





## RESEARCH ARTICLE

Lost in transition? Capturing the impacts of conservation and development interventions on relational values and human wellbeing in the forested tropics

# Relational values of forests: Value-conflicts between local communities and external programmes in Sulawesi

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## Abstract

1. Studies found that rapid decline of biodiversity and ecosystems globally have adversely affected an estimated 1.6 billion rural people whose livelihoods both directly and indirectly depend on forests. To halt the loss of forests and other natural ecosystems that simultaneously support rural livelihoods, various external programmes have been developed and applied, including market-based and rights-based approaches. However, rapid biodiversity and ecosystem decline continues, and better incentives or more secure rights have not always led to local community participation and improved livelihoods. This suggests the need to better explain local communities' motivations in nature stewardship.
2. We conducted a study of local communities in two villages in Sulawesi who voluntarily maintain forests but showed resistance to participation in formal Social Forestry programmes. The study aimed to identify motivations and underlying reasons of community preferences, guided by two research questions: (i) how did local people value forest landscapes? and (ii) how did those values interact with externally driven Social Forestry programmes?
3. We applied the Relational Values concept to understand a community's relations with the forest (or its elements) and land and identified points of value divergence. Data collection involved in-depth semi-structured interviews, focus group discussions framed by the principles of Appreciative Inquiry, participant observation and land use/land cover change analysis.
4. Our findings show that people value their forests in relation to their identity, ancestral heritage, sense of place and spiritual values. We also identified the points of value divergence and their underlying reasons of resistance towards externally driven forestry programmes. This study thus contributes to the broader

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conceptualisation of values in conservation and community participation by providing empirical evidence on the importance of the Relational Values framework in understanding the motivation and behaviour of nature stewardship and in the evaluation of value conflicts.

#### KEYWORDS

local people, participation, reforestation, relational values, sacred forests, social forestry, traditional beliefs, value conflicts

## 1 | INTRODUCTION

Globally, 1.6 billion rural people live within 5 km of a forest and depend on forests to some degree (Newton et al., 2020). This includes a wide range of groups, including Indigenous Peoples, rural communities, smallholder farmers and employees of forest-based enterprises (Chao, 2012). These groups of people have been managing their environment for multiple uses over generations, integrating practices and knowledge that were developed from their interaction with the forest (or nature in general) (Berkes et al., 2000). At the same time, ecosystems and their associated biodiversity around the world continue to experience rapid declines (IPBES, 2019; United Nations, 2019), notably in forested regions. From 2002 to 2020, a total of 64.7 Mha of old growth humid forests were lost globally (Global Forest Watch, 2021). The loss of forests and their accompanying biodiversity have negatively affected Indigenous Peoples and local communities (IPLCs) who have a strong dependency on their natural environment for subsistence, livelihoods and health. Forest loss also influences broader capabilities of local people to manage and conserve wild and domesticated biodiversity and nature's contributions to people (IPBES, 2019).

In an effort to halt forest loss in ways that also support rural livelihoods, various approaches have been implemented worldwide. These range from market-based approaches such as payments for environmental services/PES (e.g. Bhatta et al., 2014; Costanza et al., 1997; Wunder, 2005) and rights-based approaches through participatory or collaborative management models such as Community Forest Management/CFM (Adeyanju et al., 2022; Arts & De Koning, 2017; Ota et al., 2021). Indonesia's national programme on Social Forestry (SF) is one CFM model (Suradiredja et al., 2017; Wong et al., 2020).

These models were developed based on the views that the main actors in deforestation are impoverished local people, and therefore, economic values generated from conservation activities and/or forest management will help to reduce deforestation and biodiversity loss (Skutsch & Turnhout, 2020). Although significant efforts have gone into supporting these various models, biodiversity loss and deforestation continue, and implementation of these models do not necessarily translate into improved livelihoods. In some cases local communities resist participation in incentive-based activities, whereas in other cases, voluntary actions and high participation emerge organically without external incentives (Chapman

et al., 2019; Fisher et al., 2018; Scott, 1985; Stoneham et al., 2003). This suggests the need for different explanations of values and motivations driving participation and proactive action in conserving nature. This paper seeks further insight into the conditions that lead the IPLCs to participate in forest sustainability initiatives, and particularly those related to external support initiatives.

To explain values and motivations, Relational Values concept is proposed as a new domain of value articulation distinct from the dichotomy of intrinsic (the worth of the nature itself) and instrumental values (what nature does for us) (Chan et al., 2018; Himes & Muraca, 2018). Relational Values is defined as 'the preferences, principles and virtues associated with relationships, both interpersonal and as articulated by policies and social norms, which include action, experiences and habits associated with eudaimonic values. They do not refer to things but derive from relationships and responsibilities to them' (Chan et al., 2016, p. 1462). Further, Chan et al. (2016, p. 1463) explained that 'As a means (instrument) to something else, a thing is potentially replaceable'.

In Relational Values lenses, relations between humans and nature extend beyond instrumental values, and can occur at the individual level in the form of individual identity, eudaimonic stewardship (my care for nature fulfils me and leads me to a good life), and stewardship principle/virtue (keeping nature is the right thing to do), or at a collective level such as cultural identity, social cohesion, social responsibility and moral responsibility to non-humans (Chan et al., 2016). Such relations are shown in people's motivations in managing forests (or the natural environment in general), which range from securing multiple uses over generations, for example, by integrating practices through knowledge and adaptation strategies that were developed from their interaction with the forest usually deeply rooted in culture and heritage, to maintaining local identity and their overall sense of place relative to the natural world (Berkes et al., 2000). Eudaimonic motivations are central in guiding the human desire to live a complete, connected and meaningful life (MacIntyre, 1985; Ryan & Deci, 2001) and serve as strong drivers among local communities to protect their forests against powerful external actors (Yuliani et al., 2018, 2020). The strong sense of partnership with nature and nature-inclusive eudaimonia in turn represents a two-way relational value that can inform, catalyse and sustain conservation actions (Knippenberg et al., 2018).

Incentive-based programmes might clash with these relations, raising concerns that the over-reliance on economic instruments

might crowd-out people's intrinsic motivations for forest conservation (Gómez-Baggethun & Ruiz-Pérez, 2011; Muradian, 2013). To gain an in-depth understanding of people's motivations for participation, we conducted a study in two villages in Indonesia where SF schemes were promoted by external actors. In these villages, local communities were reportedly planting trees to rehabilitate forests voluntarily but showed resistance to participate in the SF schemes (Balang NGO, 2012; Tias et al., 2012). Our study aimed to identify the motivations and underlying reasons for these preferences, which were guided by two research questions: (i) how did local people value forests in their landscapes? and (ii) how did those values interact with externally driven SF programmes?

To answer these questions, we applied the Relational Values as our main concept, to discover the importance, worth or significance that people link to nature and resources as highlighted by Himes and Muraca (2018). This concept offers a nuanced perspective to accommodate pluralistic understanding of values (Allen et al., 2018), helps to consider the relationships and responsibilities between people or between nature and people (Chan et al., 2016) and facilitates a clearer understanding of the core drivers of individual and social behaviours that underlie environmental change and socio-environmental conflicts (Muradian & Pascual, 2018). Using this concept of human–nature relations, and inspired by earlier studies using a relational values framework (e.g. Chapman et al., 2019, 2020), we analysed how individuals and their wider communities collectively relate to forests and landscapes, and identified points of convergence and divergence that can result in value conflicts.

## 2 | REGIONAL CONTEXT: THE INDONESIA'S SOCIAL FORESTRY PROGRAMME

Approximately 26,000 villages—more than a third of all villages in Indonesia—are located in or in the proximity of State Forest areas, which translates to around 9.2 million households reliant on forests to a greater or lesser degree (Ministry of Environment and Forestry, 2018). To support the livelihoods of these people and maintain forest cover, the Indonesian government, through the Ministry of Environment and Forestry (MoEF), devised and implemented a national SF programme, which developed based on experience from small projects since the 1990s. The programme was also inspired by similar participatory forest management models in other tropical countries (see the history in Suradiredja et al., 2017).

The current programme began in 2015 with aims to formalise local people's access to 12.7 Mha of forest through five different SF schemes: Village Forests (*Hutan Desa*/HD), Community Forestry (*Hutan Kemasyarakatan*/HKm), Community Plantations (*Hutan Tanaman Rakyat*/HTR), Partnership (*Kemitraan*) and Customary Forests (*Hutan Adat*/HA). The programme's premise sought to provide local people with access to forest and forest resources as means for improving livelihoods and alleviating poverty, while also achieving better conservation outcomes (Fisher et al., 2018).

Defining success has thus far been focused on measurements of additional income gained through the commercialization of forest products as reflected, for example in the Ministry of Environment and Forestry's report (Ministry of Environment and Forestry, 2020) of SF evaluation.

The multidimensionality of poverty, however, is not only determined by a lack of land and income (Anand & Sen, 1997), but also includes the deprivation of capabilities linked to health, education and meaningful and equitable participation in society (Sen, 1999). Although the Indonesian government shows increasing concerns to these pluralistic ideals, current SF programming still frames poverty mainly as a lack of access to land and markets. As Allen et al. (2018) and Miller et al. (2021) observed, in making policy, governments tend to focus on utilitarian aspects that translate into monetary values rather than wider aspects of human well-being.

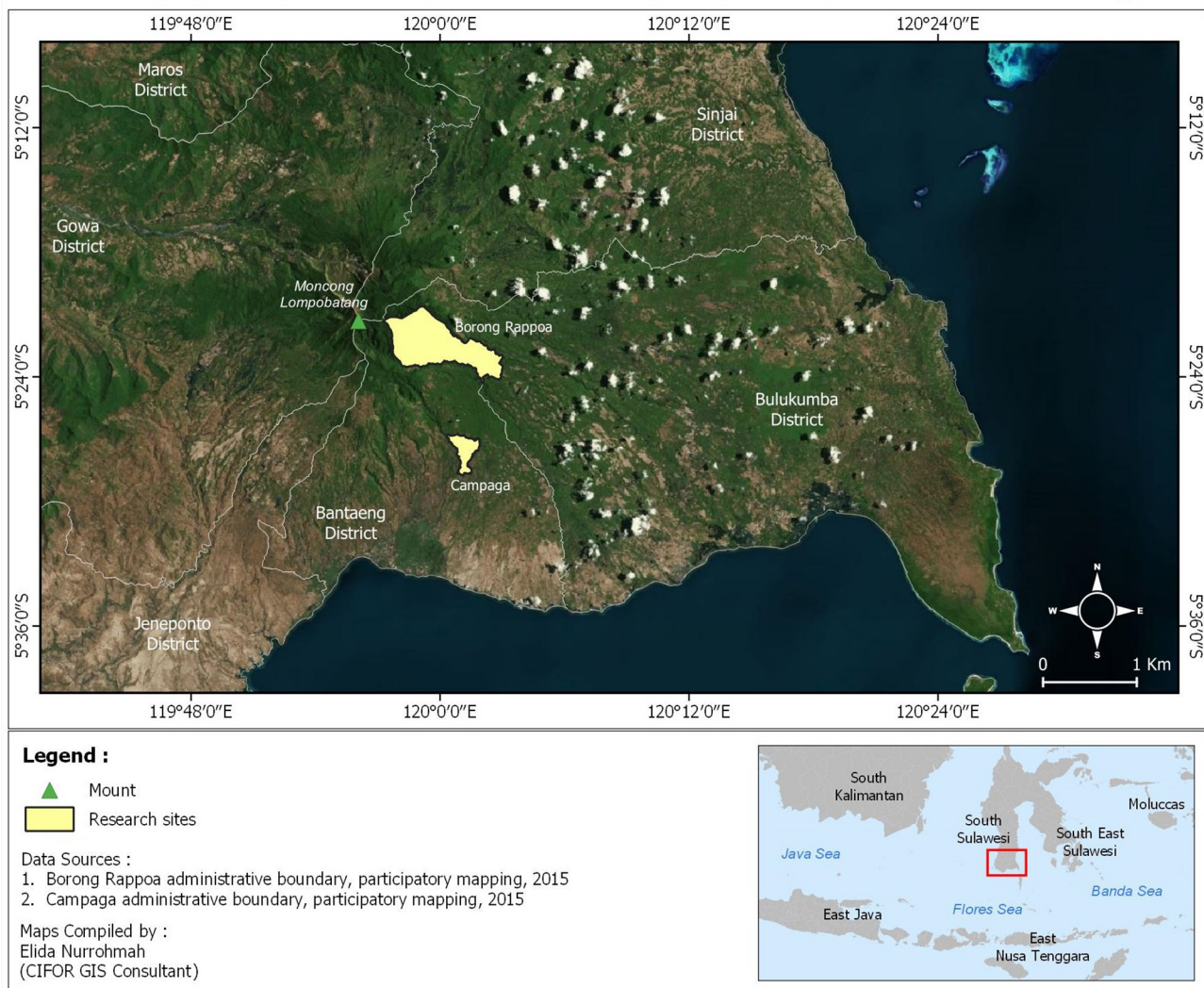
According to the Ministry of Environment and Forestry regulation no. 9/2021, local or customary communities are the main actors in SF programme implementation. The programme aims to increase welfare, support rights recognition and improve environmental sustainability. However, as often happens, policies and external interventions are not always aligned and are commonly disconnected from field realities (Maxton-Lee, 2018; Moeliono et al., 2015) and local values (Daeli et al., 2021). Such misalignment can lead to local people resisting these programmes (Fisher et al., 2018; Yuliani et al., 2016).

## 3 | CASE STUDY SITES

Sulawesi is one of Indonesia's largest islands situated in the biogeographical transition zones between Asia and Australia, known as the Wallacea ecozone (Wallace, 1869), home to unique ecosystems with a high number of endemic flora and fauna. Even today, there are frequent reports on new discoveries and rediscoveries of species (Ardi et al., 2018; Riedel & Narakusumo, 2019). Despite this biological value, between 2000 and 2017, Sulawesi lost more than 2.5 Mha of natural forest, mainly caused by logging, mining and the expansion of agricultural and industrial plantations (Indonesia/FWI, 2019).

We conducted this study in two villages, Campaga village in Bantaeng district and Borong Rappoa in Bulukumba district. These villages were selected based on the following criteria: (a) local communities reportedly resisted participation in SF programming but have taken voluntary actions to maintain their forests; and (b) have similar geographic features, that is, located on steep slopes in the upper parts of the primary watersheds of the province, the conservation of which is essential to provisioning water and minimising erosion (Figure 1).

Campaga is a village in Bantaeng district, 25 km from the district capital. The population of the village self-identifies as part of the Makassar ethnicity. In 2019, the population of the village included a total of 2138 people, comprising 1088 females and 1050 males. The main livelihoods are farming (92%), livestock raising (3.07%), daily labour (3.79%), and civil and military service (0.92%) (Bantaeng



**FIGURE 1** The research sites: Located on steep slopes of a mountainous region.

Statistics, 2020). The village territory comprises an area of some 501 ha, mostly with undulating hilly topography at 500–700 m a.s.l. and a mosaic landscape of rice fields, horticultural food crops, coffee orchards and a forest area, known as Borong Lompoa.

The 23.68 ha Borong Lompoa forest is known by the people in Bantaeng district as the sacred forest of Campaga. The forests in this area supply water to irrigate most of the rice fields downstream. It is also the source of 15.4% of the water intake for the regional water company, whose total value reached approximately IDR 1.4 billion/year or equal to US \$ 134,600/year (with average exchange rate of IDR 10,400 to US \$ 1 in 2013) (Supratman & Sahide, 2013). It was thus expected by the Village Forest promoter that a Payment for Ecosystem Services (PES)-like mechanism could be established whereby the Regional Water Company and farmers downstream would pay for the water used and the preservation of its source. In 2010, Campaga became one of the first villages in Indonesia to receive an SF licence for a Village Forest (Minister of Forestry's decree no. 55/2010) legalising the status of the Borong Lompoa to ensure benefits to all village members from the sustainable management of the forest.

Further upstream, Borong Rappoa Village is located on the steep slopes of the Lompobattang mountain between 600–1200 m a.s.l., approximately 30 km from the district capital. The upper part of the village borders a 4.65 km<sup>2</sup> state protection forest which was initially gazetted by the Dutch Colonial Forestry Service (*Bosch Wezen* or BW) in the 1930s. The village was established in 1958 when people cleared forests, including on steep slopes, for agriculture outside the boundaries of the BW. Over the years, there have been many attempts to reforest the steep slopes including establishment of farmer groups for reforestation programmes, but with little success.

The total village territory is 2186 ha, covering six hamlets<sup>1</sup>: Senggang and Katimbang are at the uppermost slope and closest to the BW, while Na'na, Assaya, Bontoa and Kayu Biranga are located on the lower slope. In 2019 the population of the village totalled 3508 people, comprising 1680 females and 1828 males. The main livelihoods are farming (76.03%), civil service (15.40%), entrepreneur (3.67%), driver and taxi-bike (1.96%), small-scale industry (1.76%) and military (1.17%) (Bulukumba Statistics, 2020).

The first Community Forestry (HKm) permits were sought in 2001 by community groups with support from an external institution.<sup>2</sup>

These community groups were initially the farmer groups which were formed for the reforestation programme. The efforts, however, gained little traction through the mid 2000s, until a Ministerial decree was finally issued in 2011 (Fisher, 2019; Moeliono et al., 2015).

## 4 | METHODS

We convened a multidisciplinary team to capture the diversity of values expressed by respondents. The team included an ecologist, an economist, a team of social scientists, and was facilitated by members of Oase, a local NGO from the region. The main data collection took place in 2012–2017, with sustained engagement that has since continued to connect with the villages.

Information was collected through semi-structured in-depth interviews, narrative walks (also known as walking interviews) (Anderson, 2004; Evans & Jones, 2011), gender-differentiated focus group discussions (FGDs) (Morgan, 1997) and participant observation (DeWalt & DeWalt, 2011). Participants were selected using a snowball sampling technique (Morgan, 2008), involving customary leaders, the village administration, the Village Forest management body (BUMMAs) of Campaga, the forest farmer association of Borong Rappoa, members of the village including representatives of the youth and women's groups and the Forestry Service officials of Bantaeng and Bulukumba districts. The number of participants who engaged in each research method is detailed in Table 1.

During the in-depth interviews, we applied the 'conversation with a purpose technique' (Burgess, 1984) where people's perception of

forests, including various interconnected issues and the underlying causes of the perception, were discussed in a natural sequence in accordance with the flow of conversation. Conversation topics and key questions raised are listed in Table 2. In the FGDs, we posed key questions to be discussed by participants (Table 3), combined with participatory village sketching as a tool to visualise respondents' stories (Pretty et al., 1995). We created as relaxing an atmosphere as possible in the interviews and FGDs helped build confidence of participants in expressing their opinion and overcoming reluctance to speak out and express opinions. Trust was built over time, and the research team has continued to maintain contact at these sites, helping to triangulate and confirm any early findings.

At the beginning of the conversations, we observed that questions using the term 'values' (e.g. 'what are the values of the forest for you') would be answered only with products used by the people (e.g. water and *pangi* fruit), which could be interpreted as instrumental values. To examine whether or not a thing was replaceable, we posed the question 'what would happen if [the thing] is gone?'

The local NGO partner also informed the research team that people were worried of being labelled mystical or superstitious if they spoke about traditional beliefs to outsiders. Thus, we began this study with trust building approaches, spending more time in the villages, accompanied by the NGO members who had become well known and well liked by local people. NGO representation was also included in the writing process and the focal point (Labarani) is listed as a co-author here. To stimulate respondents' openness, confidence, and willingness to share broader values of the forest, we reframed conversations in interviews and FGDs using an Appreciative Inquiry

TABLE 1 Number of participants for each method

Participant/respondent	Interview		Narrative walk		FGDs (youth)		Number of FGDs	Total participant
	Male	Female	Male	Female	Male	Female		
Campaga people	6	2	4	—	45 (17)	16 (9)	4	73
Government of Bantaeng	2	—	—	—	—	—	—	2
Borong Rappoa residents	11	2	2	2	92	27	6	136
Government of Bulukumba	1	1	—	—	—	—	—	2

TABLE 2 List of conversation topics and questions

Conversation topics	Questions (raised in natural sequence, in accordance with the conversation)
Livelihoods activities	<ul style="list-style-type: none"> <li>• What are the main sources of income for your family and for the people in this village?</li> <li>• How do you obtain your daily needs such as clean water and food?</li> <li>• Are forest products used? What are they? How is the product used or collected (including quantity and frequency when possible)?</li> </ul>
Perceptions of forest	<ul style="list-style-type: none"> <li>• What is the first word that comes to mind when hearing the term 'forest'?</li> <li>• Is the forest useful? How or in what ways, or in terms of what products?</li> <li>• What is the history of the forest in or near your village?</li> <li>• What do you think would happen to you in particular, and to the people in the village in general if forests in (or near) your village are gone?</li> <li>• Are there any taboos/ traditional beliefs/ local knowledge/ previous experiences related to forests?</li> <li>• What do you like/appreciate from your surrounding environment?</li> </ul>
Local or traditional knowledge	<ul style="list-style-type: none"> <li>• Do people use natural indicators/ signs to decide on uses or managing natural resources, land, or forests? (For example, to locate springs, forecast weather or planting seasons, minimise erosion, pest prevention etc.)</li> </ul>

TABLE 3 List of key questions in FGDs

Discussion topics	Key questions
Village land uses	Participants, in small groups, were asked to produce a sketch map of their village showing land uses and boundaries according to their perceptions, including from a historical perspective
Village history	<ul style="list-style-type: none"> <li>• What is the history of this village?</li> <li>• Were there any changes in the ways people manage their land and/or natural resources? Why?</li> <li>• Have there been any natural disasters and/or very difficult situations? What was the impact? How did you and the people cope with the situation?</li> <li>• What do you like/ appreciate from your surrounding environment?</li> </ul>

approach (AI), which focuses on strengths and aspirations rather than problems and weaknesses. The AI approach was primarily created as a tool for business organisational development to shift mindsets from analysing problems to charting positive possibilities (Cooperrider & Srivastva, 1987; Russell & Harshbarger, 2003) and developed as a research framework (e.g. Reed, 2007). In this study, we used AI, for example, by asking ‘what do you *like* about [the forest, or your village, or your environment, etc.] and why?’ and ‘what did you do to maintain [what you like about the forest]?’ By doing this, we were able to obtain considerably deeper insights about relational values and subsequent behaviours/actions.

Each interview and FGD took anywhere between 2 and 4h, using both Indonesian and Makassarese languages. All information gathered from the above methods was recorded and manually typed verbatim for the narrative analysis, which was then further analysed using descriptive and value-coding techniques (Saldaña, 2009).

To cross-check qualitative information from respondents/participants, we also completed a land use/land cover change analysis (LULCC) of the two villages between 2000, 2010 and 2020. We used Landsat Thematic Mapper (TM) 5 images, path 114/row 64 (acquisition date 25 May 2000 and 25 October 2009) and Landsat TM 8, path 114/row 64 (acquisition date 20 August 2020). We compared the boundaries of Campaga village based on participatory mapping in 2015, boundaries of 1996 protection forest from the Ministry of Environment and Forestry, and topography from Earth Explorer SRTM with 30-m resolution (<https://earthexplorer.usgs.gov/>). In accordance with the objective of this analysis, that is, to triangulate the qualitative information, we focused on the following land use categories: forest, cultivated area, new land/soil exposure, settlement and water bodies. The images were manually interpreted, and validated using ground truthing, combined with high-resolution satellite imagery from Bing Satellite and Google Satellite in QGIS.

#### 4.1 | Research ethics

We conducted the study following approval from CIFOR's Safeguarding and Research Ethics Policies. Such policies are designed such that research is undertaken with deep respect for all groups of society, regardless of race, ethnicity, religion and culture, gender differences and under-represented social groups. We did the

utmost to protect participants from undue intrusion, distress, indignity, physical discomfort, and personal embarrassment, psychological or other harm. We made attempts to ensure that the concerns of relevant stakeholders were addressed and sought to avoid marginalisation or exclusion of any social group in the process. Compliance with safeguarding policies was managed through the annual signing of a code of conduct for all CIFOR staff and through the inclusion of a clause requiring compliance with the safeguarding policies in the project partner contract. The research permission for CIFOR to conduct research at the site was granted by MoEF and the government of Bantaeng and Bulukumba districts.

Prior to data collection activities, we explained the objectives of our research, and requested permission to conduct research. We answered questions when posed and discussed how and in what ways our research could be relevant for the communities. We also informed participants that they were free to refuse to participate or to answer particular questions or to opt out at any stage, which none did. We requested and obtained consent from participants verbally, and ensured confidentiality of sensitive information. No written consent was requested for two reasons: first was that local culture largely remained an oral tradition, and secondly, asking them to sign a document might cause unnecessary anxiety which was based on past experience where signed documents were misused by outsiders.

## 5 | RESULTS

### 5.1 | Campaga

#### 5.1.1 | The values of the forest

The main values in the Campaga case represent individual-forest, individual-community and community-forest relations. The majority of respondents (96%) regarded the Borong Lompoa forest of Campaga as a sacred place, for the presence of two elements in the forest: sacred stones symbolising the centre of the earth, and the large springs supplying some 5400L/s, which irrigate 670ha of rice fields, and as mentioned earlier, also supply 15.4% of the intake for the regional drinking water company (Supratman & Sahide, 2013).

The reputation of Campaga forest as the source of water for people downstream is well known in the district, instilling pride in the Campaga people who associate their identity directly with the forest. As expressed by respondents, 'If the forest or spring is gone, we lose the feeling of being a Campaga person'.

Women respondents value the forest as a source of non-timber forest products (NTFPs), such as *pangi* fruit (*Pangium edule*, football fruit in English) and kemiri (*Aleurites moluccana* or candlenut). These are collected for additional income and are especially valued by the poorer households of the village. For elders, the forest is also a 'natural library' of local ecological knowledge and use. During a narrative walk in the forest, the elders shared their knowledge of wild plants in Campaga forest for medicines, fertiliser, pest control, water retention and erosion prevention. These show that the relational values contain some instrumental elements, a view which is also reported by others, for example, Deplazes-Zemp and Chapman (2021).

In common with other sacred sites, the forest is protected by traditional rules, taboos and beliefs which are respected by village members and visitors. Spitting, urinating and defecating in the springs and rivers, and collecting forest products within a 100m radius of the sacred stones, are strictly prohibited (outside this radius, people are allowed to collect fallen branches, seedlings and NTFPs). Hunting and cutting trees over the entire forest area is taboo. These rules have been largely self-enforced as people believe that anyone breaking these rules will be cursed or could fall ill. According to respondents, there were two cases in the early 2000s that strengthened this belief: a villager who cut a tree and another villager who shot an animal inside the sacred forest—both got sick and died.

The continuous protection of the sacred forest is inseparable from the custodian Daeng Bundo, locally known as the *juru kunci*

(literally means 'key holder', a common term used by Indonesians for custodians of sacred places and graveyards), whose position and role are inherited. Bundo explained: 'Our ancestors reminded us that the springs are God's gift, therefore we should preserve them, so that the springs keep flowing and are able to support the lives of as many people as possible, especially the poor'.<sup>3</sup> Campaga people themselves reside in areas with higher slopes, which also means that they obtain water from other sources. Thus, the values of the water from the sacred forest for Campaga people was relational, as it involves care and responsibilities.

The people's care and concern towards the forest is also evident from self-organised activities, such as voluntary replanting. Each time a number of trees fell after windstorms, Daeng Bundo accompanied by several village members deliberately replanted the forest with local seedlings. Although a valuable timber species, no one collected products from the fallen timber. As a result, the extent and quality of the forest has remained relatively stable since the early 1970s (Khususiyah et al., 2012).

Three respondents—all were elites who promoted and administered the Village Forest scheme—claimed that the lack of alternative income has led to encroachment of the sacred forest. This claim was contradicted by other respondents who stated no encroachment occurred after one villager fell sick and died after cutting a tree. We cross-checked this information with land use/land cover change analysis. The results confirmed that there was no visible encroachment of the sacred forest. Forest conversion of 32.39 ha for agriculture occurred on the other edge of the village, far from the sacred forest itself (Figure 2). Therefore, the three respondents' claim that encroachment of the sacred forest was the reason for promoting the Village Forest scheme was not aligned with information from other respondents and with the results of the LULCC analysis. Motivation

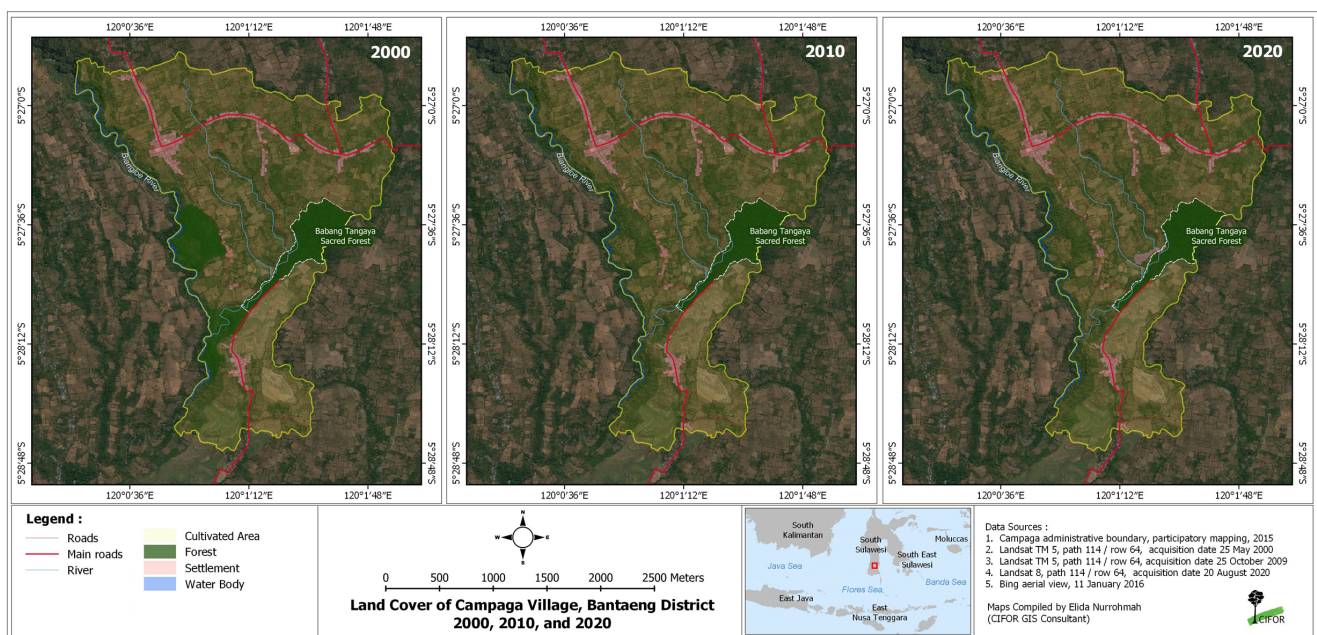


FIGURE 2 Land use/land cover change in Campaga between 2000, 2010 and 2020.

for making these claims were to attract interest and make the case for formal government SF programmes.

Village leaders and customary leaders,<sup>4</sup> although not in open conflict, have divergent ideas on development represented by the Village Forest scheme. Although in spirit, SF is focused on maintaining the forest, the way it is promoted by the government involves establishing village enterprises to raise local administrative revenues. The promise of cash benefits attracted the interest of village elites who, being on the board of the Village enterprise, then took control of raising revenues.

### 5.1.2 | Formal arrangements versus traditional belief systems

The Village Forest licence was granted after facilitation by two external institutions<sup>5</sup> for two primary objectives: (a) to secure income generating activities for local people who depend on forest resources and farming and (b) to maintain forest ecosystem services, in particular for carbon sequestration, biodiversity conservation and provisioning of water (Supratman & Sahide, 2013). Although the process before proposing any SF scheme should be participatory in nature, 87.7% of respondents said they were not involved or informed. The remaining 12.3% of respondents participated in meetings where they were informed that the Village Forest scheme would allow them to develop businesses to generate village income, for example, from water payments and tourism. According to these respondents, no women participated in those meetings. The lack of women's participation in decision-making reinforces previous findings reported by Colfer et al. (2015).

To manage the Village Forest, SF laws state that villages *can* establish an enterprise; however, establishment of the enterprise was interpreted by the Village Forest proponents as obligatory. Thus, the Campaga village administration established a formal enterprise institution called BUMMas (*Badan Usaha Milik Masyarakat* or Community-owned Enterprise), without involving the traditional institution. The main tasks of the BUMMas in managing the Village Forest are to increase the financial capacity of the village, improve local people's income, implement good governance principles in managing the forest, and develop short-term (annual), medium-term (5-yearly) and long-term (10-yearly) management plans. From interviews with BUMMas administrators, they acknowledged that at the beginning they were not sure and felt confused on how a sacred forest could be turned into a business venture. They were then 'supported' by a retired district government official, who is also one of the village elites. This person developed a management plan to turn the forest into a tourist resort including a proposal to build a modern hotel with a swimming pool – with total proposed budget at IDR 12 billion (US \$ 1.15 million). He also planned to introduce a water payment mechanism to farmers for using the water for rice field irrigation and to the government owned water utility (PDAM).

Converting water into a commodity, however, has raised concerns among village members. As one elder respondent said, 'Water

is God's blessing, given to the people through our forest. We should not be paid for a gift from God'. Daeng Bundo's expression is even stronger: 'If farmers and households downstream are to pay for Campaga water, especially those who are poorer than me, they [referring to the BUMMas and the elites behind them] should step over my dead body!' Daeng Bundo is one of the poorer members of the village, but he has stewarded the springs and waterways voluntarily as a role he expressed is inherited from his ancestors. Villagers also raised transparency and accountability issues as evident from women who expressed the following concerns during interviews and FGDs: 'Who will manage the funds? How will the [water] payment be used and monitored? Who would address these concerns?'

When we asked the elites and the BUMMas if they were aware of those concerns, they said, 'Those who don't like the Village Forest proposal were just jealous. There were also some people who still hold mystical beliefs. It's against religion to follow such beliefs, so we should abandon them'. One village member further explained: 'The lure of 12-billion-rupiah financial aid from the government has blinded them'. These quotations reflect the lack of transparent and participatory mechanisms, the failure to integrate traditional institutions into the formal arrangement and the pervasive tensions between community groups. These different perceptions and values are summarised in Table 4.

## 5.2 | Borong Rappoa

### 5.2.1 | The values of the forest

In Borong Rappoa, all respondents regarded their village territory—including elements such as forests, steep slopes and cultivated land—as an inseparable part of their ancestors' legacy. They strongly obeyed verbal agreement from their ancestors made with the government at that time (the Dutch colonial) on the BW boundaries and rights on land beyond the boundaries. One noted, 'We firmly adhere to the principle of our oral tradition as reflected in the proverb *Tau wa, kirina ji nipa'gang* [people are trusted by their word]'. Because of this, the people resisted participating in any program that did not acknowledge this agreement and tradition (see details below).

### 5.2.2 | The history of formal arrangements versus local values

The relationships between people, forests, and formal status in Borong Rappoa have a long history. Before the Dutch set up the BW boundaries in the 1930s, land was considered to belong to local people, although some of the denser and higher elevation areas were little used. With the establishment of the BW boundaries, state authorities no longer allowed people to cut trees and farm inside the border. Collecting NTFPs such as rattan and wildlife hunting was permitted. Although harvesting timber was allowed 3 m away



TABLE 4 Value conflicts in Campaga

Points of divergence	Local custodian and majority of respondents' perspectives	Village Forest Promoters' perspectives
Value of forest	Sacred place, the place where sacred stones mark the centre of earth and springs provide water for many people, connected to local identity, a scary place, but also making us proud to have such good natural forests <sup>a</sup> , and a source of <i>pangi</i> fruit <sup>a</sup>	Potential sources of income from water payment and tourism; the people should be given access to generate income from the forest they have been protecting; those who against these ideas were simply jealous; sacredness is mystical
Value of water coming from the forest	God's gift that has been guarded from generation to generation since the time of our ancestors	Source of income; farmers downstream must pay for using the water, thereby becoming an incentive for the local people to continue keeping their forest
Plan to apply water payment	Embarrassing; contradicting with ancestors' message to maintain water for people; unclear mechanisms: who's going to manage and distribute the money and for whom <sup>a</sup> ; may benefit only small group of people; 'If farmers downstream have to pay for the water, they [who created the rules] have to step over my dead body' <sup>b</sup>	Payment for water/ecosystem services is promoted by many, why should not we follow?
Protection and maintenance of forest	Self-enforced traditional beliefs; no encroachment after one village member who cut trees in the outer boundaries of the forest fell sick and died; voluntary replanting inspired by the custodian to replace tens of large trees which fell after windstorm	Poverty had caused encroachment; Village Forest scheme would strengthen protection and provide income for the people

<sup>a</sup>From women respondents.

<sup>b</sup>From custodian of Campaga forest.

from the border, it was only for the purpose of building mosques and schools.

Designation of the BW also took place alongside land allocation and certification of lands (locally known as the C1 certificate) outside of the BW, whereby certificate holders were legally given mandates to manage land. As part of the obligation of certificate holders, people paid land tax to the government every year. Over the years, they integrated cash crops such as coffee and passion fruit into their agricultural systems. In 1984, the government commenced a process reconstructing the old BW boundaries markers under the TGHK<sup>6</sup> (*Tata Guna Hutan Kesepakatan* or forest governance by consensus) programme. Under this process, the protection forest boundaries were expanded to occupy parts of the village territory, including land that had been previously used for crop cultivation for several generations.

The people felt this was not justified. They were not informed of these changes and claimed that the protection forest border occupies some hundreds of hectares of villagers' certified land. Dispossession was further enforced in 1993, when the government stopped sending tax notification letters (*SPPT/Surat Pemberitahuan Pajak Terhutang*), which were usually sent to remind residents of their tax obligations. Since then, no farmers have paid any land tax to the government.

In the early 2000s, the then Ministry of Forestry conducted a reforestation programme, paying local people to collect seedlings and plant their land just outside the state's protection forest area. Villagers participated as they trusted the government's intentions. 'It was the government's programme, so we thought it must have been for our well-being. The government also said the timber [from

the trees planted] is for us', respondents explained. In 2010, some village members began harvesting those trees to build homes. They were subsequently apprehended and threatened with prosecution and jail time by forest rangers. Although in the end they were not punished, they felt tricked. The forest rangers claimed that the land status had changed into state protection forest; therefore, cutting down trees, collecting NTFPs and clove farming in the rehabilitated area were prohibited. With the new land status, coffee farming in the existing locations within the boundaries of the protection forest area could continue but would not be allowed to expand. The district forestry service in charge at that time said: 'We only enforced our obligations, such as referring to the government maps and protecting the state forest from encroachment. We have also paid an honorarium for those who participated in the reforestation program'.

The changing policies, unclear information and non-transparent decision-making have created distrust between the people and forestry institutions. As a result, villagers rejected all subsequent forest-related programmes. They continued to participate in tree planting for various reforestation programmes, accepting the financial incentives, but then returning to poison the trees and sabotage planting efforts. They said, 'This is our revenge to the government for breaking their agreement, for taking over our land and prohibiting us from collecting NTFPs<sup>7</sup> from the forest'. Such under-the-radar approaches follow forms of peasant resistance articulated by James Scott (1985) as the 'weapons of the weak'.

In this context, there were two competing narratives of encroachment. Was it encroachment by local people on state forest areas, or

encroachment by the state on community land? We cross-checked with the information from the District Forestry Service, and literature, for example, Fisher (2019) and maps. The results are shown in Figure 3, whereby boundaries of the protection forest indeed expanded from 1913.4 ha of the original BW area (green line) to 2187.2ha (green dashed line). The additional 273.8 ha became the area of dispute.

A new head of Bulukumba Forest Service, who was more open to participation of local people in forest management, was appointed in early 2010. She engaged local people from Borong Rappoa in open dialogue to look for mutually acceptable solutions. She proposed reviving the HKm ideas initiated in the early 2000s, aimed at providing legal access to the people who have coffee orchards inside the protection forest. However, as the issue was the state claiming their forest, they rejected the HKm (see Fisher, 2019, Moeliono et al., 2015 for details). They said, 'If we agreed on HKm, it means we agreed that the land is owned by the state. In other words, we lost our ancestors' inheritance'. Resistance continued, and as a consequence, reforestation and conservation development programmes in these hamlets have continued to fail. Fisher (2019) noted that during his research period in 2015–2017, anytime discussions between the people and external actors (NGO, students, scientists, government) returned to HKm issues, the people refused to engage. The value conflicts above are summarised in Table 5.

However, when the conversations shifted to issues of watershed functions in upstream areas, risks of landslides, riverbank restoration, and various uses of the river, the discussion dynamics and atmosphere were completely different. The people participated actively and shared more positive values of the forest. In Senggang and Katimbang hamlets for example, FGD participants<sup>8</sup> revealed positive appreciation towards the forest ecosystems:

If forests disappear, the air temperature will increase and the water springs inside the forest would vanish, thus decreasing the water in our lands. Forests also provide various food sources such as mushrooms, honey, and wild meat. We fully understand that trees are crucial to maintain soil fertility; so, everyone plants trees. If any of us identifies a plant species that is good for sheltering coffee and enriching the soil, that person will share the seeds to the rest of the farmers here. We must always plant trees; water springs exist because of these trees.

They have also been planting trees on their land for generations and do not encroach on the forest to maintain water and regulate local air temperature. This provides further evidence of local acknowledgement of

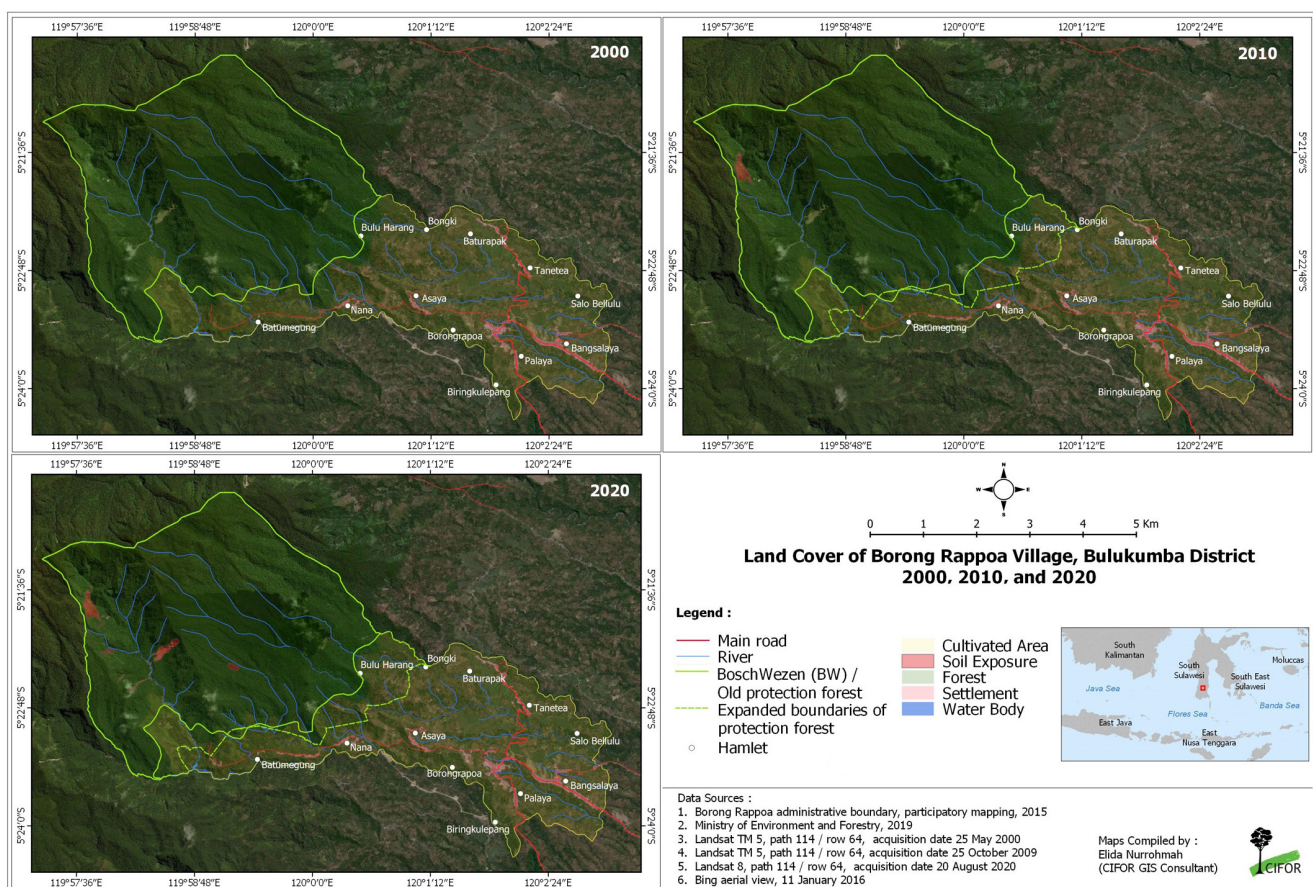


FIGURE 3 Map showing boundaries of BW/old protection forest (green line) and expanded boundaries (green dashed line).

TABLE 5 Value conflicts in Borong Rappoa

Points of divergence	Local people's perspectives	The government's and/or external actors' perspectives
Key relationships	The values of the land were non-substitutable, as the relations were between people and the land and between people and ancestor (land as inheritance)	The values were substitutable through paid participation and/or new programmes
Land outside BW boundaries	In possession of legal mandates to manage the land through land certificate	State's protection forest according to TGHK <sup>a</sup>
Government's programmes (Community Forestry/HKm) and reforestation in early 2000s	Trick to expand the state's forest on local people's land; tension between farmer group leader and members	Implementation of obligations and duties to protect state's forest from encroachment <sup>a</sup> ; participatory, as local village leaders involved in the demarcation, received salaries to designate these lands, and thus took part in formalising them as national forest <sup>a</sup> (Fisher, 2019)
Values of forests	Apart from land rights issues, the people acknowledged the values of forest in maintaining local air temperature, ensuring availability of water for coffee orchards, and source of wild food; some tree species are good shelter for coffee and help enrich the soil	The district forestry service valued the forest as State's protection forest, and what they did was to enforce law and their obligations
Maintenance of the forest	The people voluntarily shared seedlings and planted; did not encroach the forest to maintain its values	The government was not aware that local people had voluntarily maintained the forest
Participation in reforestation	The people participated only to accept the financial incentives but then poisoning the trees (weapons of the weak, Scott, 1985)	Reforestation should be promoted to rehabilitate steep slopes <sup>b</sup>

<sup>a</sup>District Forestry Service in charge at that time.

<sup>b</sup>From other external actors.

the importance of forests and its values, which became the motivation for forest stewardship.

Further discussions led to the suggestion of establishing a micro-hydropower plant to generate electricity in two hamlets, which received enthusiastic support by local people. This helped to build common ground. Residents agreed to set aside IDR 1 million per household from selling coffee to finance the turbines, and in 2015, the micro-hydropower system became operational. Having electricity in such a remote location was, as locals described, 'a dream come true'. They were fully aware that the operation of micro-hydropower depends on the forest hydrological function, and they mobilised their own efforts to conduct voluntary reforestation. This indicates that the micro-hydropower approach resulted in better relations between the people and the forest, leading to better development outcomes of electrification, as well as more sustainable management of forested landscapes.

## 6 | DISCUSSION

### 6.1 | Local values versus external programmes' views

This study contributes to research on values by providing empirical evidence of the needs to recognise relational values of Indigenous People and local communities living among and nearby forests. External actors often view values in too narrow of a perspective,

that is, economic or conservation values (which are to some extent influenced by global views of incentive-based mechanisms). This perspective has failed to achieve the intended objectives of supporting livelihoods of local communities, as well as fallen short of slowing down biodiversity and forest loss. Instead, such simplified and essentialised perspectives crowd out existing local motivations to protect nature. In many instances, such as in salmon habitat restoration in America's Pacific Northwest (Breslow, 2014; Chapman et al., 2020) and in incentive-based conservation programmes of riparian buffers in the US Northwest (Chapman et al., 2019), this has led to value conflicts.

Our findings demonstrate that there is something that goes beyond the instrumental values, which are the locally rooted complex relationships that serve as the key drivers of forest stewardship motivation and behaviour. This perspective needs to be taken into consideration by external actors, that is, the relational values elements (the eudaimonic motivation, social cohesion, moral responsibility), particularly to sustain and support existing stewardship practices (Arias-Arévalo et al., 2017; Chan et al., 2018; Winkler-Schor et al., 2020).

At first glance our research sites echoed the emphasis of valuation assessments elsewhere, whereby instrumental values might come out first from local respondents. It is, therefore, critical to use methods and questions that go beyond the instrumental values, for example, by asking people's behaviour and actions to maintain the instrumental values and what would happen if the nature element (water, forest) is gone. We found that the Appreciative Inquiry

approach and better listening techniques provided important nuances on relational values and power relations, particularly between elites and forest stewards and between local resource users and formal government institutions. Applying a relational values lens is therefore vital in the evaluation of value conflicts, especially to identify the underlying reasons that often cannot be captured using universal views of instrumental or intrinsic values frameworks.

Many external programmes explicitly state that local people will serve as the main actor and indeed intend to prioritise local interests. However, such programmes also have a tendency in not explicitly acknowledging local resource management and stewardship systems, particularly the local values that underpin them. As a result, the uses of valuation concepts do not allow for key local values to emerge. The use of different valuation concepts, for example, instrumental or non-instrumental relationships, might lead to significantly different possible actions and subsequent implications (Arias-Arévalo et al., 2017; Himes & Muraca, 2018).

Indonesian SF regulations (e.g. Government Regulation no. 23/2021), for example, applies an instrumental values lens in developing its programmes and monitoring-evaluation mechanisms. As a result, initiatives do not sufficiently consider the key relationships binding people to forests. Although the majority of people have non-substitutable relational values with their forests and landscapes, governments and other external actors focus on providing access to land and helping forest users to develop a business, rather than supporting the diverse systems of traditional forest management (Bong et al., 2019).

The case of Campaga shows that local people had strong relational values with the sacred forest. The traditional institutions and village members, individually and collectively, relate their identity with the presence of the forest and frame their responsibilities around ensuring the sustainability of spring water sources. The spiritual values instilled a sense of responsibility for continuing to care for these sites, which was reflected in their individual and collective habits and actions. By doing so, they felt useful to others, which was a part of their own tenets of leading a good life. These represent stewardship eudaimonic values and stewardship virtues on an individual level and also highlight social cohesion, social responsibility and moral responsibility on a collective level.

The externally driven Village Forest programme, which ostensibly intended to improve local livelihoods, undermined these values and thereby caused unintended consequences that increased inequality and conflict. Through formalising forest management, responsibility shifts away from traditional institutions to formal state institutions at the expense of spiritual connectedness with the forest. It would be simple to say that the conflict of value is between state and people, between instrumental and relational. Nevertheless, we also showed how the two tend to overlap and intersect in complex ways. The state invokes traditional values as a way to ensure forest conservation but stresses the monetary value from the forest as a village enterprise. These findings support the work of Himes and Muraca (2018, p. 5) who stated that articulating the value of Pacific Salmon in terms of only instrumental values silences the specific

language in which local people express their deep and multifaceted relationship with salmon and their relational webs.

Focussing on instrumental values also overlooks equity issues and has the potential for exacerbating them. The case study sites showed that people with intrinsic values with the forest might be excluded from development projects, while others able to adopt the new instrumental values perspectives benefits. This is commonly described as elite capture, which is a growing critique of SF project implementation in Indonesia (Fisher et al., 2018). The so-called participatory activities in SF proposal development did not sufficiently involve and inform village members and traditional institutions, local custodians, customary leaders and other villagers, thereby triggering horizontal conflicts and distrust, and disrupting traditional power structures. A new elite, emerging through uniform state structures of the village and the creation of the BUMMAs took the opportunity to reframe benefits around commoditizing forest products and services. The convergences are intended to follow the rich literature on the commons and polycentric governance, but our closer examination shows that initiatives privilege these instrumental values as part of the national state hierarchy, where village institutions play the decisive role. Furthermore, governments tend to formulate policies based on instrumental metrics, thereby strengthening state control and authority rather than allowing community-based management systems to strengthen and flourish (Allen et al., 2018; Li, 2002; Scott, 1999).

Negative consequences of the Village Forest proponents' idea to apply payments for Campaga water exemplified the danger of bringing a universal concept such as PES to a rural village without proper understanding of the people's relationships with the forest and the water. In other regions of Indonesia, economic incentives have weakened relational values and changed local motivation in East Nusa Tenggara (Lukas, 2013), and ideas of payments for conserving forests for their carbon in Central Sulawesi have changed people's perception of the forest (Toheke, 2013). Similar cases also occurred in the Pangani basin of Tanzania, whereby monetary payments for water represented disjointed values with people's belief that water is a gift from God (Fisher et al., 2010). These reports resonate with earlier literature that such ideas of commoditization disrupt and undermine longstanding and deeply rooted traditional systems (Gómez-Baggethun & Ruiz-Pérez, 2011; Nevins & Peluso, 2008). Commoditization of either public goods or common pool resources becomes very difficult in practice (Farley & Costanza, 2010) and often leads to unacceptable outcomes according to local notions of fairness and equity (Pascual et al., 2010).

In Borong Rappoa, local values in the form of sense of place, local identity and connectedness with ancestral land are clearly relational. Ignoring both local values and the importance of transparencies during the TGHK and reforestation processes led to long-term conflict and resistance towards forestry institutions and programmes. When the government expanded the areas of protection forests and enforced a ban on access to their land, local residents suffered a big loss with regard to inherited lands. The impact of losing inherited

land was deep and long lasting, leading to overt and quotidian resistance against state claims, followed by outright rejection of government programmes. Failure to understand these conflicting values and their impacts continue to cause resistance against externally driven programmes. In this situation, any discussion of SF designation in relation to local land claims and cultivation rights had become too contentious and may not match community interests (Fisher et al., 2018). Although the values were relational, the government framed them as instrumental and further imposed state control.

Meanwhile, people in the most upper watershed hamlets were well aware of the importance of forest ecosystems and individually and collectively maintained forests. These examples of stewardship virtue suggest a deeply grounded social and moral responsibility. As keeping the forest healthy and sharing seeds of useful plants were seen as a meaningful long standing practice, it also emerges as an example of stewardship eudaimonia and social cohesion of local people.

### 6.1.1 | Relational values in real-world policy-making

Development of the concept of relational values has been guided by two motivations: an interest in interdisciplinary inclusion and a desire to assist in real-world decision-making processes (Chan et al., 2018). The main challenges for the relational values concept in assisting real-world policy-making is in the ways that governments tend to simplify, categorise, and approach local engagement (Li, 2002; Scott, 1999). In an official statement, Indonesia expressed belief 'that beyond the sectoral dimension, moral and ethical values as well as social considerations play a significant role in sustainable development, climate change, and enhancing national resilience' (Ministry of Environment and Forestry, 2018, p. 59). Despite the official statement recognising the importance of moral, ethical and social values, the most dominant indicator in assessing SF performance remains the economic values as shown in reports (e.g. Ministry of Environment and Forestry, 2020).

The cases herein and the overall literature in this field more broadly suggest the need for accepting a pluralism of values by implementing broader landscape approaches within multi-stakeholder contexts in ways that better formulate common goals, generate ideas and establish mutually reinforced and respected required actions. The integration of broader, and oft-conflicting interests over land use lend themselves to consider landscape-scale implementation rather than focussing on a single component of the wider mosaic (Reed et al., 2020). The key is transparent and multi-stakeholder collaboration, which is conceptually popular but complex and challenging in its application (Barletti & Larson, 2019; Bouamrane et al., 2016; Fisher et al., 2017; Riggs et al., 2018). The case of the micro-hydropower initiatives in Borong Rappoa shows that local actors are also motivated by instrumental initiatives but only in ways that provide benefits and maintain a sense of place. Indeed, it deepened initiatives to further improve forest protection through voluntary restoration. This finding is similar to the evidence reported

by Lliso et al. (2021) and Kreitzman et al. (2022) that external programmes should be designed to align with local community values to increase motivational crowding-in and success of environmental conservation.

By linking with relational values as a departure point, restoration or conservation activities can enable broader widespread participation in planning and implementation (Chan et al., 2016; Higgs, 2003; Light, 2006). Although terms such as 'collective action', 'participatory' and 'multi-stakeholder process' have become common in Indonesian policies, integrated into project documents and mandated as part of donor requirements, their meanings are still widely and variously interpreted. Participation is simply translated as involvement of local people in externally driven initiatives, with some incentives to support local activities. Not only does it make participatory concepts and models misleading, but it also undermines the possibility of implementing them.

As a result, participation is translated as mere 'attendance' by local people in certain activities (such as project planning meetings, provision of information on new policies, or village workshops), and used as a basis for claiming a 'participatory approach' by external actors (Agarwal, 2001). It is therefore important to understand different types and degrees of participation (Pretty, 1994): passive, consultative, bought, functional, interactive and self-mobilisation (see also Arnstein, 1969). The power of participatory approaches is its promise to serve as a tool to stimulate social capital, which lies in supporting empowerment in ways that lead to self-mobilisation.

Unfortunately, externally driven programmes tend to override the already existing self-mobilisations long inherited and already in place, which embody the highest degree of participation and commitment to conserving forests rooted in people's relationships with nature and one another. Our findings show that participation in Campaga in development of Village Forests merely took place at the stage of informing locals, without engaging in proper consulting and remained a far cry from forms of self-mobilisation. Worse it skewed authority towards instrumental interests among elites that undermined the longstanding institutions inheriting forest stewardship. Meanwhile, in Borong Rappoa reforestation programmes took place in the form of paid participation, one built on deep-seated mistrust resulting in destructive forms of resistance among local people.

## 7 | CONCLUSION

Our case studies reflect many features typical of land management in Indonesia and elsewhere in forest management regimes across the Global South: unclear tenure, top-down governance and bureaucracy inherited from past policies, externally driven programmes and a focus on economic well-being as a sole measure of welfare. Programmes such as SF are typically developed based on economic values and controlled by a rigid bureaucracy. Local context is seldom sufficiently considered while approaches tend to be sectoral, ignoring processes that promote learning and higher degree participation

(interactive and self-mobilisation) of the most affected groups, that is, IPLCs.

Modernisation and cash economy tend to crowd out traditional values and beliefs and thereby disrupt adaptive management systems based on local knowledge and culture. Over-emphasis on economic factors alone potentially leads to elite capture and increased inequality, where the protective/conservation value of forests are ignored. Unclear information from the external actors and lack of key stakeholders' engagement as evident in the cases presented herein will lead to rejection of potentially useful programmes. External actors thus need to accept the necessity to adapt their programmes to local contexts, acknowledge and understand relational values, and develop better mechanisms for doing so.

Our study contributes to the knowledge of human–nature relationships in tropical rural areas, where relations with nature, including their definition of meaningful life, are shaped by tradition, beliefs, culture and history. Despite the global and national drive for economic improvement, economic incentives are not always the main motivation for people's choices, behaviour and actions. Understanding local values and rewarding people's action through appreciation and recognition of how these values are implemented would make Community Forest Management including SF and other conservation development programmes more effective, particularly if the broader landscape is taken into account. Respecting values and integrating them into national policy frameworks in more reflexive ways will serve to better understand the intended drivers of policies that aim to protect forests in ways that also that improve human well-being, particularly the IPLCs.

#### AUTHORS' CONTRIBUTIONS

All authors developed ideas, designed the research methods and contributed substantially in writing and revising this article; E.L.Y., M.M., A.L., M.R.F. and P.A.T. collected and analysed data; E.L.Y. led the writing, and T.S. managed the project. All authors gave final approval for publication.

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#### CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

#### DATA AVAILABILITY STATEMENT

This study used qualitative data which contained sensitive information and were documented in Indonesian and the local language. Prior to data collection, we made verbal agreements with respondents on confidentiality. In respect of this agreement, we are unable to make raw data publicly available.

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#### ENDNOTES

<sup>1</sup> Villages in Indonesia consist of several smaller units called *dusun* or *kampung*, which we describe as hamlets.

<sup>2</sup> We keep the name of this institution anonymous to protect confidentiality.

<sup>3</sup> Original quote in Indonesian language was '*Orangtua berpesan, air itu pemberian Tuhan, jadi harus dirawat untuk kemaslahatan orang banyak, terutama yang miskin*'.

<sup>4</sup> Village leaders, although elected, are instated and paid by government and consequently often more accountable to government; Customary leaders are traditional leaders established through customary rules.

<sup>5</sup> We keep the names of these institutions anonymous to protect confidentiality.

<sup>6</sup> The TGHK was part of a process to designate state's forest areas throughout the country, which reported to contain many errors and often conflicting with the spatial plans of the regions. In the 1990s, the Ministry of Forestry started the process of reconciling, reconstructing and adjusting TGHK boundaries.

<sup>7</sup> While the importance of NTFPs might be interpreted as the instrumental value, this statement also shows the deep feeling of loss of their relations with the forest as part of their territory.

<sup>8</sup> In FGDs, participants gave comments one after another. This quote is the compilation of all comments.

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