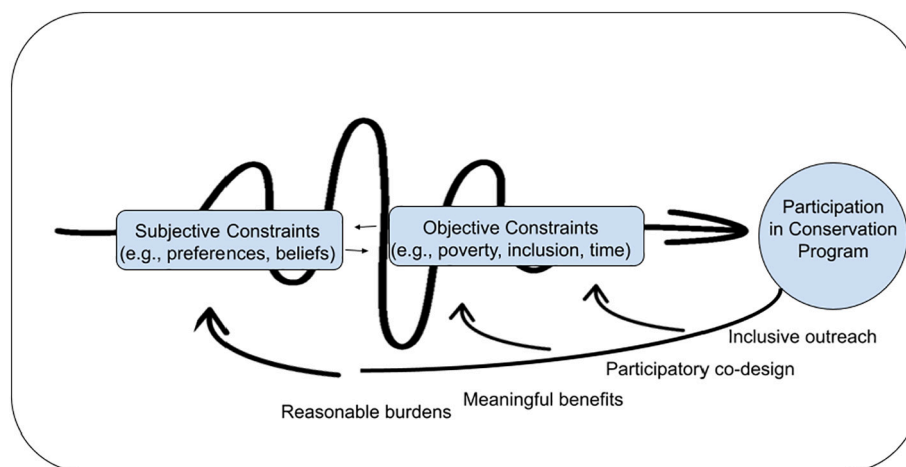


Fig. 1. Decisions to participate in conservation programs are shaped by a complex interaction of subjective and objective constraints, which are partly mediated by structural factors that include the conservation program itself. These include various project design choices, such as outreach, participatory processes, and benefits/burdens, that can mitigate or exacerbate those constraints (based on Tanner, 1999).

participation (Lliso et al., 2022; Zafra-Calvo et al., 2020; Silva and Mosimane, 2014). In many contexts, participation in conservation is also often shaped by coercive factors subjective constraints and fear of the sanctions associated with environmental rule-breaking (e.g., Carmenta et al., 2021).

1.2. The importance of non-participants

Individuals and households that do not participate in conservation programs can be very important: where they are a majority, they may limit transitions to more sustainable behaviors. Even if they are a minority, they may still have particular importance because conservation outcomes can be undermined by a minority whose non-participation continues to cause harm or causes disproportionate impacts (e.g., a powerful resident with large resource access, a few households that use fire to clear land or a small number of illegal wildlife traders targeting an endangered species).

Moreover, how subjective and objective constraints lead to non-participation can impact the equity and inclusion of social-environmental outcomes of conservation programs (Tanner, 1999; Fig. 1). For example, through not participating, households may lose access to opportunities related to payments, entrepreneurship, health, and education. Importantly, non-participants may be among those for whom the constraints to participation are greatest (Fig. 1), and for whom behavioral, cultural, and livelihood transitions are most difficult, burdensome, or undesirable (Tan, 2021). These individuals may have the ‘most to lose’ from not participating, but subjective constraints inhibit them from accessing material benefits. For example, conservation programs can create harm when they legitimize the prohibition of customary practices, such as by framing traditional hunting negatively as ‘poaching’, or subsistence-swidden agriculture as ‘slash-and-burn farming’. Such instances can attenuate the vulnerabilities of local communities without addressing their needs (Duffy, 2010; Carmenta et al., 2019; Rai et al., 2019). As a result, non-participants may often be both unique within their population and of particular interest to conservation design.

Where non-participants are considered, they are generally treated as a control group, against which to compare a treatment group to establish statistical significance. Non-participation can perhaps be best understood through the lens of constraints (Tanner, 1999; Sutton and Tobin, 2011). Similar to motivations to participate, reasons for non-participation can be associated with diverse subjective and objective factors, often mediated by structural conditions of the intervention: a sense of resentment, fear of lost access (Bennett and Dearden, 2014), conflicting values, different perceptions over time and priority for allocation, or negative legacies of past interaction with conservation institutions (Jim and Xu, 2002) are other possibilities (Fig. 1). Research also shows that disparities in the sharing of costs and benefits derived from conservation interventions can influence adverse behaviors and attitudes by local communities and individuals with livelihood heterogeneity (Mehta and Heinen, 2001; Jim and Xu, 2002; Armstrong, 2019; Newton et al., 2012). Notably, lack of clear communication about the conservation intervention and its potential impact can result in misunderstandings about the intervention and unwanted outcomes; for example, a fear of losing access to resources in the future can increase current resource extraction and degradation (Jim and Xu, 2002). However, we need to understand why – even in programmatic approaches that are designed to ensure high local participation through participatory processes and benefits residents – participation rates can still lag.

2. Methods

Amidst recognition that participation is essential, cases where individuals and households chose *not* to participate have received comparably little attention. We argue that individuals who do not participate can play unique roles in conservation, may have distinct

motives, and merit greater research attention. We analyze household-level explanations for their non-participation in a CBC intervention in nine rural communities in Indonesia's West Kalimantan Province. That intervention was specifically designed to motivate high participation rates, aiming to overcome known, objective constraints to participation (procedural and material). It included a bundle of program provisions intended to both facilitate and incentivize broad participation, also among traditionally marginalized groups – including participatory design, locally selected activities and program activities (e.g., livelihood support, savings/loans groups, access to healthcare), opportunities specifically for women, and widespread communication. Despite these efforts, participation rates across the nine communities varied from 85 % to only 15 %. This variability offers a unique opportunity better to understand the motivations and demographics of non-participating households. Such information is crucial to understanding the decision to opt out of conservation programs and to create future strategies that might increase participation rates.

2.1. Study context

The Gunung Nyiut Nature Reserve (GNNR) in West Kalimantan, Indonesia is 917 km² of montane, sub-montane, lowland rainforest (Fig. 2). It was gazetted in 1985 as a Nature Reserve (Cagar Alam) to protect the watershed of three major rivers originating from its high mountain peaks. Prior to being gazetted as a Nature Reserve, the forests in this landscape were managed by local Dayak Indigenous communities following their customary governance mechanisms known as ‘hukum adat’. After being established as a Nature Reserve, major parts of this landscape were accorded different levels of protection status in line with the global push to expand protected areas. This resulted in some communities falling within up to 7 km inside the Reserve's boundary, which led to vastly different possibilities for community members regarding access to resource use and basic government services (e.g. healthcare, education).

The establishment of the Reserve boundary sparked a series of long-standing tenure and rights conflicts between the government management agencies and local communities. As there was no notable participatory mapping or land tenure activity involvement of local communities in the establishment of the Reserve boundary, many community members expressed that their rights were ‘stolen’ from them and developed a view of forests as “government-owned”. Also, restrictions on resource use and access created a crisis in resource ownership, which undermined traditional management practices and local stewardship, and eroded the trust in conservation. Currently, the GNNR is managed by the West Kalimantan Conservation Agency (Balai Konservasi Sumber Daya Alam, BKSDA), while members of the Dayak Indigenous communities residing inside and around the Reserve's boundaries can harvest non-timber forest products in certain parts of the Reserve, the rules do not allow for hunting, land clearing, or extractive activities within its boundaries. Nevertheless, the area is highly threatened by local exploitation, such as illegal logging, poaching, and land clearing for agriculture (see Novick et al., 2022).

The Dayak communities inhabiting the GNNR region are mostly subsistence farmers and fishers, dependent on natural resources for rural livelihoods (see Miller et al., 2020; Novick et al., 2022). The average monthly household income is US\$70–210 from selling agricultural products (e.g., pepper, corn, rubber). Residents face socio-economic inequalities, lack of access to basic government services, usurped tenure rights, and resource conflicts. The communities have a strong livelihood and cultural ties to land, wildlife, agriculture, and prioritise kinship and mutual cooperation in community development (e.g., building houses, and planting rice paddy). There has been little presence by outside non-governmental organizations and conservation practitioners in the area prior to the start of the program by an environmentally-focused NGO (ENGO) in 2017.

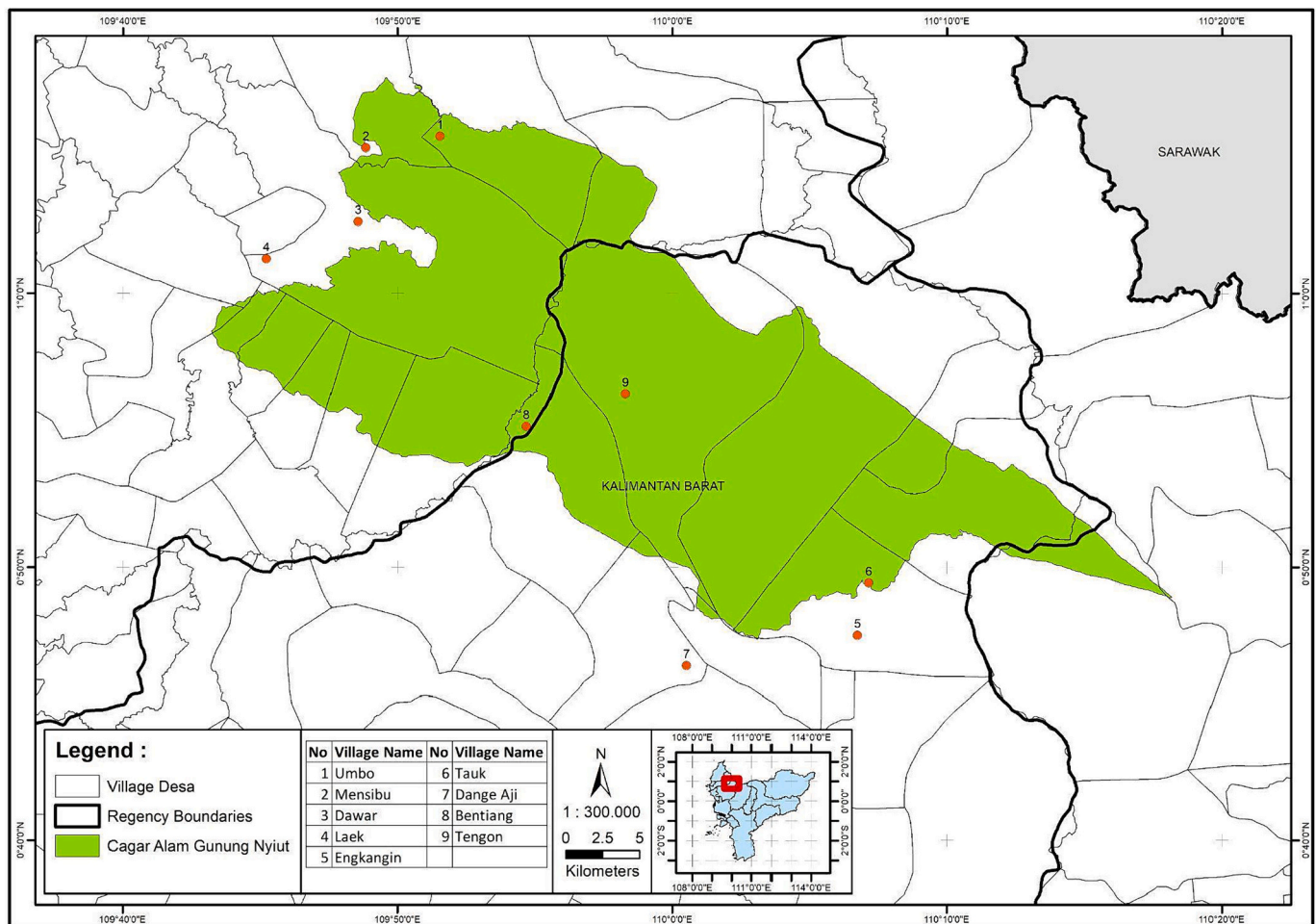


Fig. 2. Map of study area showing the location of the 9 intervention communities in relation to the Gunung Niut Nature Reserve (green shaded area) in West Kalimantan, Indonesia. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

2.2. Conservation focused on high, meaningful participation

This paper focuses on a community-centered conservation with 9 villages in and around GNNR (Fig. 2), developed by the ENGO evaluated in this study. The organization focuses on supporting community-determined solutions to social, economic, and environmental challenges. Notably, the intervention aimed for high rates of local participation in each village, considering this important to conservation-oriented outcomes; indeed, a recent evaluation of the intervention found a statistically significant negative correlation of program participation with encounter rates for poaching, illegal logging, and encroachment detections inside GNNR (Novick et al., 2022).

The project included considerable investment into the *process* of 1) identifying challenges across all three (social, economic, environmental) dimensions, and 2) eliciting community-designed solutions to these challenges in the 9 communities, through over 250 h across nine villages of focus group discussion (Fig. 3; see Miller et al., 2020 & Novick et al., 2022; Supplementary material 1). A minimum of three focus group discussions were conducted in each village as part of the ENGO's design strategy. This is done through informal discussions in the village, revising of ENGO's offer, and public consultations to ensure program activities are in line with community-determined aspirations and solutions. Before activities commence, they are spelled out in a memorandum of understanding between ENGO and each village that defines the rules of engagement, roles and responsibilities, and grounds for termination of the ENGO-village partnership.

The program activities chosen by communities fell into six

categories: Climate-smart agriculture and agroforestry; community-led forest protection; collaborative zoning and spatial planning; biodiversity research, and community healthcare, and education services (see Supplementary material 1). The program had no restrictions on who could join and participate in these activities.

The core element of this model was the creation of a Community Governance Body (CBG), a community-led organization that created a forum for community members to engage in governance and management of their surrounding natural resources, and address residents' priorities. By joining a CBG, residents were also able to access the six programmatic areas. (Novick et al., 2022; Supplementary material 1).

The approach emphasized community leadership and participatory decision-making (see Novick et al., 2022), by which community members actively participated not only in design and implementation but evaluation (Fig. 3; Supplementary material 1). The CBG held annual elections and monthly meetings and designed their own work plans to carry out programmatic activities (Fig. 3). ENGO provided technical support, in-kind support, and funds to help each community implement its vision. There were no paid or voluntary monitoring roles, conditional incentives, or focus on awareness-raising.

2.3. Respondent selection and recruitment

We recruited 146 non-participating residents for interviews between April–August 2021, across the nine communities where the intervention is running, including sites within and outside GNNR boundaries. Non-participation rates in the nine villages ranged from 15 to 85 % of

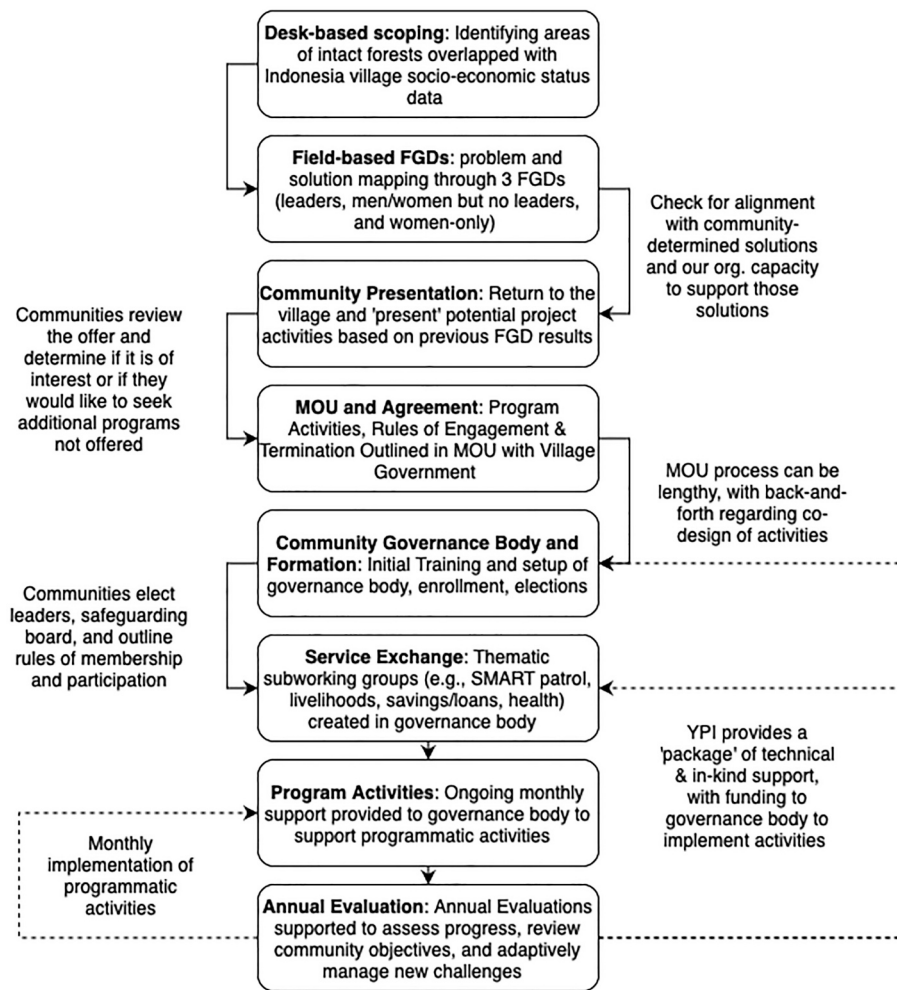


Fig. 3. Process of conservation project design, implementation, and evaluation used by ENGO, with a strong focus on meaningful local participation.

households (Table 1), and we only interviewed households who did *not* participate, as reflected in their decision not to sign up as a member of the CBG. Respondents were selected using opportunistic, purposive and snowball sampling, starting with multiple points in each village (e.g., village leader, farmer groups) and recruiting via village walks. When approached, respondents invited were given an opportunity to schedule an interview later, both for their convenience and to discriminate between outright refusals to participate and busy people. 20 respondents declined to be interviewed and 23 prospective respondents were excluded because they had not heard about the intervention.

We used a saturation sampling approach to identify respondent numbers in each village, where saturation was reached when successive

respondents repeated the same explanations for their non-participation (as reflected in their selection of cards, described below), which helped to ensure the comprehensiveness of our findings. However, we targeted a minimum of either 12 respondents or 100 % of willing households in each village (see Guest et al., 2006). We sampled 1 respondent per household (even when multiple families lived in the same household), and prioritized diversity across three key variables: gender, wealth (house made of cement or wood) and age (e.g., young, middle-age, old). We tracked respondents' demographics as the interviews were conducted and guided follow-up recruitment to ensure diversity so that the results would allow not only capture the main views but also reflect the views of minority communities. The sample has slightly more men ($n =$

Table 1
Village attributes and rates of non-participation in the Community Governance Body (CBG) by village and respondent sample (one individual per household).

Village, Sub-district, District	Population size (number of households)	Households <i>not</i> in CC (%)	Sample size (% of non-participating households)
RT.03 Umbo, Dusun Simpang Empat, Bengkawan, Seluas, Bengkayang (inside PA)	130 (40)	6 (15)	4 (67)
RT.04 Mensibu, Dusun Nibung, Sahan, Seluas, Bengkayang	179 (47)	15 (32)	4 (27)
Dusun Dawar, Pisak, Tujuh Belas, Bengkayang	1036 (297)	139 (47)	17 (12)
Dusun Laek, Bengkilu, Air Besar, Landak	738 (187)	104 (56)	12 (12)
Dusun Engkangin, Engkangin, Air Besar, Landak	698 (199)	103 (52)	34 (33)
Dusun Tauk, Engkangin, Air Besar, Landak	577 (157)	61 (38)	10 (16)
Dange Aji, Air Besar, Landak	1032 (260)	221 (85)	19 (9)
Bentiang, Air Besar, Landak (inside PA)	1103 (324)	275 (85)	11(4)
Dusun Kulum, Tengan, Air Besar, Landak (inside PA)	317 (84)	42 (50)	17 (40)

93) participating in the survey than women ($n = 52$). The nine villages were considered comparable in principal livelihood activity (predominantly farmers, $n = 91$); the spatial arrangement of villages was nuclear centres, and age was skewed towards people in their 40–50's because many young people left their villages and household heads tended to offer to participate.

We conducted additional interviews with 26 key informants across 6 of the villages in order to contrast their explanations for why some households did not participate. Key informants were community members who held elected roles in local governance bodies (CCs). These individuals therefore are in charge of overseeing the implementation of program activities and ensuring participation in activities by the wider community. Therefore, they have key insights into how individuals in their community interact or do not interact with programmatic activities.

All key informants both participated in the intervention and held voluntary or democratically elected leadership roles within the CC or community groups. These positions varied from elected governance body leaders to individuals responsible for a specific thematic area of activities within the governance body (e.g., farmer mentors, head of financial resilience, restoration leader, lead community health worker) (Supplementary information 1). They were all local residents partnering with ENGO to implement the project.

2.4. Semi-structured interviews

The interviews with non-participating households involved a set of direct questions about their reasons for not participating (Supplementary information 1). There are legitimate concerns about non-response and social desirability, especially in interviews associated with conservation proponents and when dealing with sensitive topics such as illegal behavior and non-compliance (see Nuno and St. John, 2015). However, direct questioning can nevertheless be effective (Gavin et al., 2010), and in this study, we did not discuss illegal behaviors. Practitioners familiar with the context confirmed that non-participation was unlikely to be perceived as an especially sensitive issue. However, they are of greater sensitivity in the context of the two villages inside the protected area (Tengon and Bentiang, Table 1).

Reasons for non-participation were elicited using a structured instrument. We developed a list of 21 hypothesis statements representing possible reasons for non-participation based on the literature, an online survey of the ENGO staff ($n = 63$), logical deduction, the intervention theory of change (Fig. 2), and key informant interviews. Trialing showed that providing respondents with too many options led to disengagement, so we consolidated our hypotheses into eight statements – referred to in the results as R1-R8.

Each reason for non-participation was written onto a card, and presented in a random order to the respondent, who could either read or listen to them being read aloud (see Dasgupta and Vira, 2005). Respondents were then asked to sort cards into two piles: reasons that were

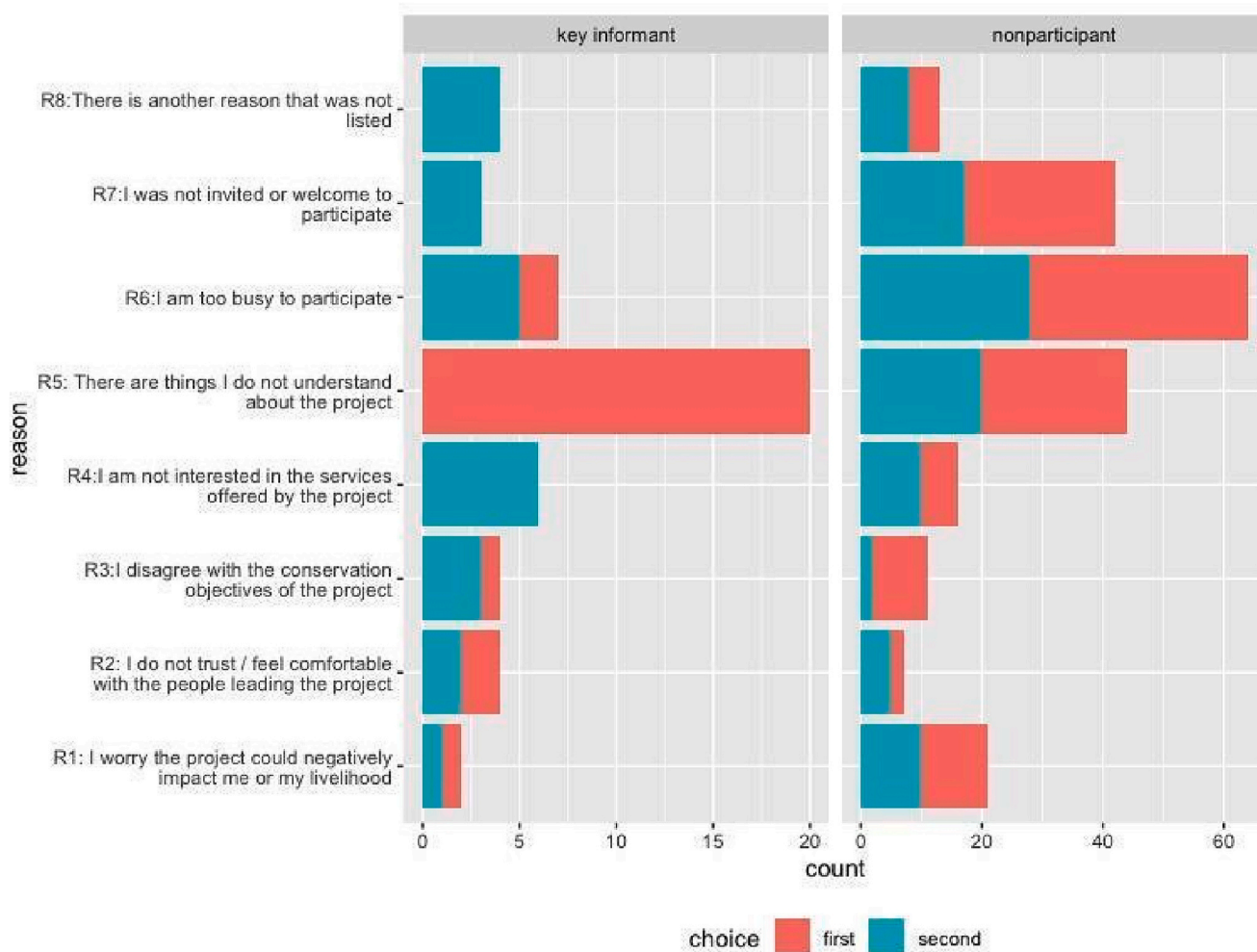


Fig. 4. A) Top reasons for non-participation reported by non-participants ($n = 146$), and B) and key informants ($n = 26$).

important to why they did not participate in the intervention and those considered unimportant and were invited to list other reasons not provided on the cards. Their choices were recorded. Respondents were asked to select and explain the 1st and 2nd most important reasons for non-participation from the 'important' pile. Data was recorded using Open Data Kit, with data and notes entered on interviewers' phones.

The 26 key informants were interviewed following a similar format but were asked to choose the top two cards that represented their opinion of why some people in their community did not participate (rather than their own reasons). They were then asked to explain 1st and 2nd most important reasons for non-participation. They were also asked for recommendations and strategies on how to improve participation rates in their community.

Interviews were conducted in Bahasa Indonesia by a team of 8 field interviewers from Tanjungpura and Panca Bhakti University. All team members were given a five-day intensive training by NGO's Research and Learning department on the survey instrument, consent process, interview techniques, the NGO code of ethics, and health and safety protocols. Team members were also provided with rapid antigen COVID-19 tests before and after the training and field work. The research was approved by Lancaster University Faculty of Science and Technology Ethics Committee (FST20117), and in Indonesia, was conducted in cooperation with BKSDA and local villages through a formal Memorandum of Understanding (MOU) with NGO.

2.5. Analysis

Respondents' top two reasons for non-participation were analyzed using descriptive statistics. We ran Fisher's-exact tests to look for non-random differences between categorical response data. This test was appropriate as it is well-suited for small sample sizes with non-normal distributions. We ran multiple two-way contingency tests to look for significant differences in reasons between different livelihoods, gender and type of house (cement vs. wood), and villages inside and outside of

protected areas. We also used descriptive statistics to compare responses from villages with high and low overall participation rates in the intervention, splitting villages along a threshold of 50 % of participating households. The non-random nature of our sampling procedure implies that the data allow us to explore reasons for non-participation within our sample only. Qualitative responses that further explained reasons for non-participation were qualitatively coded (separating reasons provided by respondents and key informants). This yielded 34 codes corresponding to reasons for non-participation. We then used a Venn diagram to represent overlaps in the reasons provided.

3. Results

Non-participants listed a range of constraints to participation; top reported reasons non-participation was that they were too busy (Fig. 4a, R6, 26 %), did not fully understand the project (R5, 18 %), and had not been invited or did not feel welcome to participate (R7, 17 %). Potentially R7 explains considerably more opting out than our results show, given that 23 prospective respondents were excluded because they had not heard of the program. The comparison of stated reasons for non-participation with demographic data suggests that these reasons were very similar for respondents from across the 9 communities, both inside and outside of protected areas, with different livelihoods (although almost all were farmers), gender, and types of house (cement vs. wood) (Supplementary information 2, 3). Reasons were also similar across villages with high and low overall participation rates (Supplementary information 2, 3).

For the top reported reasons, respondents provided further qualitative explanations for why their households had not participated (classified by researchers into 34 codes, Fig. 5, Supplementary information 3). Some of these further explanations overlapped among reasons. For example, being 'busy with the children' was used to explain both 'I am too busy to participate (R6)' and 'I was not invited to feel welcome to participate (R7)'.

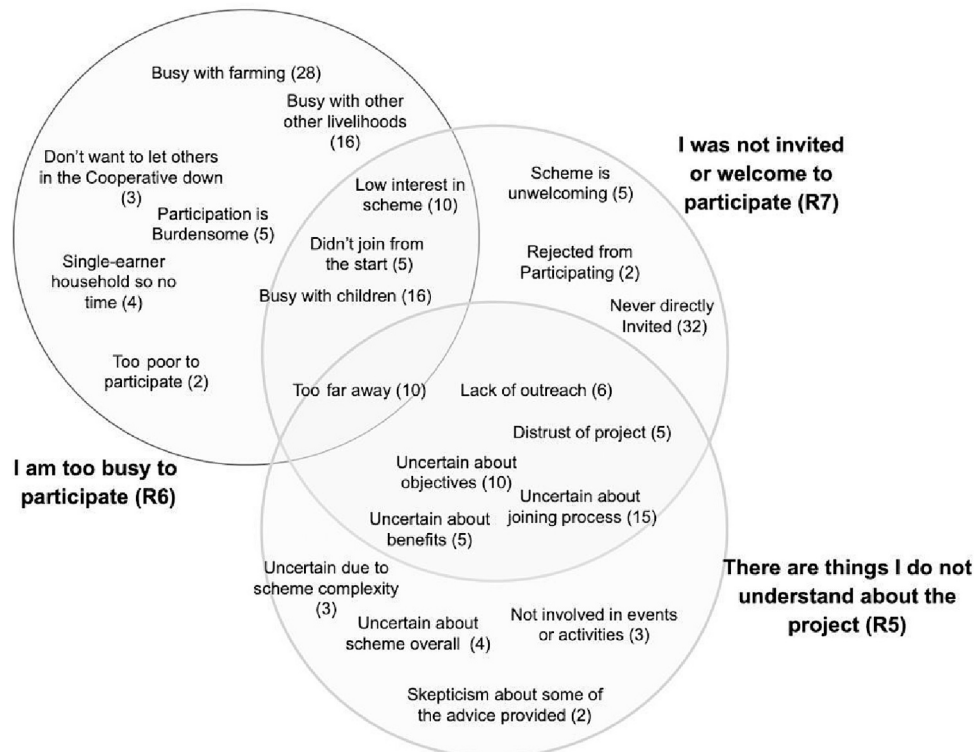


Fig. 5. Further explanations for the top 3 reasons for non-participation (R5, R6 and R7). Numbers in parentheses represent the number of times the response was provided under the 34 codes (see Supplementary information 3).

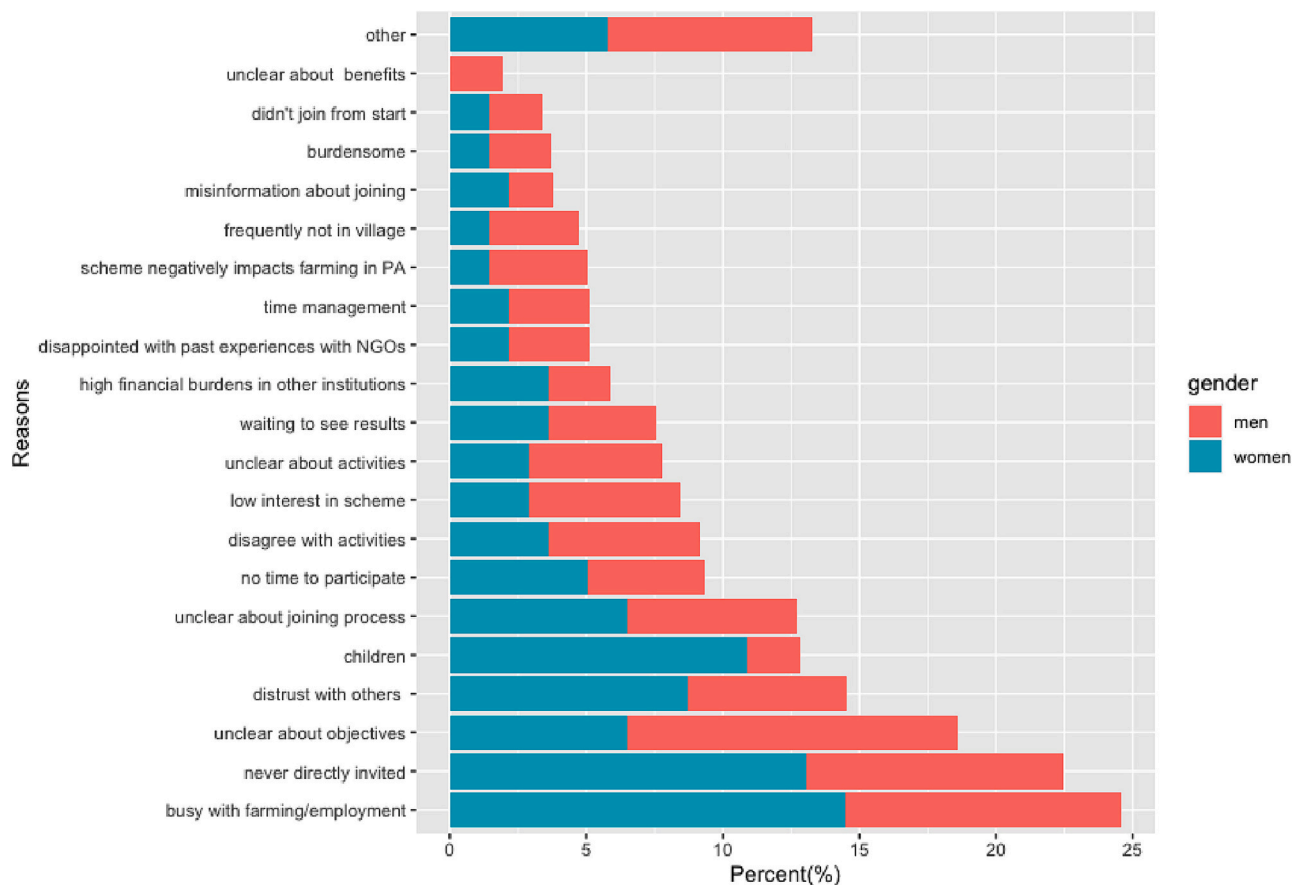


Fig. 6. Further explanations for non-participation with gender disaggregation. ‘Other’ consisted of 13 reasons reported by 1 % of participants, and included old age, plan to join in the future, college, new arrival in the village, among others.

3.1. Main reasons reported by non-participants

3.1.1. Too busy to participate

Being busy was the most frequently reported reason non-participants gave (Fig. 4, R6). During follow-up discussions, respondents explained that this was due to time objective constraints, primarily from livelihood commitments, notably subsistence farming and some cash crops farming, as well as to other types of employment (Fig. 6, Supplementary information 3). A few respondents specifically referenced poverty or being in single-person households as a reason for not having the time perceived as needed to participate. Childcare was also a recurrent explanation for lack of time, especially among women; 12 of the 14 respondents who mentioned children were women (p -value = 4.798e-05; Fig. 4).

3.1.2. Lack of understanding and uncertainty

Most respondents explained that their lack of understanding about the program (Fig. 2, R5) was because they had not been involved in NGO outreach events or activities (Fig. 3). Some attributed this to a lack of public outreach by NGO, and a small number elaborated that they had not been directly invited to participate, or because they lived too far from the intervention site. Several respondents also expressed skepticism about the technical advice provided by NGO, and even distrust (related to land rights, hunting restrictions, liability, Supplementary information 2).

Uncertainty about the intervention was a recurrent explanation to not participate that underlies multiple reasons for non-participation, notably lack of understanding (Fig. 3, R5) and not having been invited and feeling unwelcome (R7). Some of this was generalized uncertainty, while for other respondents it was specifically uncertainty about the

objectives of the intervention, the benefits it might generate and, for a small number of respondents, the joining process.

3.1.3. Not feeling invited and welcomed

Many of the respondents who did not participate because they had not been invited or felt unwelcome (Fig. 2, R7), also reported the sense of uncertainty. Many also specifically noted a lack of a direct and personal invitation, whether from senior figures in the programme or other members (versus general outreach). A small number further noted lack of general outreach. This aligns with responses about uncertainties with the joining process, even among several respondents who expressed interest in joining. Some respondents described not feeling welcome, having been rejected from participating, as well as several who explained distrust with outsiders (the NGO), community leaders involved, or other individuals in their community who already participated.

The reason ‘I was not invited or welcome to participate (R7)’ was more common in villages with lower overall participation rates (27 %) than villages with higher participation rates (16 %). It coincided with villages with populations larger than the median population size (27 %) than in villages with smaller populations (10 %; Supplementary information 3 Fig. 3).

3.2. Ideological reasons for non-participation

A small number of respondents indicated not having participated due to ideological opposition to the intervention, especially clear examples of subjective barriers to participation. Notably, only men ($n = 15$) stated that their non-participation was because they ‘disagree with the conservation objectives of the project (R3)’. Thirteen of these lived within the

buffer zone areas (though not inside the protected areas) and two inside the protected area. In follow-up explanations, men were more likely to disagree with program activities ($n = 17$) than women ($n = 5$). Regarding interpersonal matters, both men ($n = 18$) and women ($n = 12$) showed distrust in others as a reason for non-participation. Men were also more likely to report 'intervention negatively impacts farming inside protected areas' as a reason for non-participation than women (men = 11, women = 2).

3.3. Project key informants' explanations of non-participation

Key informants provided similar explanations for non-participation in the communities where they work. However, they differed slightly in some aspects (Fig. 4). The 26 key informants provided multiple expanded explanations ($n = 69$) to why they selected each R card.

Notably, most intervention key informants attributed non-participation to respondents' lack of understanding about the intervention (R7). However, the leading reason stated by non-participants, 'I am too busy to participate (R6)' (Fig. 4), was mentioned by less than half of the key informants. When asked their opinion about reported time constraints, some of the key informants ($n = 7$; 10 %) acknowledged that residents are often very busy with farming. However, most key informants ($n = 15$; 27 %) suggested that time constraint was being used as an excuse for other reasons, including not understanding the program ($n = 12$; 17 %) and lack of clear benefits ($n = 7$; 10 %). However, some key informants also attributed time constraints to poor time management ($n = 11$; 16 %) and laziness ($n = 4$; 6 %). Although 'I was not invited or welcome to participate (R7)' was a leading reason stated by non-participants, key informants did not choose it as a top reason (Fig. 6).

Other reasons for non-participation (Fig. 4 R8) were similar to those reported by non-participants, including a misunderstanding that members must pay to join, and misinformation about environmental and social data collection. Some key informants did mention that leaders participating in the intervention who were tasked with outreach and recruitment of non-participants were often not active, creating a feeling that leaders are unwelcoming or too busy to engage with non-participants.

When asked for recommendations about how to improve participation rates in their village, most suggestions focused on improving communication with prospective participants, including better data sharing and feedback on program results ($n = 13$, 21 %), general outreach ($n = 11$, 18 %), shared evidence of benefits and success ($n = 9$, 15 %), and better communication about possible benefits of participation ($n = 8$, 13 %). Only a small number focused on improving the benefits of participation ($n = 4$, 7 %).

4. Discussion

It would be reasonable to expect that non-participation in a program with socio-economic program provisions was driven by dissatisfaction with the services, perceiving them as inadequate or not aligned with local community priorities and needs. Conservation and development interventions are regularly limited by lack of resources, and there is often a strong focus on increasing funding or services to improve outcomes (Spiteri and Nepalz, 2006; Hein et al., 2013). Particularly, in incentive-based programmatic schemes, such as carbon or payment for ecosystem service projects, there is emphasis on getting the services or price signals correct and equitable to motivate pro-environmental behaviors (e.g., Ezzine-de-Blas et al., 2016; Lundberg et al., 2018; Carmenta et al., 2021).

Surprisingly, in this case, dissatisfaction with services was not a key reported constraint to participation: Only 8 % of respondents reported that they were 'Not interested in the services offered by the project (R4)' as one of their top three reasons for non-participation. This indicates that program provisions provided were aligned with local needs and priorities. Key informants also did not associate non-participation with the

quality of services provided (Fig. 4, R4). One possible explanation is that the lengthy co-design process utilized in the program (see Fig. 3) did aid in getting the program provisions correct.

This suggests that people may have been constrained and non-participating for reasons other than service provision quality or alignment with needs. Previous studies have found that outcomes can be influenced by factors unrelated to the form or the amount of the incentive itself, such as equity in reward distribution, beliefs, and legitimacy (e.g., Gross-Camp et al., 2012). Notably, the results highlight that non-participation was justified because of people's lack of time, gaps in their understanding of the program, and limitations in how the project engaged them. These three findings have large implications for the design of payment for ecosystem services, carbon finance, and various CBC schemes, which often hinge upon setting up economic benefits that cover opportunity costs or incentivize behavior change but do not necessarily address non-monetary constraints.

4.1. People's time is critical

The results specifically suggest that time is a priority, and many non-participants feel time constrained or busy to a degree that is a barrier to opting in and participating. This is inline with our concept of how objective and subjective constraints (Fig. 1) are critical in determining meaningful participation in conservation (Tanner, 1999; Morgan-Brown et al., 2010; Bennett and Dearden, 2014). Participants may argue time constraints for a range of reasons. It is likely that stating that they were too busy to participate (R6) provided some respondents with a convenient, non-confrontational explanation for their non-participation, something that the key informants suggested.

However, the prevalence of this explanation across villages and respondents suggests that conservation practitioners should pay greater attention to the implications of how program provisions impact and demand people's time - an important finding with large scale implications. Surprisingly, time does not receive greater attention in the conservation literature. It is broadly recognized across disciplines that time poverty is distinct from and complementary to material poverty, and a way of understanding the (perceived) balance between discretionary (e.g., forms of work) and non-discretionary activities (leisure) (Vickery, 1977; Williams et al., 2016). Importantly, time poverty affects not only the activities that people undertake, such as economic production, but also well-being (Giurge et al., 2020). In development studies, for example, time has received significant attention in the context of interventions to reduce poverty, improve nutrition and strengthen women's empowerment, with time used to understand factors such as the suitability, level of uptake, and viability of many developments focused program services (e.g., Williams et al., 2016; Zheng and Zhang, 2021).

Similar discussions are largely absent from the conservation literature. Conservation burdens are usually conceptualized in terms of the trade-offs of undertaking conservation, including the opportunity costs of reduced access to natural resources (Balmford and Whitten, 2003), and the material "poverty traps" that can constrain conservation (Barrett et al., 2011; Ferraro et al., 2011). Poverty was only explicitly stated as a reason for non-participation by 2 % of respondents and mentioned in the context of time constraints (Fig. 3). In contrast, the results showed that lack of time due to (predominantly subsistence) agricultural commitments and - specifically for women - childcare responsibilities were key reported barriers to participation. Although conservation programs often target gaps in incentives, enforcement or knowledge, our results suggest that conservation interventions may also benefit from better considering participants' time availability, demands and allocation. Rodriguez-Izquierdo et al., 2010 highlight the iterative process of resource management (e.g. planning, implementation, evaluation) and how perceived and actual time burdens of this process are inherently high and must be considered in when designing conservation approaches. The topic merits further study in the context of conservation

interventions, and a range of approaches, methods, and terminologies in other fields to engage with time can be used (e.g., Zheng et al., 2022).

Moreover, there is a need to further account for peoples' *perceived* time investments in engaging with conservation interventions – reflecting time not only as an objective but also subjective constraint. Bennet (2016) highlights those local perceptions of conservation planning are often overlooked and understudied, and our results suggest that local perceptions about time should also be included in that planning. Time is not just an absolute measure but is also linked to stress and perceptions of time requirements and availability (see Williams et al., 2016).

Highly tailored programs may be comparatively time-consuming, or at least appear time-consuming to prospective participants. This could be the case of the NGO program strategy (Fig. 3; Supplementary material 1), whose participatory decision process is relatively long and has many different possible activities for residents, including participatory decision-making (Supplementary material 1). The project activities are self-directed and accessing some benefits does not require additional time (e.g., access to local healthcare). The intervention does not require people to actively invest their time in conservation actions but is rather focused on more passive actions and foregoing certain opportunities (e.g., hunting), albeit foregoing such activities may incur time-demands in sourcing substitutes.

Addressing concerns about time may not only be about relieving time-burdens, but also clearly communicating time requirements and commitments (Rodriguez-Izquierdo et al., 2010; Murphy et al., 2021). Further, the availability or scarcity of time may only be one salient dimension. Another important component is people's perception around how best to use and spend their time, owing to relational or subjective benefits of spending time in certain ways that may be valued for social or cultural reasons.

Time availability is also a matter of priorities. Arguments about lack of time can reflect the importance respondents give to the proposed activity relative to their other ones (whether productive ones or not): presented with a choice of activities and limited time; individuals might perceive activities other than conservation as more important, urgent or beneficial, so they are not persuaded to make time for the additional activity, such as by abandoning other current activities. Priority setting and triage are common in conservation (Bottrill et al., 2008). It is plausible that individuals also make similar evaluations in their own decision-making and are subject to what they perceive are their main constraints and priorities, e.g., in rural low-income contexts, it could be activities that help them out of poverty or sustain their family. For some people, investing time and effort into new ways of doing things – as promoted by the NGO program provisions – might be less attractive, depending on a combination of time, risk and an individual's attitude to innovation (Zabala et al., 2017). The ways in which people perceive and engage with time is also linked to personality traits (Zheng et al., 2022), so it is perhaps unsurprising that some households choose to participate and others do not.

4.2. Understanding and engaging the intervention

Although the NGO project invested considerable efforts into public engagement and communication (Fig. 3, Novick et al., 2022), a common objective constraint among non-participants, mentioned by both respondents and key informants, was that '*There are things I do not understand about the project (R5)*'. Reported gaps in understanding related to procedures (e.g., how to join), as well as to the potential results, benefits, and objectives of the project (Fig. 3).

Respondents also referenced subjective constraints to participation; there was also skepticism and distrust among some participants and, given the sensitivity of the issues, may have been more prevalent at these sites than the data indicates. This suggests that the project, although having invested in gathering community input into the design, may not have been communicating back effectively (Salomon et al.,

2018). Both key informants and respondents noted this, and most of their recommendations for increasing participation focused on adaptive results sharing, improving outreach, strengthening knowledge on program benefits, and one-on-one engagement with non-participants. Research has highlighted the attributes of adaptive governance (Scarlett, 2013) and the necessity of building long-term engagement – principles that our results suggest could help connect with non-participants. However, finding ways of building long-term engagement that do not further infringe on time constraints will require novel, co-created mechanisms that are locally relevant and align with local priorities (e.g., concerning how best to spend the time available). Technological tools such as applications or dashboards could help increase access to data and benefits while remaining low-burden on people's time.

Behind arguments about not understanding the project (R5) there may also be a feeling of alienation and low understanding of the focus of the project approach – likely reflecting both subjective and objective constraints to participation. In such cases, finding better and more salient messaging, one that aligns with their values, can help people connect with the project. Research in Water, Sanitation and Health studies (WASH) has shown the crucial influence of framing messages (e.g., to promote the same action, communication can focus on either its health benefits, or its association with pride sentiments, among many several other possible framings). This research has demonstrated how actions framed in particular ways can result in vastly different uptake rates, because one is understood to be more salient than another (Jewitt, 2011). These insights have been successfully applied to understanding the adoption of new behaviors in other sectors (e.g., cooking stoves) and may hold potential for conservation (Jewitt et al., 2022).

Another insight regards the need for a paradigm shift about how data is shared, who owns program results, and how information is generated and disseminated. Conservation data justice (Pritchard et al., 2022), access to results, and rapid feedback has been repeatedly highlighted in research on small-scale fisheries (House et al., 2022; Kurien, 2022) as imperatives to advancing community participation in management interventions. The emergent field of conservation data justice (Pritchard et al., 2022) can be a solution to the barriers identified in our study as data justice and utilization of data through equitable feedback pathways can mitigate existing patterns of social injustice in conservation contexts (Pritchard et al., 2022; Gabrys et al., 2022).

In landscape initiatives (Novick et al., 2022), participatory monitoring and evaluation methods led to higher group social capital, performance, and cohesion; individuals were more satisfied with group membership (Kaaria et al., 2009; Sangole et al., 2014). These findings have significant implications for program monitoring and evaluation activities, which are generally donor focused, but results suggest the need to be beneficiary-focused in effective non-time consumptive ways.

There were also reported gaps in engagement that likely represent both objective and subjective constraints to participation; many non-participants reported that they felt '*not invited or welcome to participate (R7)*'. This occurred even though the project was co-designed through extensive community hearings and visioning exercises that were widely announced and largely implemented by members of the community institutions and governing bodies, but was a more common response in large versus small villages (Supplementary material 1; Novick et al. in 2022). Some respondents explained they did not participate because they did not receive an invitation, which suggests that generic outreach (e.g., open invitations to participate) was insufficient and that more targeted and personalized approaches of engagement within the NGO process (Fig. 3) may be more effective. This likely represents one of the simplest issues to overcome that the project can still potentially address, particularly when noting that this view was expressed in the largest villages, where the outreach capacity of the project representatives was most stretched.

The NGO project worked exclusively across comparatively homogeneous and small, villages ranging from 40 to 324 households (Table 1), and participation rates were lowest in the largest ones within

this range. The response 'I was not invited or welcome to participate (R7)' was more common in the larger villages and in those where fewer of their neighbours were already involved. Group size is an important, complex variable in collective action (Poteete and Ostrom, 2004). Therefore, interventions need to carefully consider how to reach all potential participants and at which group sizes effective local community governance happens and invest resources for outreach and participatory processes accordingly.

4.3. Disjunct between key informants and respondents

There were notable inconsistencies among key informants and respondents. The results highlight important differences in what they perceive as barriers that help to explain non-participation rates and could be barriers to improvements. Indeed, there are often disjunct perceptions among individuals directly involved in an intervention and those who view it from the outside (e.g., Phelps et al., 2021) that, present obvious challenges for communication and establishing a shared vision. Key informants overwhelmingly considered lack of understanding as the key explanation for non-participation (Fig. 4, R5) and suggested that participation could be increased primarily by improving communication with local residents.

Indeed, there is a need to co-create strategies for information-raising so that they are locally relevant, attractive, and salient. These strategies may require more informal and locally nuanced forms of engagement. Key informants also did not identify ideological opposition (disagreement) to the intervention as an explanation, which was raised by a small, but potentially significant number of non-participants. This reinforces the imperative of triangulating information in conservation project implementation; understanding perceptions of village members and their 'representatives' can help uncover biased or skewed views among the latter.

Interestingly, only one key informant suggested that improving the capacity of community governance body leaders, those who oversee program activities within each village, could attract greater participation. This suggests that, despite participatory intervention design, there is weak reflexivity among the key informants. Finally, there is potential in investing in closer work with non-participants, to design the strategies needed to overcome the participation barriers they perceive, such insight is particularly important if non-participants represent distinct and common features.

5. Conclusion

Conservation programs often aim for high participation, particularly where these rely on community-based institutions and depend on local behavioral changes. Even where participation rates are high, small numbers of individuals opting out can have a potentially significant impact. Ensuring not only broad participation, but also the participation of those who might be hardest to engage, can be important to ensuring outcomes and equity and shared access to benefits and costs. However, research and reporting tend to focus on those who participate or on the overall perceptions of local residents, while non-participation is often overlooked or treated as a control group. This study highlights the importance of understanding and addressing the various subjective and objective constraints to participation, as articulated by non-participants themselves. The results have relevance for the design and implementation and implementation of community-centered conservation programs more broadly. Despite growing recognition that increased opportunities for engagement and meaningful decision-making control are important to many communities and can have positive conservation outcomes, this is premised on the assumption that people want to and can participate. Even in the context of the ENGO programmatic model, which has strong elements of co-design and focuses on facilitating participation, full engagement is not automatic or guaranteed. Moreover, the ENGO model further delivers a range of locally relevant and locally defined services

for residents that are seemingly attractive motivators to bolster participation, yet this also does not guarantee widespread uptake. The results show that non-material factors, such as time, understanding of the intervention, and feeling actively invited to join, are also important to households that do not participate. This has broad implications for conservation and climate programming as non-material barriers would be inherently present in target sites that are important biodiversity hotspots or carbon sinks but are often overlooked in program design, implementation, and evaluation.

These results can inform future conservation design and investments by practitioners, donors and governments in several areas. First, consider whether and how interventions are communicated across entire communities, including what additional efforts are needed to target non-participants. Second, our results suggest the importance of reviewing the time burdens associated with different parts of interventions, particularly in projects that seek to bolster local meaningful engagement, and how these can be mitigated and communicated. The third main implication regards interventions that deliver conservation incentives, including payments for carbon and other ecosystem services. These often focus on identifying attractive monetary and material benefits to motivate participation but can struggle to have full uptake (see Adhikari and Agrawal, 2013). Our results suggest that rather than increasing the value of incentives, or changing the social-economic programs, strategic investments to strengthen outreach materials and more personalized engagement, rapid feedback, and democratized project ownership could be more effective in boosting participation. Importantly, these efforts would need to address tensions over how people allocate their time. Many of these factors, particularly those associated with time allocation, have yet to be meaningfully explored in the context of most conservation interventions, not only to increase participation but also to ensure equitable interventions.

CRediT authorship contribution statement

Adam Miller: Writing – original draft, Methodology, Funding acquisition, Formal analysis. **Abrar Ahmad:** Writing – original draft, Supervision, Project administration, Methodology, Data curation. **Rachel Carmenta:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Funding acquisition, Conceptualization. **Aiora Zabala:** Writing – review & editing, Supervision, Methodology, Investigation, Formal analysis. **Muflihati:** Supervision, Project administration. **Siti Masitoh Kartikawati:** Validation, Supervision, Project administration. **Putri Damatashia:** Visualization, Validation, Supervision, Resources, Project administration, Methodology, Data curation, Conceptualization. **Novia Sagita:** Supervision. **Jacob Phelps:** Writing – review & editing, Writing – original draft, Visualization, Supervision, Methodology, Funding acquisition.

Declaration of competing interest

We declare that the authors of this study have no conflict of financial or non-financial interests in this research.

Data availability

Data will be made available on request.

Acknowledgements

The authors would first and foremost like to thank the Indigenous communities of the Gunung Niut Nature Reserve who have partnered with YPI and the Indonesian government to improve management of the area and participate in this research. We would like to thank the YPI field staff and team members who lead field data collection. We would also like to thank the BKSDA management authority who was an essential partner in this research and programming in the area.

Funding

Funding for this research was provided through the Illegal Wildlife Trade Challenge Fund project IWT077.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.biocon.2024.110605>.

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