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Ecological care work in bamboo value chains: Feminist political ecology insights to care in forest-human relations

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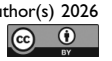

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Abstract

Over the last 20 years, bamboo has been promoted and marketed as an innovative and eco-friendly material, often evoking a sense of responsibility and care for nature. This article broadens understandings of care in forest-human relations, by examining the ecological care work done by peasants and emerging local civil society organizations in the Lao People's Democratic Republic (PDR). Drawing on feminist political ecology and qualitative research conducted in Houaphanh province, we take the Bamboo Program as a case at the intersection of sustainable forest management and development interventions in the Lao PDR. We critically question: 1) the allocation of care for nature to green consumption; 2) the narratives that still represent upland peasants as "unproductive", "destructive", and "indifferent" towards forests; and 3) the disregard of care work and reproductive labor in research on forest-based commodities and value chains. Our analysis demonstrates how ecological care work is embedded in everyday material and affective practices that peasants and civil society organizations carry out with(in) the bamboo forests, and how livelihoods and bamboo value chains are dependent on such work. We conclude that recognizing ecological care work is a matter of ecological justice, as it challenges dominant environmental narratives of caring for nature and highlights the everyday practices of maintaining bamboo forests and livelihoods in peri-capitalist spaces.

Keywords

Ecological care work, reproductive labor, bamboo, feminist political ecology, rural development, environmental justice

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Introduction

Bamboo has been integral to the livelihoods of rural peoples in Africa, Asia, and the Americas for thousands of years. In Asia, bamboo has adapted to many landscapes, is in widespread use, and holds a great biocultural significance (Wong, 2004). For peasants[1] in the mountainous regions of Southeast Asia, diverse bamboo species have served as an important source of subsistence, income, knowledge and cultural practices. Over the past two decades, amid the global shift towards a green/bioeconomy, bamboo has gained prominence in global markets focused on "eco-friendly" materials, where it is valued for its rapid growth, affordability, and performance (van der Lugt and King, 2019). Several initiatives and development interventions in the Global South have promoted bamboo, among other non-timber forest products (NTFP), as a crucial resource for nature-based and bioeconomy solutions to land and forest degradation, often aligning with development strategies to relieve rural poverty (FAO and INBAR, 2018; Lobovikov et al., 2009; Rosenfeld et al., 2024; Ying et al., 2024). These interventions are implemented and supported by intergovernmental agencies, including the International Bamboo and Rattan Organization (INBAR), the Food and Agriculture Organization (FAO), and other International Non-Governmental Organizations (INGO), research centers, governments, and private sectors.

As the industrialization and commercialization of bamboo has expanded, its purchase and use are increasingly framed as a way of caring for nature and benefiting impoverished rural communities (Dwivedi et al., 2019; Hogarth and Belcher, 2013; Lobovikov et al., 2012; Van Hiep et al., 2024; Ying et al., 2024). The global boost for bamboo products and the aspiration for transforming rural economies have led to several initiatives in existing (e.g., handicrafts, food, incense sticks and chopsticks) and emergent markets (e.g., flooring, furniture, and construction) (Flynn et al., 2017; Hogarth and Belcher, 2013; Marsden et al., 2011). In lower-middle income countries like Lao PDR (hereafter Laos), such projects aim to develop bamboo and NTFP commodity and value chains in support of the environmental and economic sustainability of rural villagers (Greijmans and Hitzges, 2012; Kibler, 2023). These projects involve activities at different scales (Desbleds, 2021; Kibler, 2023). The most time- and labor-intensive tasks are performed at rural production sites, including monitoring, harvesting, and processing. Bamboo value chain documentation and analyses tend to frame these labor-intensive activities as participation, and they are often only considered in relation to their economic costs. We fill this gap by asking who performs the work implicated in ecological care in these bamboo-based bioeconomy solutions—specifically, how is it carried out, remunerated, distributed, valued, and recognized?

To address these questions, we broaden and deepen our understanding of caring in human relations with forests, by examining ecological care work, and its integration into bamboo value chains. We argue that including ecological care work as a concept in the analysis of commodity and value chains is critical to highlight the importance of these activities—often poorly remunerated, unpaid, and taken for granted—in today's peasant economies. This research seeks to make visible the labor involved in the development of bamboo value chains driven by rural development projects in Laos, and its intersections with rural development and forest conservation policies.

Drawing on recent discussions within feminist political ecology (FPE) and environmental humanities, we consider human ecological care work as part of the reproductive labor that ensures the regeneration and maintenance of interdependent human communities and ecosystems (Barca et al., 2023; Corwin and Gidwani, 2021; Papadopoulos et al., 2023; Ressiore C. et al., 2024; Singh, 2018). We think about human ecological care work as the intricate daily engagements and activities fundamental to the social, economic, and ecological reproduction of human and more-than-human life (Barca 2020), which are required or controlled by programs of environmental protection, stewardship, and nature conservation (DiNovelli-Lang and Hébert, 2018). We contribute to understanding the intricate connections between ecological care work and environmental

justice (EJ) in rural development projects involving bamboo and NTFP as value chain commodities. Commodity and value chain research is key to tracking the flow(s) and value(s) of goods and examining the social and power relations surrounding the production, transformation, and consumption of commodities in the green economy (Neimark et al., 2016; Ruben, 2024). While research often highlights labor networks and the participation of women (Jensen, 2009; Malanski et al., 2022), little attention has been paid to the ecological care work and reproductive labor that commodity and value chains encompass.

Often the division between productive and reproductive activities can be blurry, particularly in the NTFP commodity and value chains. Household members simultaneously carry out work for their livelihood and the market, such as the collection, harvest, and transformation of NTFP, crafts, and smallholder agriculture (Dunaway, 2013). The close relationship between the creation of commodities and services (productive labor), and life's daily activities to maintain people's and nature capacities (reproductive labor), is present and linked to the social organization of time and space. Ecological care work is fundamental for (re)production as human communities have developed a material and metabolic interdependence with the more-than-human world, encompassing animals, plants, fungi, elements of ecosystems and earth formations (Barca, 2024; Mies and Bennholdt-Thomsen, 2001). A significant proportion of working time is devoted to activities that maintain, cultivate, and sustain these interconnections. Daily work is shaped by affective values, such as duty, compassion, fear, or joy, which are shaped by the individual experience of emotions, embodied feelings, and socio-cultural and political considerations about nature (González-Hidalgo, 2020; Singh, 2018).

Our understanding of ecological care work as part of reproductive labor aligns with what political ecologists and ecofeminists have called "forces of reproduction" (Barca 2020) and "caregiving labor in human-nature relations" (Salleh, 2017). This approach reminds us that ecological care work can be naturalized, taken for granted, or valued depending on the space in which it is performed and the class, gender, and social status of the performers (Jax et al., 2018; Barca, 2020). Even when the labor of local and indigenous peoples is celebrated in development and green/bioeconomy interventions, their engagement is often reduced to "local participation", which obscures the labor involved (Neimark et al., 2020: 497).

We examined the Bamboo Program series of development projects from 2008–2021 in the Houaphanh Province in northwestern Laos. Implemented by the Netherlands Development Organisation (SNV) and the French Group for Research and Technology Exchanges (GRET), the program sought to expand economic opportunities for rural households to alleviate poverty and curb deforestation via promoting sustainable management of bamboo forests and plantations. The initiative was endorsed by the provincial government and sought to make the province a model for a sustainable bamboo industry that could "provide 'green gold' (*kham kieo*) for poverty alleviation" (Houaphanh Provincial Government, n.d.). After its phase-out, it was continued by the Bamboo and Non-Timber Forest Product Development Association (BNDA), a Civil Society Organization (CSO). Rural development projects with their market-oriented approaches and international organization funding, often in coordination with different levels of government, can help us understand how ecological care work and EJ are configured under Lao socialism (High, 2021). They allow us to analyze how ecological care work is performed in peri-capitalist spaces—those that "simultaneously interact within and outside of capitalism" (Tsing, 2015, 65).

The article proceeds as follows. In section 2, we elaborate on our conceptual understanding of reproductive and care work in socio-ecological relations, which led us to focus on the concept of ecological care work and its implications for EJ. In section 3, we describe the case and our research methods. In section 4, we explain the global-local configuration of care for nature and caregiving in bamboo value chains. In section 5, we describe peasants' ecological care work, cultural and spiritual practices, and economic needs under the quota system. In section 6, we discuss bamboo

handicraft as a source of income, highlighting the affective connection of artisans to their work and the persistence of gender inequalities in decision-making. In section 7, we conclude on the centrality of peasants and civil society organizations ecological care work in Houaphanh for bamboo forests, value chains and livelihoods. Recognizing that this ecological care work is crucial for EJ, as it challenges framing narratives about care for nature through green consumerism and label upland peasants as unproductive and uncaring of forests.

From caring for nature to ecological care work as a matter of environmental justice

The concepts of care and reproductive labor in socio-ecological relations have received increasing academic attention in political ecology and environmental humanities. Ecofeminists and feminist political ecologists have extended the scope and discussion of care, reproduction, and domination in socio-ecological transformations that seek to sustain life on land, and in soil, air, and water. Life includes the lives of microorganisms, plants, fungi, and animals (Allison, 2023; Bauhardt and Harcourt, 2018; Berman-Arévalo and Ojeda, 2020; Dombroski et al., 2018; Hackfort and Saave, 2024; Jax et al., 2018; Moriggi et al., 2020; Puig de la Bellacasa, 2017; Ressiore C. et al., 2024). We consider it crucial to situate care in our analysis of forest-human relations as a form of reproductive labor to avoid its depoliticization, which currently occurs within the "green consumerism" narrative (Barendregt and Jaffe, 2014).

Thus, we revisit Marxist feminist thinking on reproductive labor. Laslett and Brenner (1989: 382–383) define reproductive labor as "the activities and attitudes, behaviors and emotions, responsibilities and relationships directly involved in the maintenance of life on a daily basis, and intergenerationally". This life-sustaining work ensures that food, clothing, and shelter are available, and it fosters the social ties and interactions needed for the well-being of the members of society, including vulnerable populations (e.g., children, elderly). While feminist theory emphasizes that reproductive work is traditionally performed by women for the daily maintenance of individual and social human life, Marxist ecofeminists shift their focus to the connections between human production, reproduction, and their relationship with ecosystems. Merchant (1987: 269–70) argues that in subsistence economies, production and reproduction are interconnected for community preservation, but with the rise of capitalism, they became separated spheres, subordinating reproduction to production and capital accumulation. Similarly, from postcolonial framing, Mies and Bennholdt-Thomsen (1999) argue for recognizing and valuing various forms of reproductive labor beyond the industrial worker's domestic sphere. They propose the "subsistence perspective" as an alternative to capitalist economies, which includes the systematically devalued and appropriated work of peasants in subsistence agriculture, labor historically carried out in colonies, and work done in or with nature (Mies and Shiva, 1993). These forms of reproductive labor enable a "metabolic bridging between human and natural cycles" (Salleh, 2003: 71) reconnecting material and energy exchanges between human societies and ecological systems, disrupted by capitalist production (Foster, 2000).

While the concept of reproductive labor helps us understand the metabolic bridging in subsistence economies, the concept of ecological care work deepens this perspective by incorporating the affective dimensions this work involves. Drawing on the ethics of care (Tronto, 1993), Puig de la Bellacasa (2012) expands the notion of care to include the practices and activities that maintain and repair connections across human and more-than-human worlds. Tronto (1993) further distinguishes between care about, care for, caregiving, and care receiving. We focus on care-for as a question of assuming responsibility and caregiving as a matter of practice. Corwin and Gidwani (2021) state that caring for nature involves the process of recognizing one's responsibility and requires real

practices (i.e., care work); thus, "we cannot simply 'care' for something and remain detached from it". Feminist political ecologists focus on the affective and emotional dimensions of commoning and collective action (González-Hidalgo, 2020; Singh, 2017), reciprocity and ethical commitments in more-than-human relations (Allison, 2023; Gesing, 2021; Suchet-Pearson et al., 2013; Sullivan, 2019; Ehrnström-Fuentes et al., 2025), and caring practices in extractive environments (Berman-Arévalo and Ojeda, 2020; Corwin and Gidwani, 2021). The transformative potential of care in socio-ecological relations is considered for its capacity to offer alternatives to capitalist economies (Dombroski et al., 2018; Estévez-Saá and Lorenzo-Modia, 2018; Barca et al., 2023), and its relevance and absence in transformative social movements (Jauhola et al., 2025). However, to date, ecological care work has not been theorized in relation to rural development projects within socialist regimes, where environmental governance is state-controlled, but market-oriented (Creak and Barney, 2022; Kenney-Lazar, 2019; Lu and Smith, 2023). This specific context is further developed in the following sections.

We understand that ecological care work encompasses the material dimensions that nurture the metabolic bridging between human and more-than-human life and the affective, emotional, cultural, and spiritual dimensions as relational practices that give work motivation and meaning. Thus, we bridge two approaches often treated separately in the literature, and in doing so we frame ecological care work as a matter of EJ. The first approach emphasizes the practical and labor-intensive actions necessary to sustain or repair ecosystems (Barca et al., 2023; Corwin and Gidwani, 2021) focusing on the economic organization and distribution of labor within broader socio-economic and political structures. Barca (2023) highlights the material and labor-intensive dimensions of ecological care and shows its embeddedness in the distribution of resources (e.g., land allocation/monetary compensation), living and working conditions, and the unequal visibility and recognition of who works. The second approach emphasizes the affective and emotional dimensions emerging in socio-nature encounters (Singh, 2018, 2017), offering insights into how affects, dispositions, emotions, and values are cultivated and/or how they emerge in forest-human relations and encounters, including work (Jax et al., 2018; Singh, 2017, 2015; Sullivan, 2019; West et al., 2018). To bring forth the ethical and affective dimensions of performing such labor, we draw on Singh's (2017) ecological care work, which can foster affective and political relationships with specific ecosystems and may shape new environmental subjectivities; for example, becoming an environmental defender (Bourguignon et al., 2023). Raghuram (2016) indicates that affects are personal and political. Ecological care work also embodies agency through situated, material, and affective everyday practices that shape specific environmental subjectivities (Singh, 2013) where power is negotiated, reproduced, or transformed. By integrating both perspectives, ecological care work can be viewed through an EJ lens, highlighting two aspects: 1) the socio-political contexts that shape who cares for nature, the distribution ecological care work and its recognition; and 2) the affects embedded in this work and their potential to foster just and careful socio-ecological relations.

We understand EJ not as a formal or a rigid set of preconceived liberal guidelines about fairness (Velicu and Kaika, 2017), but as an ethical-political horizon grounded in care, well-being, dignity, and the flourishing of interdependent human and more-than-human life, while addressing the distribution of responsibilities, burdens, and benefits arising from this pursuit (Kirksey and Chao, 2022; Leff, 2021; Papadopoulos et al., 2023). This perspective emphasizes the uneven visibility, recognition, valuation, and distribution of ecological care work involved in repairing, maintaining, and nurturing human relations with forests and the diverse entities therein (Álvarez and Coolsaet, 2018; Guibrunet et al., 2021; Gutiérrez-Zamora et al., 2023; Ramcilovic-Suominen et al., 2024). Often invisibilized, this work is disproportionately performed by marginalized communities. A central element of EJ is recognition that ecological care work is mediated by hierarchies of life and worth, including gender, class, race, ethnicity, and other categories assigned and experienced

in specific historical and spatial contexts. Ecological care work subsists within political and economic systems that improve their techniques of alienation and devalue certain humans and more-than-human beings until they become merely resources (Tsing, 2015: 19). While crucial for sustaining life, ecological care work can be entangled in overconsumption, exploitation, and waste (Corwin and Gidwani, 2021: 3). These dynamics shape the benefits and burdens of ecological care work, along with disparities in valuation and visibility, which are concerns of EJ.

Methods and case description

This article is based on recorded, semi-structured individual interviews ($n = 25$), focus group interviews ($n = 5$), workshops ($n = 2$), and the first author's observations during two one-month research visits in June 2023 and March 2024 in Houaphanh Province and Vientiane City. The first author conducted focus group interviews with bamboo producers in four villages in Viengxay district ($n = 4$) and district authorities in Viengxay ($n = 1$) (Table 1 and Figure 1), and individual interviews with bamboo producers, traders, and district authorities in Houaphanh province with the support of the projects local partner BNDA. Interpretation, translation, and transcription between Lao and English was provided by BNDA. The interviews explored perspectives and experiences related to the Bamboo Program and working in the bamboo sector. The first author conducted open-ended interviews with researchers, consultants, and INGO staff working in the environment and development sector in Vientiane City ($n = 7$). The project organized two BNDA led workshops. One was a provincial workshop addressing the revision of the Bamboo Provincial Strategy (2020–2025) and one a district workshop on the current condition of bamboo handicrafts. We conducted a literature review comprised of 73 documents, including reports, policy literature, working papers, newsletters, public documents, and other grey literature related to the Bamboo Program and its collaborators. We accessed these documents via the LaoFab portal, the official websites of GRET and SNV. Additionally, GRET and BNDA staff provided documents. We used QSR NVIVO11 for analysis of the transcriptions and documents and focus coding for respondent statements and the program documentation. The research was conducted independently from the Bamboo Program and our collaboration with BNDA did not extend to writing or dissemination of research results. While we shared our analysis with BNDA for feedback, we are solely responsible for the analysis and interpretation presented herein.

The bamboo program in the province of Houaphanh, Laos

Houaphanh Province, in the northeast of Laos, has an ethnically diverse population, including Lao, Tai Kao, Tai Dam, Tai Deng, Khmu, and Hmong people. The mostly rural province has a low population density and a high rate of secondary forest cover (Greijmans et al., 2007). Bamboo grows naturally in mixed deciduous forests[2] and upland fallows, and has provided food, fuel, and material for fishing, agriculture, and construction (Boupha and Phimmavong, 2006). Bamboo and other NTFP remain a main source for survival strategies, food security, and cash income in rural households in Houaphanh.

The province has historical and symbolic importance in shaping revolutionary imaginings for state socialism in the country (Tappe, 2011). The mountainous terrain was the refuge and base of the armed resistance against French colonial rule (First Indochina War) and later the United States during the Vietnam War. The caves of Viengxay in Houaphanh were the headquarters of the Pathet Lao, a communist-oriented movement aligned with the Vietnamese communists. From the caves, the Pathet Lao organized resistance activities and planned their 1975 ascent to control of the country. After the Lao People's Revolutionary Party (LPRP) came to power in 1975, the country maintained close political and economic ties with its primary sources of

Table 1. Information about the villages visited.

Village	Households	Population	Women/ Men	Bamboo forest (ha)	Land use Plan	Accessibility	Bamboo value chain
Ban Eurn (B. E.)	74	435	215/220	84	FM and PLUP (2012)	20 min. ride from main road	Slats and Sticks[8] (khouane);Shoots[9] (Dja); Handicraft (khouane)
Ban Loun (B. L.)	50	255	124/131	406	CM (2013)	30 min. ride from main road	Slats and Sticks (khouane);Shoots (hok and khom); Handicrafts
Ban Poungnakhao (B. P.)	36	179	90/89	12 ha	FM (2012)	On main paved road	Handicrafts (khouane)
Ban Xinegman (B. X.)	37	210	110/100	30 ha	FM (2012)	On main paved road	Handicrafts (khouane)

Note: FM = Forest Management Plan; PLUP = Participatory Land Use Planning; CM = Combined Method.

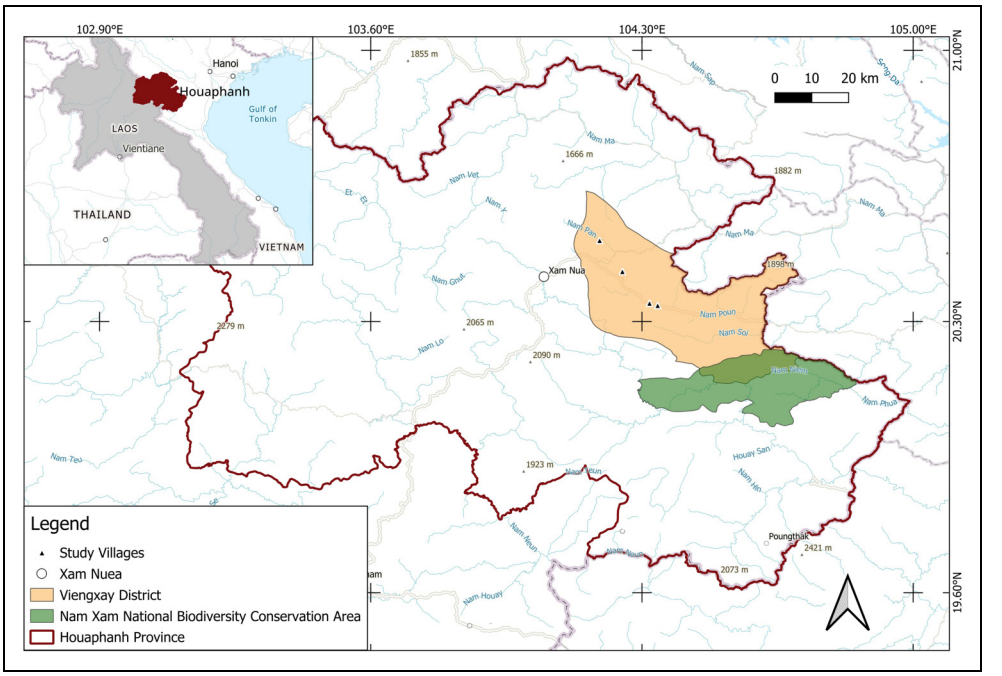

Figure 1. Localization of study villages (Map created by Gutiérrez-Zamora using data from OpenDevelopmentLaos (ODL).

foreign aid, Vietnam and the Soviet Union (Stuart-Fox, 1997). Border tensions with Thailand, China, and Cambodia, along with communist economic crisis and economic boom in other Southeast Asia countries, triggered a shift in Laos' economic and foreign policy (Evans, 2002). By 1986, the Lao government implemented the New Economic Mechanism (NEM), inspired by Vietnam's "Doi Moi" reforms, to transition to a market economy. The NEM sought to promote private enterprise, increase agricultural productivity, and attract foreign investment (Stuart Fox, 1997), while maintaining party-state control over land and forests (Creak and Barney, 2018). These reforms set the tone for donor-supported and market-oriented projects in rural development.

Despite their wide uses across rural regions, until recently bamboos and NTFP were considered irrelevant in global economic trade (Arnold and Pérez, 2001) and often underestimated in development and forest policy (Shackleton and Pandey, 2014) compared to timber (Delgado et al., 2016). Since the mid-1990s, rising demand and diverse programs have underlined the economic, cultural, and ecological significance of bamboo (de Mello et al., 2020). In Laos, studies on NTFP have focused on ecological and economic assessments to inform market-oriented development interventions (e.g., Evans and Viengkham, 2001; Foppes and Phommasane, 2006; Greijmans et al., 2007; Jensen, 2009; Lee et al., 2021; Peters et al., 2013).

The global demand and integration of NTFP into current forest-based bioeconomic strategies (Smith-Hall and Chamberlain, 2023) raises important questions about ecological impacts (Schimetka and Ingram, 2024), equity, participation, and recognition of the ecological care work that peasants and other actors carry out. This is relevant in a country like Laos where the socialist political system has oriented rural development policies towards market integration and prioritized economic growth through land concessions, expansion of agricultural and forestry plantations, and infrastructure projects over sustainable forest management (Suhardiman et al., 2019; Singh, 2020)[3].

Meanwhile, forest conservation policies continue to centralize decision-making, but displace the burdens of compliance, which fall onto local communities, requiring them to regulate their livelihoods under state imposed rules (Ramcilovic-Suominen and Mustalahti, 2022). Notions of justice in forest management do not focus on formal rights of participation or equitable distribution of benefits, but are configured around security, the internalization and legitimacy of authority, and symbolic justifications and negotiations of power (Dwyer et al., 2016; Martin et al., 2018; Singh, 2012; Ramcilovic-Suominen and Mustalahti, 2022). In this context, the Bamboo Program is significant to understand the effects that rural development projects using value chain approaches have on peoples' livelihoods and their relationships with bamboo forests.

The Bamboo Program (2008–2021) spans five continuous projects. The first phase (2008–2015) included projects implemented by GRET and SNV. The second phase (2015–2019) was implemented by GRET, and the third phase (2019–2021) saw the birth and consolidation of the BNDA. The Bamboo program was conducted under the approval of the Provincial Governor, in collaboration with the Provincial Office of Agriculture and Forestry (PAFO), the Provincial Office of Natural Resources and Environment (PONRE), the Department of Planning and Investment (DPI), the Department of Industry and Commerce (DOIC), and three different district authorities. The program received funding from EuropeAid, Agence Française de Développement (AFD), the Swiss Agency for Development and Cooperation (SDC), Oxfam, and other private funders. During this research (2023–2024), BNDA was working as the main facilitator with GRET support. In November 2024, a new phase of the program was initiated upon receipt of private funding to strengthen and expand to other districts.

The primary goal of GRET was to reduce deforestation and curb unsustainable crop (maize) expansion by assisting villagers to sustainably manage bamboo forests and plantations (Porbounmixaithor *et al*., 2017; Desbleds, 2021). For SNV, the program's primary objective was supporting bamboo sector development to alleviate poverty via enhanced economic opportunities (Greijmans et al., 2007; Greijmans and Hitzges, 2012). The program pursued expansion of the bamboo sector as an economic activity, enhancing bamboo exchange value, and generating income for rural communities by promoting four commodities and value chains based on bamboo species used in the province: 1) Bamboo handicrafts made from various species, including sticky rice containers and woven baskets targeting domestic and export markets. 2) Slats and sticks made from mai khouane (*Dendrocalamus longifimbriatus*) as semi-processed bamboo materials exported to Vietnam for finishing. 3) Fresh bamboo shoots harvested from nor khom (*Indosasa sinica*) and nor dja (*Sinarundinaria microphylla*) for food and trade in local and regional markets. 4) Dried bamboo shoots produced from nor hok (*Dendrocalamus hamiltonii*) for export to Vietnam. Herein, we focus on the slats, sticks, and handicrafts, but often mention bamboo shoots (Figure 2).

Recognizing the growing global demand for bamboo as an opportunity underestimated by Lao authorities, SNV and GRET noted the potential was often constrained by inadequate regulatory mechanisms.The program formulated and coordinated three provincial strategies in partnership with the provincial authorities during 2011–2016, 2016–2020, and 2020–2025.[4] These strategies were intended to set specific objectives and priorities to guide political and institutional frameworks towards sustainable management and commercialization of bamboo and fostering sectoral growth and development (Desbleds, 2021). In 2013, 66 villages in Houaphan were targeted for intervention, located in Viengxay ($n = 43$), Sobbao ($n = 14$), and Xam Neua ($n = 9$) districts. By 2020, the number of villages receiving interventions decreased to 63 villages. Sobbao ($n = 9$), and Xam Neua ($n = 9$) decreased, while Viengxay ($n = 45$) increased. In Viengxay district 56 out of 104 villages have allocated bamboo forest.

In the first program phase (2008–2015), GRET focused on developing a "territorial approach" including participatory land use planning (PLUP) processes. Some villages participated by

Figure 2. Bamboo harvesting and products: slats, sticky rice containers, fresh shoots (Photos by Gutiérrez-Zamora).

mapping and planning land use for agriculture and forestland allocation within the state policy frameworks. A "commercial approach" was used by SNV, focused on fostering value chains and business models (Desbleds, 2021; Kibler, 2023). The Bamboo Program's territorial approach draws from the Land Use Planning (LUP) international development projects and interventions in the Houaphanh Province to regulate land allocation and use (Lestrelin et al., 2012). This approach is aligned with Lao national development goals of rural poverty reduction and increasing investment (GRET/SNV, 2012). GRET conducted forest management plans (FM), participatory zoning and allocation of bamboo, agricultural, and forest land in pilot villages using PLUP and later developed the "Combined Method" (CM) (Porbounmixaithor et al., 2017). These zoning processes restricted swidden cultivation and livestock activities. Forest regulations stigmatize swidden cultivation as a driver of tropical deforestation (Castella et al., 2013; Fox et al., 2009; Ramcilovik-Suominen, 2019; Singh, 2020). Though the Lao state and international actors label it as a "backward method of land use", it remains among the oldest and most complex agroforestry systems for lands used for subsistence (Dressler et al., 2017) and is the basis for the Bamboo Project's efforts.

In a broad sense, the Bamboo Program exemplifies a market-oriented approach to NTFP aimed at reconciling development and forest management goals. Since the 1990s, this approach has gained traction among donors and development agencies (Kusters et al., 2006) and has led to strategies seeking to increase the capabilities and access to engage in markets of rural communities, smallholders, and women (Thorpe et al., 2017). The premise is that rural development interventions

bridge economic development and environmental stewardship by creating economic incentives for sustainable forest management (Flynn et al., 2017; Gutiérrez-Zamora, 2021; Ruben, 2024). The development of NTFP value chains, commodity certifications, and fostered forest-based enterprises are prioritized by INGOs, donors, and governments. In Laos, the development of NTFP value chains support poverty alleviation by serving as a strategy enabling peasants to generate monetary income. Yet, this approach has not led to greater peasant influence over forest regulations, as the Government of Laos (GoL) uses policies like land allocation and quotas for state territorialization (Lestrelin et al., 2012; Ramcilovik-Suominen, 2019; Suhardiman et al., 2019). However, state control is never complete as peasants, traders, and other civil actors continue their livelihoods while navigating state policies.

Care for nature and care giving in the production of bamboo products

> "Choose bamboo products, it's good for you and our planet"
> Scandinavian-based company campaign

The global demand for bamboo products is growing, particularly in North America and Europe, which emphasize bamboo's ecological and aesthetic qualities for furniture, interior decoration items, and disposable and reusable utensils and textiles. This framing promotes "green consumerism", which appeals to consumers' sense of moral responsibility to care for the planet and nature (Sachdeva et al., 2015). Green consumerism among affluent classes emerged as a compelling solution for promoting sustainable lifestyles while contributing to the fight against global poverty (Barendregt and Jaffe, 2014). This approach emphasizes that consumers who prioritize sustainable products are socially and ecologically responsible and caring individuals. Yet, this approach fails to consider the caregiving work, skills, and affects that is put into growing, harvesting, and processing bamboo. This labor is fundamental to commodity value chains as it maintains and regenerates bamboo forests over time, ensuring the quality and continuity of bamboo as a material, and supporting community well-being. Marketing makes visible a romanticized version of this labor rather than properly compensating workers, while intermediary value chain actors capture most of these products economic and symbolic value. This shows how ecological care work is undervalued in global and regional supply chains where the recognition, compensation, and decision-making power for those who perform the work remains limited, relegating issues of EJ across bamboo global supply chains.

The growing global demand for bamboo products is a key factor for export production in countries including China, Vietnam, and Indonesia (INBAR, 2022). In Laos, the bamboo exports to China and Vietnam are used domestically and for further processing into higher-value products (Lee et al., 2021).[5] Under the framework of boosting green/bio-economies, rural policies have integrated local bamboo industries into the global market (Flynn et al., 2017; Hogarth and Belcher, 2013; Van Hiep et al., 2024). While the use value of bamboo remains central to rural economies in these countries, the increasing exchange value is already changing how bamboo is harvested, collected, manufactured, and used, shifting the relations between forest ecosystems, rural livelihoods, and cultural practices. Recent studies suggest that the rise of the bamboo industry, particularly via expansion of large-scale plantations, increases the existing tensions between environmental protection and economic growth in Chinese and Vietnamese rural development (Flynn et al., 2017; Van Hiep et al., 2024). Similarly, Trọng Hiếú and Poisson (2024: 213) show that bamboo use in traditional handicrafts persists in Vietnam, but it has become specialized due to consumer preferences for certain aesthetics, signaling shifts in cultural practices and local production priorities. The expansion of the global bamboo industry in Laos is officially framed as

an opportunity for the sector; however, unlike Vietnam and China, bamboo production has experienced slower change, and the market is mainly domestic. During the implementation of the Bamboo Program there were attempts to export handicrafts to European markets, but a consultant and former SNV staff member explained (Interview, 02 June 2023):

> Production for exports is difficult, even if you get [a] little higher price, in the handicraft sector it is almost impossible to compete, because consumers in Europe want 100 000 baskets per month, per container and producers cannot meet these volumes. The volume is impossible, and we don't even have access to the sea.

In Houphanh Province the production of bamboo commodities, including handicrafts, slats, and sticks maintains its artisanal qualities and embodies what scholars have identified as metabolic bridging, i.e., relational and cyclic practices in which human labor and ecological processes are closely intertwined, sustaining and regenerating each other (Salleh 2010; Barca 2020). By artisanal, we mean goods created by hand, using customary techniques, tools, or machinery, often in tension with the speed and uniformization required by international markets. The production process aligns with and adapts to the rhythms of subsistence agricultural tasks and cycles, even when land allocation processes have modified those practices. Bamboo use value persists in the harvesting and trading of bamboo shoots, weaving crafts, making tools for fishing and farming, and rural building. Much of the labor dedicated to bamboo is done during the dry season (November–April), as people work on rice cultivation during the rainy season (May–October). Even when bamboo enters Vietnamese export commodity chains, like the dry shoots or slats and sticks, villagers consider it produces goods and is an important plant for their livelihoods and ways of living, engaging with the metabolic value of bamboo. A senior male pointed out (Interview B. L., 06 March 2024):

> We use bamboo shoot for our food, the poles can be used for fencing, house construction, and some other canes for our supply for produce the handicrafts, like fish traps and baskets. We also collect fresh bamboo shoot and sell it, it is based on the season such as Khom and Hok, and in the dry season we were harvesting khouane bamboo for slats and sticks, but now there is no company buying it.

This account highlights the diversity of bamboo uses, their seasonal labor, and the uncertainties of mechanized export-oriented production led by investors and their companies. Local and regional traders have historically purchased bamboo products for local markets, but participation in export-oriented chains is recent. This shift reflects how control over bamboo value chains and their benefits is reconfigured as it increasingly lies with investors and companies. Meanwhile villagers continue to bear the responsibility for maintaining the forest through their ecological care work, remaining in a subordinated position in the value chain. In the following section, we analyze the production of slats and sticks in more detail.

Ecological care work in the production of slats and sticks under the quota system

The Bamboo Program sought to expand the bamboo sector as an economic activity, enhance bamboo exchange value, and generate income for rural communities through the four existing bamboo commodity and value chains. While bamboo products are used in the region for domestic, cultural, and commercial purposes, the program reorganized commercial activities around handicrafts and shoots, and assisted in establishing business links between villagers and processing companies with machinery oriented toward slats and sticks exports. For rural villagers,

bamboo work has become valuable for income diversification, complementing rather than replacing subsistence farming. Yet, it also became a sector where they must navigate and entangle their ecological care work, cultural and spiritual practices, and economic needs. In the villages involved in the khouane bamboo harvesting, men are responsible for harvesting bamboo culms (stems), while women and children are usually responsible for harvesting, preparing and trading bamboo shoots. In a collective interview (B. E., 14 June 2023) with villagers involved in the khouane bamboo harvesting (slats and sticks), they explained:

> The main work for us villagers is farming and livestock raising. We cannot separate them, but rice is for our own consumption. When I compare livestock raising to khouane bamboo harvesting [for sticks] the income is much better, because livestock takes more time to receive the income. […] But khouane takes more time to cut and select than Chinese yam [Dioscorea polystachya Turcz. / Dioscoreaceae], there are many steps to cut bamboo well and not damage it. […] we don't offer a ceremony to the spirit [for harvesting bamboo], only before constructing the road to access the forest when the company comes, to make sure everything is running smoothly.

Peasants assess their activities by their income potential and by the labor, time, and knowledge required to perform the activity, maintain bamboo stands, and ensure their regeneration. This intentional form of ecological care is co-produced with project staff and supports long-term maintenance of the bamboo forest. While rural livelihoods address immediate needs, villagers' ecological care work also responds to the needs of the more-than-human world. In bamboo cultivation, harvesting, and processing, there is a difference between extractive practices oriented solely toward income generation and ecological care practices that sustain socio-ecological conditions and community continuity. Ecological care is reflected in villagers' spiritual practices to appease forest spirits and prevent community harm during major landscape changes, for instance when the company constructed a road to transport the bamboo poles.

In the four villages, people expressed that project staff brought in additional knowledge and responsibilities related to sustainable harvesting, monitoring, and district and provincial level reporting. Villages now have a forest management plan implemented through different land use planning processes (see Table 1). Bamboo monitoring and assessment are conducted annually by the village bamboo committee which "ensures that monitoring is done, ensures that rules and regulations are followed by villagers and meetings are held where the whole village participates" (Collective interview in B. L., 15 June 2023). Although villagers expressed their joy in collectively carrying out these critical activities for the sustainability of bamboo value chains, the villagers did not mention that these tasks were compensated as paid work. In the khoune value chain the company pays the village bamboo committee a percentage per the terms of the contract, which leaves open questions about whether they adequately reflect the labor contributions of village members for forest monitoring and regeneration techniques (i.e., selective cutting and cutting cycles). This illustrates that ecological care work is the foundation upon which commodity value chains depend but is often invisibilized and appropriated by investors and companies. Furthermore, price paid by the company is considered low for their work and their contracts are often breached, which suggests dissatisfaction with the lack of adequate income for their effort and a lack of power in negotiating contracts. In a collective interview (B. L., 15 June 2023), villagers mentioned that:

> For couples working one day, we can get 100–200 kilograms. And the price is only 300 lAK/1 kg. If the company does not build the access road to the forest it is 450 lAK/1 kg.[6] […] but the Vietnamese company does not followsw the contract and does not pick up the poles on time and they dry on the road, and they lose weight.

The companies engaged in the khouane slat and stick value chain were established by a Lao state-owned enterprise and Vietnamese investors. These companies, which have varying levels of maturity and operational stability, operate seven factories located in Houaphanh Province, producing primarily slats and sticks for export to Vietnam. During our 2023–2024 visits, we found that at least two of the factories were not operational and the other three were suspended. Near Viengxay, we visited the premises of a suspended factory, which had the splitting machine still in place. Both villagers and factory operator indicated that operations were hindered by delays in receiving quotas from the GoL and the economic crisis produced by the COVID-19 pandemic. District authorities mentioned that the factories were bankrupt and there was a need to attract other investors.

The quota system is a governance tool intended to protect NTFP from overexploitation by regulating the quantity or volume of bamboo for commercial uses. Under this system, each company interested in NTFP commercialization must obtain commercial and quota licenses annually through the PAFO and DOIC. The PAFO then seeks approval of the quotas from the Ministry of Agriculture and Forestry. Once the Ministry approves the annual quota at the provincial level, the PAFO allocates the quota to the DAFO (District Agriculture and Forestry Office) who assigns authorized traders to work exclusively in specific villages to purchase NTFP from villagers (Greijmans et al., 2007; Lee et al., 2021). Since the first program phase, the quota system has been identified as a key concern that requires attention to develop supportive policies for the bamboo sector, particularly for the trade of khouane slats and sticks and mai hok dry shoots (Desbleds, 2021). In this sense, based on interviews with various actors, the quota system seems to rely on indirect or distance monitoring. This leads to several challenges: 1) delays in quota approvals and the interruption of planning and trading; 2) short-term planning limits the agreements and collaboration between villagers, traders, and investors; 3) the limitation of villagers decision making and negotiating power; 4) decision-making at central level is not informed by data and monitoring of bamboo resources; and 5) a lack of ownership of the bamboo sector strategies at the district and provincial levels. Even when quotas are designed to prevent NTFP overexploitation, they restrict commercial activity and prevent peasants from obtaining fair economic benefits for their labor.

The khouane bamboo stick and slats commodity chain exemplify Laos dependence on foreign investors for capital and infrastructure, including roads and processing factories. While these investments provide some additional income for villagers, the reliance on short-term contracts under the current quota system prioritizes immediate profits over sustainable resource use and unfair remuneration for the villagers' efforts in maintaining and utilizing bamboo forests. The unresolved challenge lies in how set, enforce, and sustainably manage quotas for resource use over the long term.

This scenario reflects tensions between market-oriented approaches to capital generation and the command-and-control strategies that dominate the centralized and top-down environmental governance in Laos (Lu and Smith, 2023). Unlike other policy tools (i.e., bans), quota systems can support provincial and district ownership of the bamboo strategies and decision making premised on community-based monitoring of NTFP. Such quota systems could ensure fair compensation for the ecological care work of villagers and other local actors and create a policy tool responsive to the NTFP ecosystem conditions, and the socio-economic needs of those in the commodity chain, addressing as fundamental elements of EJ.

Gender and the affective dimension of bamboo ecological care work

A central focus of the Bamboo Programme is promoting bamboo handicrafts and strengthening the value chain. Unlike bamboo shoots and semi-processed slats and sticks, handicrafts require manual skills, creativity, and careful attention, which increases their monetary value and

enhances the aesthetic, symbolic, and cultural values. Beyond creating economic incentives for sustainable bamboo forest management, the programme devoted substantial time and resources to develop artisanal products through collective learning, training, workshops, village cross-visits, study tours, and other peer-to-peer methods. A BNDA staff member explained they "facilitate the communication and collaboration between different actors within the chain, like the producers, traders, the private sector, but also the government staff in the district and provincial levels" (Interview, 12 June 2023). They follow participatory forest governance frameworks to foster collaboration between multiple stakeholders, including rural communities, even if their influence over policies is limited.

Establishing village producer groups aimed at empowering villagers to secure income from bamboo handicrafts was central to the participatory and pro–poor economic development approach in the handicraft value chain (Voelksen and Phutphong, 2010). Activities focused on improving product quality, facilitating negotiations with traders, and collecting taxes to build the village development funds to cover administrative and salary costs related to the trade of bamboo products and forest management activities (Porbounmixaithor et al., 2017). Even after the program ended in 2020, producer groups continued to focus on maintaining handicraft quality, negotiation with the traders, and bamboo forest monitoring.

Although GRET and BNDA have used participatory forest governance approaches and worked together with the Lao Women's Union (LWO) to promote equality and inclusion of women, youth, and people with disabilities within the villages and producers' groups, everyday reality reveals persistent inequalities. Young and older women and men assume different roles in artisanal and ecological care work, but women retain limited influence over decision-making reflecting a core dimension of environmental injustice. During the artisans meeting with district authorities, male artisans were more present, and the female trainers' contributions were often dismissed through subtle actions such as silencing or overlooking their opinions (fieldwork notes, 2024). These dynamics show the gender-based hierarchical recognition of ecological care and artisanal work and reflect the limitations of participatory frameworks in forestry and rural development policies and programs.

The distribution of handicraft work varies across villages. In villages E and L, few villagers are actively involved in bamboo handicrafts as it is customarily an activity for older men. Younger villagers handle physically demanding agricultural tasks, while women wove silk textiles on bamboo looms for use and sale. Textile weaving is a famous and culturally significant craft in Houaphanh province. In villages P and X, proximity to the road facilitated handicraft commerce and it became a central part of their economies. Men and women make bamboo handicrafts, due to the project attempts to include more women and artisanal goods increasing economic value. The open and enclosed spaces of these villages' rural homes have become the hub of bamboo handicraft production and market processes. A female handicraft trainer in village X explained how her involvement in bamboo crafts has reshaped the division of labor in her household (Interview in B. X., 07 March 2024):

> In the past, I used to weave textiles for sale, but I had to buy yarn, so I had to go far away to get it. With bamboo, my husband helps me to cut and carry the canes, he doesn't know how to [weave] it, but everyone in the family can learn and do it.

This female artisan pointed out, bamboo harvesting and processing involve shared domestic labor negotiated at the family level. Men and women have complementary roles in production, and both have an affective engagement in taking pride in the precision, aesthetics, and durability of their products. The female trainer pointed out that quality "depends on skills, but to be good a crafter, you must love it and be able to generate income for the family" (Interview with female villager in B. X,

07 March 2024). Similarly, a male producer shared, "I enjoy making handicrafts. When they are produced and sold, they generate income for us and support our children's education" (Interview with male villager in B. E, 05 March 2024). The emotional connection to the craft processes reflects how affections, such as love or enjoyment, may motivate creativity and dedication to artisanal work. Trainers also described the joy of visiting bamboo forests together and teaching techniques for responsible bamboo use and treatment.

Bamboo handcrafts can be made from different bamboo species, but the producers' selection is based on the specific characteristics of each product. Village P focuses on producing small sticky rice containers, while producers in Village X create a wider range of products and sizes based on the demands of the customers and traders. Khouane (*Dendrocalamus longifimbriatus*) is preferred for the culms long internodes that can be used in weaving rice containers of different sizes. Artisans' tactile understanding of bamboo is evident in careful selection of the culms based on strength, length, and softness. To ensure the quality and durability of their products and prevent termite and beetle damage to the pieces, the artisans use two techniques: 1) submerging bamboo culms in water and salt for over 15 days; 2) smoking and heating the culms on an open fire fueled by unused bamboo strips. This fire exposure offers protection and adds dark natural coloring to the bamboo strips, which artisans use in their designs. Such practice also represents peasants' frugality, turning leftover strips into fuel. Traders remarked that some villages have significantly improved the quality of their products and their weaving skills, which enhances the resistance to insect damage and decay and the beauty of the product. These processes protect artisans' products, by improving durability and quality, while reflecting their tactile, ecological, and creative knowledge.

Artisanal work is closely related to seasonal rhythms and time management: during the rainy season, handicraft producers work in the evenings for approximately two to four hours, while during the dry season, producers work six to twelve hours on producing handicrafts. However, keeping the technical and ecological knowledge needed for bamboo's sustainable use largely depends on ensuring family financial stability. On average, trained artisans reported earning between 100,000 and 120,000 lAK (4.79–5.74 USD) per day while working on their craft for 5–7 h,[7] an income that sustains families but does not fully reflecting the value of the embedded care work.

The creation of value chains for bamboo crafts fosters a sense of pride, enjoyment, and dedication. In these peri-capitalist spaces, where global markets have an incomplete but growing presence, the affective dimensions of ecological care work, such as the enjoyment derived from craftsmanship, the careful selection of bamboo culms, their patient splitting and shaping, or the creativity of intricate basket weaving, represent an expression of villagers' agency in embodied, emotional, and material forms. These tasks require ecological and cultural knowledge of bamboo that until now has allowed villagers to control their time and work rhythms. Attention to these everyday acts of ecological care offers an alternative perspective to the homogenization generated by a green consumerist approach to what caring for nature means. Handcraft provides the necessary livelihood to keep the diverse uses of bamboo alive amidst the global mechanization of the bamboo industry (Binfield *et al*., 2024). Yet, fair compensation and recognition remain limited, and unequal access to decision-making constrains the work and income of women and youth, reinforcing environmental injustices (Gutiérrez-Zamora, 2021; Schenk-Sandbergen, 2024). Enjoyment and satisfaction among peasants/artisans emerge as an individual feeling and a sense that affirms the dignity of artisanal practice, which demonstrates how ecological care work contributes directly to economic value creation yet remains hierarchically unrecognized. Those who most embody this ecological work are not always those who benefit most economically or hold decision-making power. While ecological care work materially sustains livelihoods and bamboo value chains, affects constitute a political space where the conditions of EJ are felt and enacted: shaping who feels entitled to speak, who endures invisibility and how recognition is experienced.

Conclusions

This article contributes to bridging discussions on ecological care work within commodity and value chains and EJ debates. Our analysis of the Bamboo program and the development of bamboo value chains in Huoaphan, Laos reveal four interconnected findings: 1) ecological care work carried out by peasants and local civil society organizations is fundamental to sustaining bamboo forests and their value chains, yet remains largely unrecognized; 2) dominant narratives based on green consumerism obscure the relational, material, and affective dimensions of this ecological care work; 3) ecological care work is shaped by hierarchical power relations that influence who performs and benefits from ecological care work, with implications for EJ; 4) ecological care work takes place under state control and market pressures; yet, still allows space for peasants' agency.

By focusing on ecological care work, we challenged the idealization of the "care for nature" under the lens of green consumerism as it often ignores the socio-environmental, territorial, productive, and labor conditions behind "eco-friendly" products like those made from bamboo. We demonstrated that, in bamboo value chains, both productive and reproductive labor are intertwined. The ecological care work performed by peasants in Houaphanh, Laos, seeks to maintain their homes and livelihoods, and sustain and nurture their material, emotional, and cultural relationship with bamboo. When villagers selectively harvest bamboo shoots or culms, they are collecting a product for sale and actively managing the regeneration of bamboo. They draw on previous and co-produced ecological knowledge and when needed perform spiritual practices. Similarly, when they conduct forest monitoring or teach younger generations handicrafts or harvesting skills, they are ensuring future livelihoods and sustaining ecological relations.

These practices show how market-oriented production is embedded in broader reproductive and ecological relations, making visible how commodity value chains are materially dependent on ecological care work, which remain undervalued and often invisible in conventional economic or development analyses. Thus, there is an inevitable interrelationship between people's care for their lands, forests, and homes, even when these become nodes that form the network of production and global market processes (Dunaway, 2013).

Our analysis emphasized that the role of rural producers and their daily work goes beyond being "participants" in specific rural or sustainable forest management projects. Recognizing their participation as ecological care work is important for initiatives aimed at achieving a socially and ecologically just future. As Singh (2018) suggests, for EJ it is crucial to consider the nature of ecological care work and its distribution.

A focus on ecological care work helped us to conceptually bring together the material and the affective dimensions often analyzed separately. The analysis of ecological care work also sheds light on the ways subsistence economies encompass material and affective relationships between villagers, bamboo forests, bamboo handicrafts and the often-unnoticed multiple dimensions in daily life wherein care work is provided. In Houaphanh market-oriented interventions in rural development, agriculture, and forest conservation coexist and are regulated by command-and-control strategies for resource allocations (e.g., quota systems) which are part of the state policies of a one-party socialist government (Wilcox et al., 2021). These interventions have served to transform these areas into peri-capitalist spaces that are intertwined into the everyday life of the rural villages in a socialist regime (High, 2021). We acknowledge the possibilities that caring for nature and subsistence narratives can be used as state legitimation devices in rural areas (Nguyen and Chen, 2017; Ramcilovik-Suominen, 2019), for example, after the economic shock of the COVID-19 pandemic (Rehbein, 2022) and through the current crop booms rapidly transforming agricultural production and the rural landscape (Hua et al., 2022; Lu and Smith, 2023).

This case demonstrates how ecological care work remains central to sustaining peasants' subsistence economies and bamboo production in Houaphanh, even under increasing connection to global markets. Yet, the rhythms of artisanal and subsistence production, rooted in ecological knowledge and seasonal cycles, are in tension with the demands of regulated export value chains. This tension reveals the limits of market-oriented interventions in development programs and how commodity chains are materially dependent on ecological care work, which is undervalued in economic analyses. Through the narratives expressed by the different actors, we showed that in everyday forms of social and economic organization of subsistence such logics are neither completely dominant nor exclusive. Villagers subtly negotiate access to NTFP and at times diverge from the extractive logic of industrial bamboo processing by maintaining some control over harvesting, working times/rhythms, and artisanal expressions. These everyday care acts represent their agency and open small spaces of autonomy within the state regime and global bamboo industry. They also provide an opportunity to rethink ecological care work from a logic of possibility and vitality with a horizon for EJ. In the pursuit of more caring human relationships with the more-than-human world, it is fundamental to create collective strategies for support, compensation, and reparation for people and territories where ecological care work is carried out as a matter of EJ.

Highlights

- The ecological care work carried out by peasants and civil society organizations in bamboo value chains contributes to just rural development in Laos.
- Green consumption narratives about care for nature obscure peasants ecological care work.
- Rural development programs utilizing NTFP value chains require attention to the material and affective dimensions of ecological care work.
- Recognizing and valuing ecological care work is linked to environmental justice.

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Author contributions statement

V.G.Z contributed to the Conceptualization, Methodology, Data Collection and Analysis, Writing of the Original Draft, Review and Editing.

S.R.S contributed to the Review & Editing of the original draft, Supervision, and the Resources and Funding Acquisition.

Ethical considerations

Informed consent was obtained verbally before participation. The consent was audio-recorded in the presence of an independent witness. The first author informed every interviewee about the nature and purpose of the research and the interview, and ensured that they understood that they could withdraw from the interview, the recording, or refuse to answer a question at any time. The ethical committee of the Natural Resources Institute Finland (LUKE) has reviewed the project and advised that an ethical clearance is not needed if all informants are over 16 years old and the publication does not include their personal information.

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Notes

1. We use the term peasant to refer to the agricultural class who produce primarily for their own subsistence needs and who continue to rely on a subsistence ethic for decision-making (Scott, 1977). While peasants in northern Laos continue to be dependent on agriculture and possess limited capital assets, these subsistence socio-economic relations have been transformed by the advent of international development interventions and investments in market-directed commodities, e.g., maize, cassava, and rubber (Dwyer and Vongvisouk, 2019; Hua et al., 2022; Kallio et al., 2019; Lu and Smith, 2023).
2. Stands where deciduous tree species are more than 50%, the forest story is not as dense as evergreens, and most of the seedlings and saplings are deciduous trees.
3. Since the 1990s, China has strengthened political and economic relations with Laos through large-scale investments in mining, energy, agriculture, and infrastructure, creating a highly uneven dependency and environmental controversies (Laungaramsri 2019; Stuart-Fox 2009). Simultaneously, Western governments and international agencies re-established relations with Laos through development projects concerning poverty reduction, sustainability, rural development, health, education, and trade, where many CSOs appeared only as a technical requirement (Ramcilovic-Suominen et al., 2024).
4. The Bamboo Task Force (BBTF) was established to formulate strategies and advance favorable conditions for the bamboo sector in the province, acting under the direction of the provincial governor and including DPI, PAFO and DOIC (Porbounmixaithor et al., 2017).
5. Bamboo product exports reached $3.6 billion by 2022, with China representing 75.1% (INBAR 2024). In contrast, Laos exported $113,000 in bamboo products to China, Thailand, and Vietnam (WITS 2022).
6. In June 2023, the exchange rate of 1 USD = 18,300 LAK. This means that 100 kilograms were equivalent to about $1.64 (with road access) and $2.46 (without access).
7. As of March 2024, exchange rate was 1 USD = 20,875 LAK. The prices of sticky rice containers were as follow: lamp= 10,000 LAK ($0.48); Sticky rice containers: Small= 35,000- 40,000 LAK ($1.68–1.91); Medium =50,000–60,000 LAK ($2.39–2.87); Large= 70,000 LAK ($3.35).
8. Bamboo slats are flat, wider strips obtained by splitting, planning and drying the culms, often treated or laminated. They are used flooring, furniture, panels, blinds, and fencing. Bamboo sticks are thin pieces obtained by splitting the culms into strips, slicing, polishing, and air-drying. Sticks are graded by quality and used for products like incense sticks, grill skewers, chopsticks, and craft materials.
9. Bamboo shoots are the new, tender sprouts harvested from the plant's base.

References

Allison E (2023) Collective responsibility and environmental caretaking: toward an ecological care ethic with evidence from Bhutan. *Ecology and Society* 28(1): 10.

Álvarez L and Coolsaet B (2020) Decolonizing environmental justice studies: A Latin American perspective. *Capitalism Nature Socialism* 31(2): 50–69.

Arnold JEM and Pérez MR (2001) Can non-timber forest products match tropical forest conservation and development objectives? *Ecological Economics* 39(3): 437–447.

Barca S (2020) *Forces of Reproduction: Notes for a Counter-Hegemonic Anthropocene*. Cambridge: Cambridge University Press.

Barca S (2023) Dimensions of repair work. *Dialogues in Human Geography* 13(2): 255–258.

Barca S (2024) *Workers of the Earth: Labour, Ecology and Reproduction in the Age of Climate Change*. London: Pluto Press.

Barca S, Di Chiro G, Harcourt W, et al. (2023) Caring communities for radical change: What can feminist political ecology bring to degrowth? In: Harcourt W, Agostino A, Elmhirst R, Gómez M and Kotsila P (eds) *Contours of Feminist Political Ecology*. Cham: Springer International Publishing, 177–206.

Barendregt BA and Jaffe R (2014) *Green consumption: the global rise of eco-chic*. London: Bloomsbury Publishing.

Bauhardt C (2018) Nature, care and gender. Feminist dilemmas. In: Bauhardt C and Harcourt W (eds) *Feminist Political Ecology and the Economics of Care: In Search of Economic Alternatives*. London: Routledge, 16–35.

Berman-Arévalo E and Ojeda D (2020) Ordinary geographies: Care, violence, and agrarian extractivism in "post-conflict" Colombia. *Antipode* 52(6): 1583–1602.

Binfield L, Nasir V and Dai C (2024) Bamboo industrialization in the era of Industry 5.0: an exploration of key concepts, synergies and gaps. *Environment, Development and Sustainability*. doi: 10.1007/s10668-024-05584-4.

Boupha L and Phimmavong S (2006) *Laos Resource Mapping and Farmer Input Market Studies part of the Vietnam: Laos Bamboo Sector Feasibility Study*. Hong Kong: Oxfam.

Bourguignon N, Leonardelli I, Still E, et al. (2023) More-Than-Human co-becomings: The interdependencies of water, embodied subjectivities and ethics. In: Harcourt W, Agostino A, Elmhirst R, Gómez M and Kotsila P (eds) *Contours of Feminist Political Ecology*. Cham: Springer International Publishing, 129–153.

Castella J-C, Lestrelin G, Hett C, et al. (2013) Effects of landscape segregation on livelihood vulnerability: Moving from extensive shifting cultivation to rotational agriculture and natural forests in Northern Laos. *Human Ecology* 41(1): 63–76.

Corwin JE and Gidwani V (2021) Repair work as care: on maintaining the planet in the capitalocene. *Antipode*.

Creak S and Barney K (2018) Conceptualising party-state governance and rule in Laos. *Journal of Contemporary Asia* 48(5): 693–716.

Creak S and Barney K (2022) The role of "resources" in regime durability in Laos. *Communist and Post-Communist Studies* 55(4): 35–58.

Delgado TS, McCall MK and López-Binqüist C (2016) Recognized but not supported: Assessing the incorporation of non-timber forest products into Mexican forest policy. *Forest Policy and Economics* 71: 36–42.

de Mello NGR, Gulinck H, Van den Broeck P, et al. (2020) Social-ecological sustainability of non-timber forest products: A review and theoretical considerations for future research. *Forest Policy and Economics* 112: 102–109.

Desbleds L (2021) *From shared governance of bamboo forests to structuring of sustainable value chains* [Online]. GRET. [Accessed 3 April 2023]. Available from: https://gret.org/en/publication/from-shared-governance-of-bamboo-forests-to-structuring-of-sustainable-value-chains-2/.

DiNovelli-Lang D and Hébert K (2018) Ecological labor. *Society for Cultural Anthropology*.

Dombroski K, Healy S and McKinnon K (2018) Care-full community economies. In: Bauhardt C and Harcourt W (eds) *Feminist Political Ecology and the Economics of Care. In Search of Economic Alternatives*. London: Routledge, 99–115.

Dressler WH, Wilson D, Clendenning J, et al. (2017) The impact of swidden decline on livelihoods and ecosystem services in Southeast Asia: A review of the evidence from 1990 to 2015. *Ambio* 46(3): 291–310.

Dunaway WA (2013) *Gendered Commodity Chains: Seeing Women's Work and Households in Global Production*. Redwood City, USA: Stanford University Press.

Dwivedi AK, Kumar A, Baredar P, et al. (2019) Bamboo as a complementary crop to address climate change and livelihoods – insights from India. *Forest Policy and Economics* 102: 66–74.

Dwyer M and Vongvisouk T (2019) The long land grab: Market-assisted enclosure on the China-Lao rubber frontier. *Territory, Politics, Governance.* 7(1): 96–114.

Dwyer MB, Ingalls ML and Baird IG (2016) The security exception: Development and militarization in Laos's protected areas. *Geoforum* 69: 207–217.

Ehrnström-Fuentes M, Böhm S, Hagolani-Albov S, et al. (2025) Multispecies organizing in the web of life: Ethico-political dynamics of matters of care in ecologies-in-place. *Business Ethics Quarterly* 35: 525–554.

Estévez-Saá M and Lorenzo-Modia MJ (2018) The ethics and aesthetics of eco-caring: Contemporary debates on ecofeminism(s). *Women's Studies* 47(2): 123–146.

Evans G (2002) *A Short History of Laos: The Land in Between*. Crows Nest, NSW: Allen & Unwin.

Evans TD and Viengkham OV (2001) Inventory time-cost and statistical power: A case study of a Lao rattan. *Forest Ecology and Management* 150(3): 313–322.

FAO and INBAR (2018) *Bamboo for land restoration*. Beijing, China: International Bamboo and Rattan Organisation (INBAR). Available from: https://www.inbar.int/resources/inbar_publications/policy-synthesis-report-4-bamboo-for-land-restoration/.

Flynn A, Chan KW, Zhu ZH, et al. (2017) Sustainability, space and supply chains: The role of bamboo in Anji county, China. *Journal of Rural Studies* 49: 128–139.

Foppes J and Phommasane S (2006) Local initiatives to link farmers to markets in upland Laos. *Mountain Research and Development* 26(3): 200–204.

Foster JB (2000) The metabolism of nature and society. In: *Marx' Ecology: Materialism and Nature*. New York: Montly Review Press, 141–177.

Fox J, Fujita Y, Ngidang D, et al. (2009) Policies, political-economy, and swidden in Southeast Asia. *Human Ecology* 37(3): 305–322.

Gesing F (2021) Towards a more-than-human political ecology of coastal protection: Coast care practices in Aotearoa New Zealand. *Environment and Planning E: Nature and Space* 4(2): 208–229.

González-Hidalgo M (2020) The ambivalent political work of emotions in the defence of territory, life and the commons. *Environment and Planning E: Nature and Space* 4(4): 1291–1312.

Greijmans M and Hitzges C (2012) *SNV Bamboo Programme. Approaches, Lessons and Innovations in Lao PDR*. Vientiane Capital, Laos: SNV.

Greijmans M, Oudomvilay B and Banzon J (2007) *Houaphanh Bamboo Value Chain Analysis Identifying SNV's Potential Advisory Services for the Development of the Bamboo Value Chain*. The Hague: SNV Netherlands Development Organization.

GRET/SNV (2012) LUP Coordination Workshop in Huaphan Province (Report). Sam Neua, Laos.

Guibrunet L, Gerritsen PRW, Sierra-Huelsz JA, et al. (2021) Beyond participation: How to achieve the recognition of local communities' value-systems in conservation? Some insights from Mexico. *People and Nature* 3(3): 528–541.

Gutiérrez-Zamora V (2021) The coloniality of neoliberal biopolitics: Mainstreaming gender in community forestry in Oaxaca, Mexico. *Geoforum; Journal of Physical, Human, and Regional Geosciences* 126: 139–149.

Gutiérrez-Zamora V, Mustalahti I and García-Osorio D (2023) Plural values of forests and the formation of collective capabilities: Learnings from Mexico's community forestry. *Environmental Sociology* 9(2): 117–135.

Hackfort S and Saave A (2024) Toward a caring and (re)productive bioeconomy? A feminist analysis of sociotechnical innovations and sustainability shortcomings. *Sustainability: Science, Practice and Policy.* 20(1): 2375808.

High H (2021) *Projectland: Life in a Lao Socialist Model Village*. University of Hawaii Press.

Hogarth NJ and Belcher B (2013) The contribution of bamboo to household income and rural livelihoods in a poor and mountainous county in Guangxi, China. *International Forestry Review* 15(1): 71–81.

Houaphanh Provincial Government (n.d.) <*The First 5 Years Bamboo Development Strategy (2011–2015), Houaphanh Province*. Huoaphanh, Lao PDR: Department of Planning and Investment (DPI), the Department of Agriculture and Forestry (PAFO), the Department of Industry and Commerce (DOIC).

Hua X, Zhang L and Kono Y (2022) Fruit booms and investor mobility along the China-Myanmar and China-Laos borders. *Ecology and Society* 27(3): 35.

INBAR (2022) *Trade Overview 2020: Bamboo and Rattan Commodities in the International Market*. Beijing, China: INBAR.

INBAR (2024) *Trade Overview 2022: Bamboo and Rattan Commodities in the International Market*. Beijing, China: INBAR.

Jauhola M, Oguz A, Sundström S, Steiler I and Gutiérrez-Zamora V (2025) Centering feminist ethic of care in socio-ecological transformative movements. In: Ramcilovic-Suominen S (ed) *Just Socioecological Transformations*. London: Routledge, 89–106.

Jax K, Calestani M, Chan KM, et al. (2018) Caring for nature matters: A relational approach for understanding nature's contributions to human well-being. *Current Opinion in Environmental Sustainability* 35: 22–29.

Jensen A (2009) Valuation of non-timber forest products value chains. *Forest Policy and Economics* 11(1): 34–41.

Kallio MH, Hogarth NJ, Moeliono M, et al. (2019) The colour of maize: Visions of green growth and farmers perceptions in northern laos. *Land Use Policy* 80: 185–194.

Kenney-Lazar M (2019) Neoliberalizing authoritarian environmental governance in (post)Socialist Laos. *Annals of the American Association of Geographers* 109(2): 338–348.

Kibler J-F (2023) *Village forests and bamboo value chains in the mountains of Northern Laos: including the commons in public policies?* Nogent-sur-Marne: GRET.

Kirksey E and Chao S (2022) Introduction. Who benefits from multispecies justice? In: Chao S, Bolender K and Kirksey E (eds) *The promise of multispecies justice*. Durham: Duke University Press, 1–22.

Kusters K, Achdiawan R, Belcher B, et al. (2006) Balancing development and conservation? An assessment of livelihood and environmental outcomes of nontimber forest product trade in Asia, Africa, and Latin America. *Ecology and Society* 11(2): 20.

Laslett B and Brenner J (1989) Gender and social reproduction: Historical perspectives. *Annual Review of Sociology* 15: 381–404.

Laungaramsri P (2019) China In laos: Enclave spaces and the transformation of borders in the Mekong region. *The Australian Journal of Anthropology* 30: 195–211.

Lee B, Rhee H, Kim S, et al. (2021) Assessing sustainable bamboo-based income generation using a value chain approach: Case study of nongboua village in Lao PDR. *Forests* 12(2): 153.

Leff E (2021) Racionalidad y Justicia Ambiental: La Elusiva Injusticia de la Vida. *Historia Ambiental Latinoamericana y Caribeña (HALAC) revista de la Solcha* 11(3): 19–38.

Lestrelin G, Castella J-C and Bourgoin J (2012) Territorialising sustainable development: The politics of land-use planning in Laos. *Journal of Contemporary Asia* 42(4): 581–602.

Lobovikov M, Schoene D and Yping L (2012) Bamboo in climate change and rural livelihoods. *Mitigation and Adaptation Strategies for Global Change* 17(3): 261–276.

Lobovikov M, Yiping L, Schoene D, et al. (2009) *The poor man's carbon sink: bamboo in climate change and poverty alleviation*. Rome: Food and Agriculture Organization of the United Nations (FAO).

Lu J and Smith H (2023) From booms to BansGoverning land and forests in Laos. *Sociology of Development* 9(2): 131–150.

Malanski PD, Schiavi SMdA, Dedieu B, et al. (2022) International research on labor in agri-food value chains: A bibliometric review from web of science. *Frontiers in Sustainable Food Systems* 6: 852178.

Marsden T, Yu L and Flynn A (2011) Exploring ecological modernisation and urban–rural eco-developments in China: The case of Anji county. *Town Planning Review* 82(2): 195–224.

Martin A, Myers R and Dawson N M (2018) The park is ruining our livelihoods. We support the park! unravelling the paradox of attitudes to protected areas. *Human Ecology: An Interdisciplinary Journal* 46(1): 93–105.

Merchant C (1987) The theoretical structure of ecological revolutions. *Environmental History Review* 11: 265–274.

Mies M and Bennholdt-Thomsen V (1999) *The Subsistence Perspective: Beyond the Globalised Economy*. London: Zed Books.

Mies M and Bennholdt-Thomsen V (2001) Defending, reclaiming and reinventing the commons. *Canadian Journal of Development Studies / Revue Canadienne D'études du Développement* 22(4): 997–1023.

Mies M and Shiva V (1993) *Ecofeminism*. Halifax, NS: Fernwood Publications.

Moriggi A, Soini K, Bock BB, et al. (2020) Caring in, for, and with Nature: An Integrative Framework to Understand Green Care Practices.

Neimark B, Mahanty S and Dressler W (2016) Mapping value in a 'green' commodity frontier: Revisiting commodity chain analysis. *Development and Change* 47(2): 240–265.

Neimark B, Mahanty S, Dressler W, et al. (2020) Not just participation: The rise of the eco-precariat in the green economy. *Antipode* 52(2): 496–521.

Nguyen MTN and Chen M (2017) The caring state? On rural welfare governance in post-reform Vietnam and China. . *Ethics and Social Welfare* 11(3): 230–247.

Papadopoulos D, Puig de la Bellacasa M and Tacchetti M (2023) Introduction: No justice, No ecological peace: The groundings of ecological reparation. In: Papadopoulos D, Puig de la Bellacasa M and Tacchetti M (eds) *Ecological Reparation: Repair, Remediation and Resurgence in Social and Environmental Conflict*. UK: Bristol University Press, 1–16.

Peters CM, Thammavong B, Mekaloun B, et al. (2013) Growth of wild rattans in Cambodia and Laos: Implications for management. *Forest Ecology and Management* 306: 23–30.

Porbounmixaithor H, Huynh P, Herchuechang A, et al. (2017) *Community-based management of natural bamboo forests*. GRET.

Puig de la Bellacasa M (2012) 'Nothing Comes without its world': Thinking with care. *The Sociological Review* 60(2): 197–216.

Puig de la Bellacasa M (2017) *Matters of Care: Speculative Ethics in More than Human Worlds*. University of Minnesota Press.

Raghuram P (2016) Locating care ethics beyond the global north. *ACME: An International Journal for Critical Geographies* 15(3): 511–533.

Ramcilovic-Suominen S, Chomba S, Larson AM, et al. (2024) Decolonial environmental justice in landscape restoration. In: Katila P, Pierce Colfer CJ, de Jong W, et al (eds) *Restoring Forests and Trees for Sustainable Development: Policies, Practices, Impacts, and Ways Forward*. New York, NY : Oxford University Press.

Ramcilovic-Suominen S and Mustalahti I (2022) Village forestry under donor-driven forestry interventions in Laos. In: *Routledge Handbook of Community Forestry*. London: Routledge, 434–448.

Ramcilovik-Suominen S (2019) REDD+ as a tool for state territorialization: Managing forests and people in Laos. *Journal of Political Ecology* 26(1): 263–281.

Rehbein B (2022) Laos in 2021: One more return to the subsistence ethic? *Asian Survey* 62(1): 145–152.

Ressiore A, Lima CLS and Turnhout E (2024) Care narratives: Babassu breakers and mother palm trees. *Geoforum; Journal of Physical, Human, and Regional Geosciences* 156: 104109.

Rosenfeld T, Pokorny B, Marcovitch J, et al. (2024) BIOECONOMY Based on non-timber forest products for development and forest conservation - untapped potential or false hope? A systematic review for the BRAZILIAN Amazon. *Forest Policy and Economics* 163: 103228.

Ruben R (2024) From market-based development to value chain transformation: What markets can (not) do for rural poverty alleviation? *Journal of Rural Studies* 109: 103328.

Sachdeva S, Jordan J and Mazar N (2015) Green consumerism: Moral motivations to a sustainable future. *Current Opinion in Psychology* 6: 60–65.

Salleh A (2003) Ecofeminism as Sociology. Capitalism Nature Socialism.

Salleh A (2010) From metabolic rift to "metabolic value": Reflections on environmental sociology and the alternative globalization movement. *Organization & Environment* 23(2): 205–219.

Salleh A (2017) *Ecofeminism as Politics: Nature, Marx and the Postmodern*. London: Zed Books.

Schenk-Sandbergen L (2024) Women and land rights in Lao PDR. Treasure your matri heritage before it is too late! where do we land up on gender equality? *Gender, Technology and Development* 28(1): 123–152.

Schimetka LR and Ingram VJ (2024) Leveraging the value chain-landscape governance nexus for non-wood forest products and tropical forest restoration. *Forest Policy and Economics* 169: 103340.

Scott JC (1977) *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. New Haven, USA: Yale University Press.

Shackleton CM and Pandey AK (2014) Positioning non-timber forest products on the development agenda. *Forest Policy and Economics* 38: 1–7.

Singh NM (2013) The affective labor of growing forests and the becoming of environmental subjects: Rethinking environmentality in Odisha, India. *Geoforum* 47: 189–198.

Singh NM (2015) Payments for ecosystem services and the gift paradigm: Sharing the burden and joy of environmental care. *Ecological Economics* 117: 53–61.

Singh NM (2017) Becoming a commoner: The commons as sites for affective socio-nature encounters and co-becomings. *ephemera. Theory & Politics in Organization* 17(4): 751–776.

Singh NM (2018) Introduction: Affective ecologies and conservation. *Conservation and Society* 16(1): 1.

Singh S (2012) *Natural Potency and Political Power: Forests and State Authority in Contemporary Laos. Southeast Asia - Politics, Meaning, Memory*. Honolulu: University of Hawaii Press.

Singh S (2020) Understanding changes for forest-dependent communities in upland Laos. *Human Ecology* 48(2): 199–209.

Smith-Hall C and Chamberlain JL (2023). Why focus on non-timber forest products in the bioeconomy? In: *The Bioeconomy and non-Timber Forest Products*. Earthscan studies in natural resource management. London: Routledge, pp. 4–14.

Stuart-Fox M (1997) *A history of Laos*. New York: Cambridge University Press.

Stuart-Fox M (2009) LAOS: The Chinese connection. *Southeast Asian Affairs* 2009: 141–169.

Suchet-Pearson S, Wright S, Lloyd K, et al. (2013) Caring as country: Towards an ontology of co-becoming in natural resource management. *Asia Pacific Viewpoint* 54(2): 185–197.

Suhardiman D, Keovilignavong O and Kenney-Lazar M (2019) The territorial politics of land use planning in Laos. *Land Use Policy* 83: 346–356.

Sullivan S (2019) Towards a metaphysics of the soul and a participatory aesthetics of life: Mobilising Foucault, affect and animism for caring practices of existence. . *new Formations: A Journal of Culture/Theory/Politics* 95: 5–21.

Tappe O (2011) Memory, tourism, and development: Changing sociocultural configurations and upland-lowland relations in Houaphan province, Lao PDR. *Sojourn: Journal of Social Issues in Southeast Asia* 26(2): 174–195.

Thorpe J, Mathie A and Ghore Y (2017) *A typology of market-based approaches to include the most marginalised*. Brighton: The Institute of Development Studies.

Trọng Hiêú D. and Poisson E. 2024. *Bamboo in Vietnam: an anthropological and historical approach / Đinh Trọng Hié^u and Emmanuel Poisson. 1st ed.* Abingdon, England: Routledge.

Tronto JC (1993) *Moral Boundaries: A Political Argument for an Ethic of Care*. New York: Psychology Press.

Tsing AL (2015) *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. UK: Princeton University Press.

van der Lugt P and King C (2019) *Bamboo in the Circular Economy The potential of bamboo in a zero-waste, low-carbon future* [Online]. International Bamboo and Rattan Organisation (INBAR). Available from: https://www.inbar.int/resources/inbar_publications/policy-synthesis-report-6-bamboo-in-the-circular-economy/.

Van Hiep T, Tham LT and Thong LM (2024) Analyzing economic performance and value added distribution in the Luong bamboo value chain: A case study of Thanh Hoa province, Vietnam. *Trees, Forests and People.* 16: 100563.

Velicu I and Kaika M (2017) Undoing environmental justice: Re-imagining equality in the Rosia Montana anti-mining movement. *Geoforum; Journal of Physical, Human, and Regional Geosciences* 84: 305–315.

Voelksen S and Phutphong TD (2010) *Bamboo Producer Group Assessment*. Houaphan Province, Lao PDR: SNV.

West S, Haider LJ, Masterson V, et al. (2018) Stewardship, care and relational values. *Current Opinion in Environmental Sustainability* 35: 30–38.

Wilcox P, Rigg J and Nguyen MTN (2021) Rural life in late socialism: Politics of development and imaginaries of the future. *European Journal of East Asian Studies* 20(1): 7–25.

WITS, (2022) Trade statistics for Laos: Bamboo exports (HS code 140110).

Wong KM (2004) *Bamboo the amazing grass: a guide to the diversity and study of bamboos in Southeast Asias*. Serdang, Selangor, Malaysia: International Plant Gentic Resources Institute (IPGRI)/ University of Malaya.

Ying H, Smith A and Robles L (2024) Ending poverty with bamboo and rattan. *Bamboo and Rattan Update (BRU): INBAR* 5(1): 2–3.