World Development 155 (2022) 105885

Contents lists available at ScienceDirect

World Development

journal homepage: www.elsevier.com/locate/worlddev

Proletarianization and gateways to precarization in the context of land-based investments for agricultural commercialization in Lao PDR

Vong Nanhthavong [a,b,*], Sabin Bieri [a], Anh-Thu Nguyen [a], Cornelia Hett [a], Michael Epprecht [a]

[a] Centre for Development and Environment (CDE), University of Bern, Switzerland
[b] Institute of Geography, University of Bern, Mittelstrasse 43, CH-3012 Bern, Switzerland

ARTICLE INFO

Article history:
Accepted 6 March 2022

Keywords:
Land-based investments
Dispossession
Employment
Precarity
Gender
Lao PDR

ABSTRACT

Labor is central to the debates on global land-based investment. Proponents purport that these investments are an avenue for rural transformation from resource- to wage-based livelihoods through the generation of employment and contribution to poverty reduction. Drawing on a recent, unique national dataset on land concessions in Lao PDR, this paper uses an agrarian political economy lens to investigate how land-based investments live up to this expectation. The paper analyzes potential determinants of the degree to which different social groups engage in wage-labor within land-based investments. Results show that while land-based investments create a significant absolute number of jobs, former land users were offered predominantly low-skilled and seasonal jobs. The effects of these investments on rural employment are uneven depending on degrees of land and resource dispossession, the extent of job creation, and the availability of alternative opportunities in the region. In the majority of cases, former land users, especially women were pushed into precarious conditions through three processes: dispossession without proletarianization; limited proletarianization; and adverse proletarianization. We argue that the promotion of land-based investments as an approach for rural development, particularly along the gradient of transforming resource- to wage-labor based livelihoods, is ineffective without concurrent opportunities within and beyond the agricultural sector to absorb the labor reallocated from traditional livelihoods. Enforcing labor regulations, including restrictions on hiring of foreign labor, compliance with minimum wages, and relevant skills transfer are essential to minimize precarization and increase benefits for local people. Further, protecting peasants' individual and common land-use rights is imperative to minimize the concurrence of precarization and increasing traditional vulnerability.

1. Introduction

The burgeoning expansion of global land-based investments since the 2007–08 food, energy, and financial crises has posed a substantial challenge for sustainable development (Smith, 2018). These investments directly threaten rural livelihoods through competition for access to land and resources. The transformation of land and labor relations along with environmental degradation, has the potential to push peasants[1] into precarious living conditions (Cotula, 2012; Hall et al., 2015; Roudart & Mazoyer, 2016; White et al., 2012), as access to land remains a primary means of organizing intra-household relations and an important component of rural livelihood resilience (Joshi, 2018; Zhan, Mirza, & Speller, 2015). Global growth of land-based investments has slowed since 2012 (Nolte, Chamberlain, & Giger, 2016), with new investments temporarily being suspended in countries including Cambodia and Lao PDR (Hett et al., 2020; Neef, Touch, & Chiengthong, 2013). Nonetheless, systematic assessments of land-based investments' impacts on rural livelihoods remain critical for managing existing investments and corresponding government strategies (Borras & Franco, 2012; Cotula et al., 2014; Cotula, 2014; Margulis, McKeon, & Borras, 2013). Evidence-informed decision-making on such complex issue requires both quantitative livelihood data with qualitative information on the implementation processes of land-based investments

* Corresponding author at: Centre for Development and Environment (CDE), Country Office in Lao PDR, University of Bern, Unit 11, House Number 136, Simuang Road, Hom 1, Ban Phapho, Vientiane, Lao People's Democratic Republic.
E-mail addresses: nanhthavong.vong@gmail.com (V. Nanhthavong), sabin.bieri@cde.unibe.ch (S. Bieri), anh-thu.nguyen@cde-regions.net (A.-T. Nguyen), cornelia.hett@cde.unibe.ch (C. Hett), michael.epprecht@cde.unibe.ch (M. Epprecht).

[1] In this paper, we subscribe to Bernstein's definition of "peasants," referring to agricultural petty commodity producers who mainly rely on internal resources including land, natural resources, animals, crops, seeds, water, skilled labor, knowledge, saving, networks, etc., together with other economic activities to produce for subsistence and/or reproduction through a certain degree of labor and market relations in the capitalist development (Bernstein, 2010; Bernstein, Friedmann, van der Ploeg, Shanin, & White, 2018).

https://doi.org/10.1016/j.worlddev.2022.105885
0305-750X/

across socio-ecological contexts, particularly regarding the prominent claims of employment creation (see Messerli, Peeters, Schoenweger, Nanhthavong, & Heinimann, 2015; Oya, 2013a; Schneider et al., 2020).

Here, we refer to land-based investments or land deals, as land acquisitions that entail transfer of land-use rights to domestic or foreign actors through sale, lease, or concession by the state, often of low-income host countries (Anseeuw et al., 2012). These investments involve a range of sectors including but not limited to agriculture, mining, infrastructure development, energy, and conservation (Borras and Franco, 2012; Levien, 2011; Mishra & Mishra, 2017; Narain, 2009). In the literature, land investments have often been termed "large-scale land acquisitions" (LSLAs) with the size of greater than 200ha (Debonne, van Vliet, Heinimann, & Verburg, 2018; Messerli, Giger, Dwyer, Breu, & Eckert, 2014; Nolte et al., 2016). Globally, approximately 68 million hectares are part of such LSLAs (Matrix, 2021). However, land use change also occurs at smaller, more incremental scales (Cotula, Vermeulen, Leonard, & Keeley, 2009; Friis & Nielsen, 2016). Lao PDR has been heavily targeted for land acquisitions, and more than 70% of its 1,181 total investments are smaller than 200 ha (Hett et al., 2020). In this paper, we examine agricultural investments in Lao PDR of all sizes, ranging from three to 30,000 ha.

Land-based investments can be interpreted as a driver as well as the result of agrarian transition, that is shifting from primarily land-based, subsistence-oriented livelihoods to predominantly wage-based livelihoods. These changes are concomitant to broader societal transformations resulting from globalization and, idiotypically, the structural shift from predominantly agricultural to industrial and services-oriented economies (Bernstein & Byres, 2001; Rigg, 2001, 2020). Advocates of a "trickle-down" logic (Peet & Hartwick, 2015; Potter, 2014) such as the World Bank, claim that land-based investments contribute to economic growth and poverty reduction by mobilizing "idle" towards more efficient land uses (Cotula et al., 2009, p. 62; Messerli et al., 2014), facilitating technology and skills transfer, generating employment, and raising rural wages (World Bank, 2008, 2009, Deininger & Byerlee, 2011). This position coincides with earlier focuses in the development sector on increasing the efficiency of agricultural systems (Holt-Giménez, 2008). Critical scholars, on the other hand, have argued that land-based investments are a process for local elites and (trans)national actors to gain control of the means of production in the Global South, referred to as "global land grabbing" (Borras & Franco, 2012; Hall, 2013). Thus far, job creation by land investments has been less than expected (Hallam, 2009), while adverse impacts, including dispossession of land and associated resources, often outweigh the benefits of employment (Baumgartner, von Braun, Abebaw, & Muller, 2015; Dell'Angelo, D'Odorico, & Rulli, 2017; Hett et al., 2020; Wegerif & Guereña, 2020).

Outcomes of land-based investments vary for different social groups, particularly between men and women. Women are more likely to suffer from the decrease of food security and income due to dispossession of land and forest resources (Ndi, 2019; Park & Daley, 2015). Limitations in access to farmland for subsistence production tend to increase women's burden to maintain household food security and thus contribute to what has been termed the "feminization of responsibility" (Chant, 2014; Yengoh et al., 2015). Moreover, women are often excluded from employment opportunities that are physically-demanding within land-based investments (Ndi, 2019) or paid lower wages (Mercandalli et al., 2021).

Further, empirical studies across countries reveal a wide range of impacts of land-based investments on rural employment. In some contexts, former land users are rarely employed (Levien, 2013; Li, 2011), with migrants filling jobs created by land deals instead (Baird, Noseworthy, Nghiem, Le, & Fox, 2018; Porsani, Börjeson, & Lehtilä, 2017). In other contexts, significant employment opportunities are created by land deals, but are considered unattractive by peasants due to their casual nature, low wages, or other types of poor conditions, compared to available alternatives (Friis, 2013; Gyapong, 2019; Portilla, 2017). In cases where land and resource displacement did not occur, employment together with other spillovers from the investment have contributed to improving local livelihoods (Thondhlana, 2015). However, this debate suffers from an absence of systematic analysis on labor and employment, particularly considering the heterogeneity of investments across geographical conditions, land use types, and socio-ecological contexts (D. Hall, 2013; Oya, 2013a; Wegerif & Guereña, 2020). Previous analyses have primarily drawn from single case studies that provide a depth of understanding in specific contexts (e.g. Baird et al., 2018; Gyapong, 2019; Kenney-Lazar, 2012; Li, 2011), but are often problem-driven and highlight cases with reported negative impacts, resistance, and large-scales (i.e. >200 ha) (see Cipollina, Cuffaro, & D'Agostino, 2018; De Schutter, 2011; Messerli, Heinimann, Giger, Breu, & Schönweger, 2013; Oya, 2013a). In reality, global land-based investments vary greatly in size and scope (Cotula et al., 2009; Friis & Nielsen, 2016; Hett et al., 2020; Xu, 2018), implementation (Oya, 2013a), and impacts, especially on the most vulnerable groups with consideration of ethnic and gender differences (D. Hall, 2013; Hall et al., 2015; Wegerif & Guereña, 2020; Zhan et al., 2015). The effect on rural livelihoods and employment is likely to vary accordingly (Deininger & Byerlee, 2011; Nolte & Ostermeier, 2017), yet understanding of this heterogeneity and the role of employment in rural transformation from resource- to wage-based livelihoods remains limited.

By combining original inventory and qualitative survey data, our article offers a systematic analysis of land-based investment implementation processes across socio-ecological contexts, providing nuanced evidence for informed decision-making on a complex issue. Further, by employing an agrarian political economy approach to address the thus far neglected dimension of labor relations and employment with a focus on gender disparities (Edelman, 2013), we contribute to a constructive debate beyond entrenched positions on land-based investments (Messerli et al., 2015; Oya, 2013a; Schneider et al., 2020). We characterize and contextualize processes under which peasants are excluded from and included in proletarianization within land-based investments. Specifically, we hypothesize that the number and quality of jobs created by land-based investments for agricultural purposes vary across types of investments, implementation processes, and socio-ecological contexts. The degree to which peasants engage in wage-labor in the context of land-based investments is also, therefore, determined by these factors.

The remainder of this paper is organized as follows. The second section describes key concepts and our analytical framework. Sections three and four provide a brief overview of policies promoting land-based investments for rural development and policies surrounding rural livelihoods, land tenure, and labor in Lao PDR. Section five describes materials, data, and methods used for the analysis. The main findings, discussion, and policy recommendations are presented in the sixth and seventh sections respectively. Conclusions and suggestions for future research are drawn in the final section.

2. Key concepts and analytical framework

2.1. Labor relations in the context of land-based investments in low-income countries

We use an agrarian political economy perspective to investigate the relationship between land-based investments and

employment (D. Hall, 2013; Marx, 1976). The explanatory power of this framing allows the interpretation of village-based data and qualitative findings at the micro-level in light of macro-level development. Through this lens, land-based investments are framed as the primitive accumulation of early capitalism in its dispossession of peasant land and introduction of proletarianization (Bernstein, 1977; Marx, 1976). We argue in line with Cruz-Del Rosario and Rigg (2019) that rural precarity and devaluation of rural livelihoods is emerging through the establishment of capitalist relations of production.

Under "narratives of scarcity" (Borras, Kay, Gómez, & Wilkinson, 2012; Scoones, Smalley, Hall, & Tsikata, 2019), the surge of land-based investments in the Global South since the mid-2000s can be explained as a process of global capitalist accumulation by agribusinesses from advanced economies that heavily rely on the import of food and raw materials. Scarcity of land resources and increasing costs of labor have spurred the shift or expansion of production into regions with abundant land and lower labor costs (Anseeuw et al., 2012; Grain, 2008; Zoomers, 2010). This process is often facilitated by the states of low-income countries, who, in seeking to attract investment, adopt narratives of land abundance and surplus labor (Arnold & Pickles, 2011; Carroll, 2020; Deininger & Byerlee, 2012; Li, Li, Wu, & Xiong, 2012). The prominent role of the state of host countries has been described as "state landlordism" (Cipollina et al., 2018, p. 14), and is particularly evident in contexts of insecure land tenure and close relations between investors and states (Byerlee, 2014).

Capitalist accumulation by dispossession (Hall, 2013; Harvey, 2003) describes a process by which peasants are expropriated from land and related resources that they rely on for food and income generation, separating them from the means of production and creating conditions for reliance on wage-based incomes (Bernstein, 1977; Levien, 2011; Marx, 1976). These changes of property relations, along with the transformation of the social relations of production and labor have the potential to push peasants into precarious conditions, notably affecting men and women in different ways (Cruz-Del Rosario & Rigg, 2019; Kusakabe & Myae, 2018; Li, 2009; Tappe & Nguyen, 2019).

Precarity was initially introduced in the study of wage-labor conditions of late capitalism to contrast between precarious and standard employment (Cruz-Del Rosario & Rigg, 2019; Ettlinger, 2007; Standing, 2011). Standing defines a "precariat" as a person engaged in wage or casual labor who is subject to poor labor conditions and low wages, or the jobless who have been excluded from proletarianization (2011). To adapt precarity to contexts in the Global South, Rigg, Oven, Basyal, and Lamichhane (2016) distinguish between vulnerability as the traditional form of livelihood exposure, in contrast to the produced, modern exposure associated with precarity, noting a triangular relationship where development and economic growth can create, "(possibly) declining vulnerability on the one hand and (possibly) growing precarity on the other," (Rigg et al., 2016, p. 66).

In the context of land-based investments, we define precarious labor as the exclusion of dispossessed peasants from employment or inclusion of displaced peasants under unfavorable terms. These unfavorable conditions may include low wages, lack of job security, lack of opportunities to attain skills, or vulnerability due to exclusive dependence on unreliable and low-quality wage labor (see also Cruz-Del Rosario & Rigg, 2019; Rigg et al., 2016). For the purpose of this study, it is important to note, that the above listed employment conditions have been associated with feminization processes. In other words, feminization does not only describe an increasing share of women in a certain sector, but also the downgrading of previously standardized labor regimes such as typical for an industrial, unionized context (Bieri, 2014; Chant, 2014). Conceptually, this framing has also been applied in developing countries, although levels of standard employment are generally lower than in high-income countries. Regardless, the question emerges as to whether the substantial influx of women into wage labor is associated with deregulation, flexibilization, and a general downgrading of working conditions. In this paper, we assess two aspects of precarity. First, we examine the exclusion of displaced peasants from employment opportunities, and second, the quality of employment offered to displaced peasants. Assessment of quality encompasses types of jobs, job security including consideration of seasonality and development cycle, and wages compared to the national, official minimum wage.

Precarization frames how labor relations are shaped through the transformation of peasants' access to land and resources as well as social capital and other community-based resilience structures throughout the transformation from resource- to wage-based livelihoods. Precarity thereby describes an unsettled state of fluctuation barely above or below the poverty threshold, with no buffer or prospect of building one, and always at risk of nosediving. With their gender-specific responsibility to maintain household food security, women are particularly under pressure, once their access to land and forests has been complicated.

In this respect, proletarianization of rural populations through land-based investment activities disrupts the risk-distribution logic of land-based livelihoods (see Li, 2015). Traditionally, land-based livelihoods focus on risk-minimization, which entails diversifying income sources to reduce vulnerability, often with gender-specific functions within the overall risk-minimization strategy. Reduction of diversification options, such as deprivation of access to communal resources, can therefore undermine livelihoods, increase vulnerability and significantly reduce resilience to shocks (Bouahom, Douangsavanh, & Rigg, 2004; Martin & Lorenzen, 2016). Through increased dependency on unstable wage income, peasants are potentially pushed into precarious conditions, resulting in a process described by Rigg and colleagues as "truncated" agricultural transition (2018). Throughout the analyses, we adopt a gender lens to interpret our data in view of gendered differences of the effects of land-based investments and thus addressing what has been identified as a major gap in the land-investment debate (Doss, Summerfield, & Tsikata, 2014).

While land-based investments may increase income and widen livelihood options in some cases, risks associated with land dispossession are unilaterally shifted onto peasants particularly women. The fact that women tend to bear the brunt of some of these effects is not only due to differences in social roles, rights, opportunities, as well as their specific bargaining position within households, but also because of their prime responsibility in providing food security – a fact that is increasingly highlighted by initiatives, such as the World Food Programme (WFP, 2020), aiming to increase women's empowerment in view of making households more food secure (Behrman, Meinzen-Dick, & Quisumbing, 2012; Carli, 2001; Clement et al., 2019). Women in developing countries are heavily dependent on natural resources for a living, yet their tenure rights are often not officially recognized (Doss, Meinzen-dick, & Bomuhangi, 2014). Thus, their vulnerability to land and resource dispossession is exacerbated in that it directly affects their household function and their economic status: they shift from being a provider of household food security to an additional mouth to feed (Archambault & Zoomers, 2015; Namubiru-Mwaura, 2014). Moreover, women's inclusion in the decision-making processes is often limited (de Vos & Delabre, 2018), as is their ability to engage in development opportunities. Regarding employment, women's prospects can potentially go both ways. Variations in skill level, women's role in care and household reproductive work, and gender-specific limitations on mobility may make women less

competitive than men. However, on the contrary, women may be more attractive to employers seeking non-unioned workers or to pay very low wages (Carr & Chen, 2004; Elias, 2020; Joshi, 2018).

2.2. Analytical framework: Rural employment effects and livelihood transformation

2.2.1. Determinants for job creation and peasant engagement in employment

Our analysis considers various determinants of job creation and peasant engagement in employment across investment characteristics, implementation processes, and socio-ecological contexts. Job creation may vary with the size of the land deal, as larger deals may require more labor than smaller-scale ones (Andersson, Lawrence, Zavaleta, & Guariguata, 2016; Davis, D'Odorico, & Rulli, 2014). Commodity type may also be a factor, as certain commodities can be produced with capital substitution of labor, while others are more labor-intensive (Deininger & Byerlee, 2011). Annual crops are more likely to be cultivated through capital-intense methods compared to perennial crops, which are considered to be more labor-intensive (Deininger & Byerlee, 2011; Nolte & Ostermeier, 2017). Further, the terrain could influence the mode of production of the investment (Messerli et al., 2015). Flatland, such as in southern Lao PDR, is more conducive to mechanization, especially in large-scale deals, requiring less labor (Hett et al., 2020; Nolte & Ostermeier, 2017). In contrast, machinery is rarely used in the northern region due to steep slopes and other topographical constraints. The number of jobs may also potentially differ throughout the development phases of the investment, and it is generally expected that employment opportunities would significantly increase once the deal reaches its full operational stage (Cotula, 2014; Deininger & Byerlee, 2011). Finally, previous studies have suggested that foreign investors tend to import workers from their origin countries rather than hiring local workers (Baird et al., 2018; Kenney-Lazar, 2012).

Peasant engagement in employment may be further influenced by the accessibility of the village and the degree of land dispossession. Accessibility has been shown to impact the availability of development opportunities in Lao PDR, which vary across geographical regions (Epprecht, Minot, Dewina, Messerli, & Heinimann, 2008). Proximity to the provincial capital may offer better access to markets, public services, transportation, and communication networks, and people living in this area tend to have a greater choice of livelihood options. For this reason, low-quality jobs offered by land-based investments (Gyapong, 2019; Pye, Daud, Harmono, & Yappika, 2012) may not be attractive to people in more accessible areas. Limited opportunities in rural areas may be exacerbated through land and associated resource dispossession (Borras & Franco, 2013; Li, 2011). The extent of land dispossession may therefore be a determinant in the degree of peasants' engagement in wage-labor, with some peasants being forced to rely on wage-labor due to a lack of alternatives (Kenney-Lazar, 2012; Roudart & Mazoyer, 2016).

2.2.2. Quality of job created by land deals

A multidimensional perspective has widely been used to measure job quality (Clark, 2015; Schokkaert, Ootegem, & Verhofstadt, 2009), which includes both objective and subjective indicators on earnings, job security, working conditions, hours, autonomy, mobility, and job satisfaction (Cazes, Hijzen, & Saint-Martin, 2016; Charlesworth, Welsh, Strazdins, Baird, & Campbell, 2014; Chen & Mehdi, 2019). In this paper, we consider three indicators of job quality: i) opportunities for skill development, measured as whether the job is low or high skilled and the provision of training; ii) job security, measured by fixed or seasonal contracts, and development or operational phase employment; and iii) earning quality, measured by wages paid compared to the national official minimum wages.

2.2.3. Transformation from natural resource- to wage-based livelihoods

Land-based investments directly transform rural livelihoods primarily through dispossession of land (Hall et al., 2015) and common resources (Borras et al., 2012; Haller, Käser, & Ngutu, 2020; Nanhthavong, Oberlack, Hett, Messerli, & Epprecht, 2021). To maintain their livelihoods, former land users are pushed to engage in wage employment with land deals (Akram-Lodhi, 2012; Kenney-Lazar, 2012), rely on marginalized land or claim new land, e.g. nearby forest (Nanhthavong, Epprecht, Hett, Zaehringer, & Messerli, 2020; Porsani, Angela, & Kari, 2019), and/or outmigration (Barney, 2012; Hurni & Fox, 2018). In this paper, we characterize and contextualize rural livelihood transformation in three pathways. First, fully dispossessed peasants may be fully proletarianized, becoming dependent on wage-employment with land-based investments. This is especially the case for those lacking alternative means (Harvey, 2003; Marx, 1976). Second, peasants who experience partial dispossession may become semi-proletarians, continuing smallholder agricultural production while simultaneously compensating their losses through, often precarious, wage labor (Kenney-Lazar, 2012). Third, dispossessed peasants may be excluded from processes of proletarianization, for instance, where land-based investments fail to generate local wage-employment or peasants themselves lack the means to engage in wage-labor (Dinerstein, 2002).

3. Promoting land-based investments for rural development in Lao PDR

Land-based investments have been a primary driver of Lao PDR's steady economic growth at well above 10% GDP per capita over the last decade (World Bank, 2015a,b, World Bank, 2018). They have been promoted by the Government of Lao PDR (GoL) since the country's economic liberalization in the late 1980s, and were further reinforced in the mid-2000s under the framework of, "Turning the land into capital" (Kenney-Lazar, Dwyer, & Hett, 2018). Since then, land-based investments have skyrocketed, with more than 1.02 million ha, or roughly four percent of the country's territory, granted to domestic and foreign investments for mineral extraction, agricultural production, and hydropower development. Although the share of domestic investment has grown since the 2010s, the majority of the concession area remains under foreign investment (Hett et al., 2020).

The GoL's rationale for the promotion of land-based investments is two-fold. First, they contribute to the national revenue through taxes and royalties. Secondly, they are expected to support the rural transformation from a predominantly subsistence to a market-oriented economy, contributing to overall poverty reduction. Despite decreasing poverty, approximately 24.5% of the total population were living under the national poverty line in 2015, with an even higher average rate of 31.6% in rural areas (Bader, Bieri, Wiesmann, & Heinimann, 2016; Coulombe, Epprecht, Phimhidzai, & Sisoulath, 2016; Epprecht, Bosoni, et al., 2018). According to the GoL, subsistence livelihoods that rely on smallholder agriculture and forest resources perpetuate poverty and have limited contribution to the growth of national agricultural production and trade (MAF, 2010). From this perspective, land-based investments support development through the creation of employment and spillovers in infrastructure, technology, inputs, and market access, enabling peasants to engage in more productive, commercial agriculture. Wage employment created by investments would provide a stable income source for peasants in rural

areas (CPI, 2006; GoL, 2004) and market-oriented agricultural production and off-farm jobs offer pathways to permanent employment (MAF, 2010; MPI, 2016).

To stimulate local benefits, the GoL's policy clearly states that investors should prioritize hiring Lao citizens for employment opportunities, particularly former land users in the local area (GoL, 2013; STEA, 2005). Foreign labor allowances permit hiring up to 15% of total physical labor and 25% of management or technical experts from foreign countries as necessary (GoL, 2013). Additionally, concession agreements also specify investors' obligation to provide skills training for local people to participate in employment within the investment (IPD, 2013).

Initial analysis in Lao PDR revealed numerous risks to the local community associated with land-based investments, especially adverse impacts on the local environment and jeopardy of rural livelihoods dependent on natural resources (Baird, 2011; Hett et al., 2020; Kenney-Lazar, 2012; Schönweger, Heinimann, Epprecht, Lu, & Thalongsengchanh, 2012). The same studies assessed the benefits of these investments, including employment creation, to be ambiguous or small. Alarmed that the adverse impacts would nullify the benefits and threaten sustainable development, the GoL issued several moratoria on land-based investments beginning in 2007. Significantly, the Prime Minister's Order No. 13 (GoL, 2012) suspended the granting of land to new investments for large-scale mineral activities, and rubber and eucalyptus plantations, the most common agricultural investments at the time. Simultaneously, the GoL requested systematic analysis of land-based investments in order to understand their impacts and improve regulation measures.

4. Livelihoods, land tenure, and the labor force in rural Lao PDR

Although its share of the country's overall GDP has declined, agriculture remains the primary livelihood source of more than 70% of the country's labor force (World Bank, 2018; LSB, 2016), and land continues to be a cornerstone of rural livelihoods in Lao PDR in a variety of ways. Limited access to markets, credit, and employment opportunities are the main obstacles for peasants to move away from self-employed agriculture to non-farm income opportunities (Epprecht, Bosoni, et al., 2018; LSB, 2020). Since the country's economic liberalization increased access to markets, services, and infrastructure has supported the diversification of rural livelihoods (Menon & Warr, 2013; World Bank, 2015a), including cash crop and livestock production, collection of forest products, and off- and non-farm employment (Martin & Lorenzen, 2016; Nanhthavong, 2017; NSC, 2004). However, although many households engage in commercialized agriculture, most continue to primarily produce for household consumption, only selling surplus production and/or growing cash crops as a secondary engagement (MAF, 2014; Nanhthavong, 2017). This is supplemented by raising livestock as a key method of resilience against shocks (LSB, 2018) and collection of forest resources as a significant source of food and income, particularly for the poorest groups (LSB, 2020). In some contexts, income from forest related resources including non-timber forest products (NTFPs), hunting, fishing, and logging, account for up to one-third of annual household income (see Parvathi & Nguyen, 2018; Van Der Meer Simo, Kanowski, & Barney, 2019).

By Lao law, land is the property of and centrally managed by the state (The National Assembly, 2015). Individual right to private use of land is allocated by the state through land titling or customary ownership (GoL, 2003). Efforts to title land have focused on urban and *peri*-urban areas, with an emphasis on non-agricultural purposes (Hirsch, 2011), whereas regulation of rural land tenure is weak. Peasants rarely receive land titles, instead of relying solely on customary user rights (Dwyer, 2017; Kenney-Lazar, 2013), placing them at risk of being coercively dispossessed (Baird, 2011; Dwyer, 2007). Land use types such as forest or pasture belong to the state and are managed by communities, allowing peasants access to food or income sources and other ecosystem services (Dwyer, 2017). Rural households individually hold on average 2.4 ha across multiple plots (MAF, 2014), although this varies across regions. Plots are slightly larger in the central and lowland regions, with an average of 3.1 ha per household, and slightly smaller in the north, with an average of 1.3 ha (Epprecht, Weber, et al., 2018). The rural population's vulnerability is further exacerbated by resource scarcity and displacement caused by development projects, including but not limited to agricultural land-based investments, hydropower dams, and mining.

There are limited employment opportunities outside of the agricultural sector. The labor force survey conducted by LSB in 2017 revealed that besides agriculture, 27% of the Lao labor force was employed as public servants, including defense, security, education, and public health. Employment in the manufacturing subsector accounted for 14% of the total employed labor force, while 33% was engaged in wholesale and retail trade, and repair of vehicles and motorcycles (LSB, 2018). The rural population often do not have the skills to fulfill jobs outside the agricultural sector. Although approximately 85% of the labor force is literate, these rates are much lower among rural women, and less than one-fifth of the labor force has received vocational training or tertiary education (LSB, 2016). As a result, more than 80% of the labor force are engaged in the informal sector (LSB, 2018). The rural population in particular do not benefit from high-paid, urban employment, nor jobs created by development projects in rural areas (World Bank, 2015b). Youth are increasingly migrating temporarily or permanently to urban or cross-border areas in search of employment (Andriesse & Phommalath, 2012; Barney, 2012; Cole & Rigg, 2019; Epprecht, Bosoni, et al., 2018; Manivong, Cramb, & Newby, 2014; Rigg, 2007) and engaging in low paying jobs in garment factories, shops, restaurants, or construction (Lao People's Revolutionary Youth Union (LYU), 2014).

Further, studies highlight a mismatch between the training received by the educated and the required skills in the labor market in Lao PDR, where access to skilled-labor remains the most significant constraint experienced by the business sector (World Bank, 2014).

5. Materials and methods

5.1. Data

We use two comprehensive datasets on land deals for our analysis. First, we use the GoL's 2017 Lao National Land Concession Inventory (LCI), which contains all documented land concessions and leases in the agricultural, mining and hydropower sectors including key characteristics and geospatial information. This census of land concessions and leases was extracted from a comprehensive review of district, provincial, and national government documents collected between 2016 and 2017 related to the granting and implementation process of land-based investments (see Hett et al., 2020). The LCI details 777 deals covering roughly 0.6 million ha of granted area across all 18 provinces of Lao PDR (Figure 1). Key recorded characteristics include type of commodity, origin of investors, size (in ha), and spatial components. Second, we draw from the quality of investment (QI) dataset, a subset of the census data that encompasses 179 deals covering an area of 196,880 ha in nine provinces. This subset provides detailed, qualitative data on implementation processes and environment and socioeconomic impacts, including employment. This data is limited

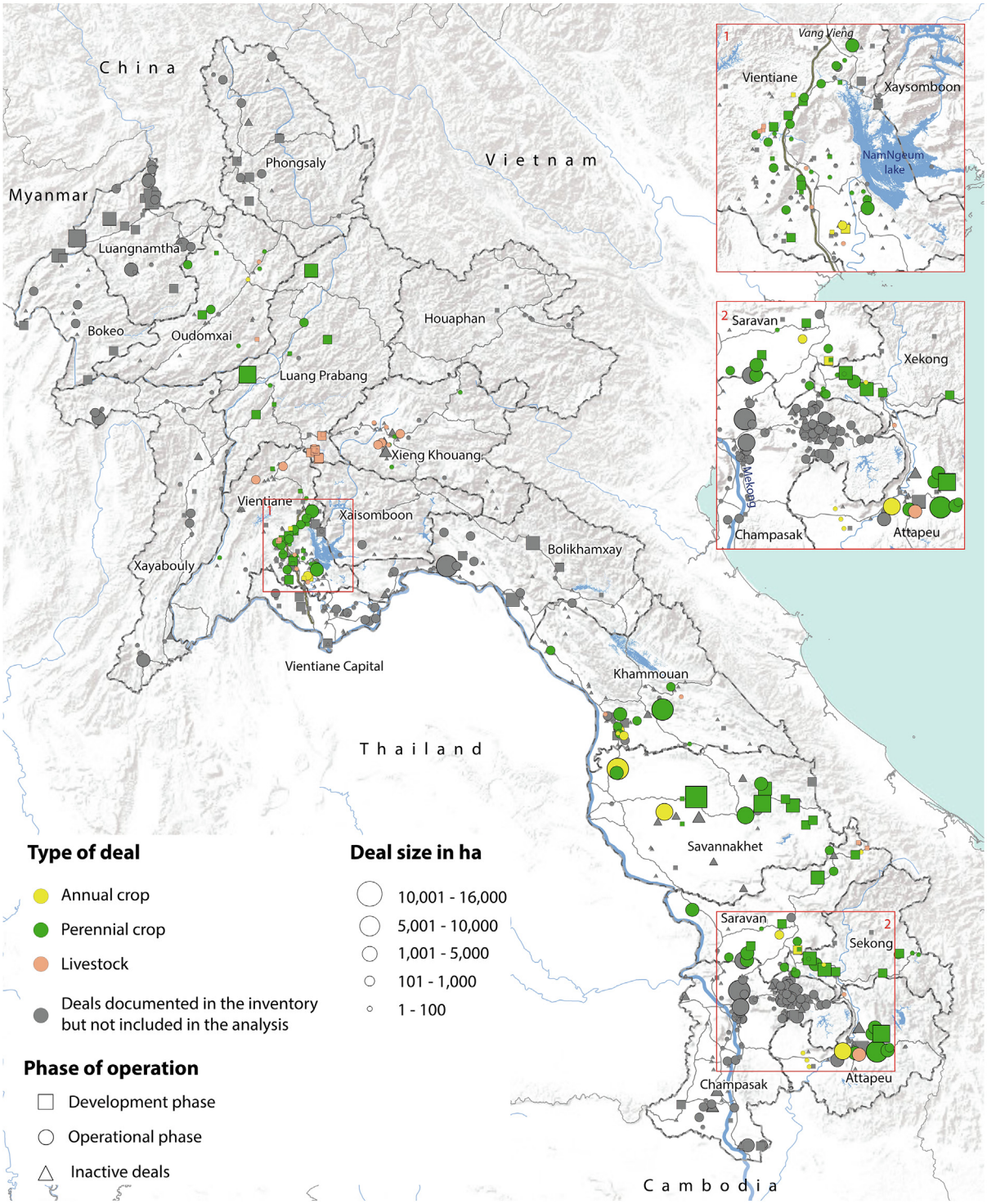

Figure 1. Locations of all land deals in Lao PDR and deals included in the analysis by type of commodity, phase of operation, and size.

to three representative provinces in the northern region (Oudomxai, Luang Prabang, and Xieng Khouang), central region (Vientiane, Khammouan, and Savannakhet), and southern region (Saravan, Sekong, and Attapeu), as well as to deals larger than 10 ha. This qualitative data was collected through semi-structured interviews with government representatives, companies, village committees, and former land users in villages where direct land and natural resource dispossession occurred – hereafter referred to as "affected villages" (see Hett, Nanhthavong, Kenny-Lazar, Phouangphet, & Hanephom, 2018). The affected village is determined by the administrative boundary where the investment was located and recorded in the LCI. This dataset does not include information on villages neighboring the investment that may be indirectly affected. The survey process and sample size are delineated in Table 1, and variables, their measurement, and data sources included in the analysis are presented in Table 2.

In our study, we utilized the complete LCI data and a subset of 164 deals of the QI data that had complete data related to employment. Two-thirds (n = 98, 111,145 ha) of these deals were in the operational phase, and the remainder (n = 66, 55,227 ha) were still

in the development phase at the time of assessment (Figure 1). These deals are summarized in Table A and Table B of the Appendix. The size of the deals is presented in Figure 2. The majority of land deals in the sample are small-scale, with almost half receiving a granted area between 100 and 500 ha each. Of the QI dataset, we utilize only the qualitative data collected from interviews with companies, village committees, and former land users.

5.2. Limitations

There are a number of data and methodological limitations that should be considered in interpreting our findings. First, our consideration of proletarianization takes into account only employment directly generated by the land-based investments within the sample. While rural employment may be generated indirectly or beyond the land-based investments, this was not represented or considered in our existing data and current analysis. Secondly, in modeling the proportion of peasants employed by the land deal, the size variable refers to the total developed area per land deal, rather than the land loss per affected village. In many cases, a land deal affected more than one village and the extent of land acquired varies greatly from one to another village. Further, the extent of land loss in each village correspondingly varies, however, this data is not available in the LCI. Further limitations relate to the measurement of employment. In this paper, employment implies that jobs were offered and accepted by former land users; jobs that were offered but not accepted are not captured as part of this analysis. Additionally, we considered the share of peasants in the total working-age population in the affected village who were employed by land deals. However, in some cases, this measurement may be biased towards areas of low population density. In general, remote areas in Lao PDR have lower population densities (LSB, 2016), hence the share of peasants employed in wage-labor with land deals may be higher than in areas of high population density. Finally, it is important to note that our analysis focuses on the empirical changes in villages before and after the implementation of land-based investments, but cannot be interpreted as a direct comparison between outcomes of land-based investments and a counterfactual scenario without land-based investments.

5.3. Analysis

5.3.1. Livelihood contexts of sampled villages

To contextualize the impact of employment created by land-based investments on the rural livelihoods and safety nets, we examined the village economy, the extent of land dispossession, and changes in access to other livelihood resources, such as NTFPs, wild animals, and livestock.

5.3.2. Job creation and peasant engagement in employment with land-based investments

To gain understanding of the process of job creation and peasant engagement in employment with land-based investments, we constructed three models for ordinary least squares regression. First, we explored the average number of jobs created by land-based investments per hectare, calculated by dividing the number of jobs created by the total developed area, as suggested by Nolte and Ostermeier (2017). This model is structured as:

$$Y_i = \alpha + \beta_1 X_{i1} + \gamma_1 D_{i1} + \gamma_2 D_{i2} + \delta_1 E_{i1} + \eta_1 F_{i1} + \eta_2 F_{i2} + \lambda_1 (X_{i1} D_{i1}) + \lambda_2 (X_{i1} D_{i2}) + \varepsilon_i \quad (1.a)$$

$$\varepsilon_i \; N(0, \sigma_\varepsilon^2) \quad (1.b)$$

where Y_i represents the continuous dependent variable of average number of jobs by ha created by deal i and α is the regression constant. The terms β, γ, δ, η, and λ represent the respective coefficients to variables X_1, the continuous size of the land deal in ha, D, the categorical commodity type of investment, and E, the binary phase of development, F, the categorical terrain, and an interaction term between the size and commodity type. The error term is represented by ε and is assumed to be independently distributed with zero mean and finite variance.

Additionally, we also ran a one-way ANOVA to compare the mean number of jobs per hectare created by land deals across types of crops and livestock.

We then considered the determinants of peasant engagement with the created employment, measured by the share of peasants employed by land-based investments of the working-age population in the village. The model is structured as:

$$Y_i = \alpha + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \gamma_1 D_{i1} + \gamma_2 D_{i2} + \delta_1 E_{i1} + \eta_1 F_{i1} + \eta_2 F_{i2} + \theta_1 G_{i1} + \theta_2 G_{i2} + \lambda_1 (X_{i1} D_{i1}) + \lambda_2 (X_{i1} D_{i2}) + \varepsilon_i \quad (2)$$

where Y_i represents the continuous dependent variable of the share of peasants employed. The model retains the explanatory variables from equation (1.a) with the addition of continuous variables X_2, representing accessibility, and X_3, representing land dispossession, and categorical variable G, representing the origin of investment.

The final model compliments the previous by exploring the share of foreign employed labor by each land deal, specified as:

$$Y_i = \alpha + \beta_1 X_{i1} + \gamma_1 D_{i1} + \gamma_2 D_{i2} + \theta_1 G_{i1} + \theta_1 G_{i2} + \lambda_1 (X_{i1} G_{i1}) + \lambda_2 (X_{i1} G_{i2}) + \varepsilon_i \quad (3)$$

where Y_i represents the share of foreign labor employed by deal i.

Explanatory variables included in these models are based on theoretical justification in Section 2.2.1.

5.3.3. Job quality within land-based investments

After examining job creation and peasant engagement with employment within land-based investments, we sought to further understand the quality of these jobs. First, we summarized the types of jobs created by each investment as reported through com-

Table 1
Data sources, interviewee, type of interview, and sample size of the QI subset.

Source of data	Interviewees	Type of interview	Number of interviews
Company interviews (Table A in the Appendix presents the characteristics of companies)	Investor or field manager of an investing company, with translators for foreign companies	Individual interview	118
Interviews with village committees	- Village chiefs Village Land Management Unit Village Forest Management Unit Representatives of Youth's Union Representatives of Women's Union Representatives of Elderly	Group interview (8 – 10 persons per interview)	282
Interviews with former land users	Four to five households who: Lost land to land deals Did not lose land to land deals Engaged in wage-labor with land deals Did not engage in wage-labor with land deals	Group interview (12 – 16 persons per interview)	282

Table 2
Variables included in analysis, their measurement, and source.

Variable	Measurement	Source
Employment and impacts on livelihood resources		
Number of jobs created by land-based investments	The number of jobs created by a land-based investment, including whether those positions are filled by foreign and local recruits	Company interviews (QI)
Types of jobs created by land-based investments	Types and number of jobs, including: 1) Skilled-labor and salaried job including management, technical expert, transport, and security guard; 2) Low-skilled labor and seasonal job including clearing land, digging, planting, weeding, applying agrochemicals, applying fertilizer, and harvesting.	Company interviews (QI)
Jobs accepted by former land users	Number and types (same as above) accepted by former land users	Interviews with former land users (QI)
Working-age population in the affected village	Population between ages 15 and 64 years	2015 Lao Population and Housing Census (PHC) (LSB, 2016)
Wages	Wages by type of job	Interviews with former land users (QI)
Proportion of dispossession	Percentage of households per village experiencing a partial or complete loss of individual land ownership to land-based investments	Interviews with village committees (QI)
Extent of individual land dispossession	Average number of hectares lost per household per village	Interviews with village committees (QI)
Change in access to farmland	Villagers' perception of availability, scale ranging from "increased a lot," "increased a little," "unchanged," "decreased a little," and "decreased a lot"	Interviews with former land users (QI)
Change in the availability of NTFPs and wild animals	Villagers' perception of availability, scale ranging from "increased a lot," "increased a little," "unchanged," "decreased a little," and "decreased a lot"	Interviews with former land users (QI)
Change in large livestock production	Villagers' perception of change, scale ranging from "increased a lot," "increased a little," "unchanged," "decreased a little," and "decreased a lot"	Interviews with former land users (QI)
Characteristics of land-based investments		
Type of commodity	Category of commodity invested in by the land-based investment including annual crops, perennial crops, and livestock	LCI
Developed area	The area in hectares developed at the time of assessment (opposed to granted area)	LCI
Origin of investors	Origin of the investor as stated in the business registration including domestic, foreign, or joint venture	LCI
Phase of operation	Whether the deal was in development or operational phase at the time of assessment	LCI
Socio-ecological contexts of targeted villages or land-based investments		
Villages' main economic activities	The three most important economic activities in terms of time and labor allocation per village	Interviews with village committees (QI)
Terrain	The slope of the area under land-based investment implementation categorized as: Flatland with a slope < 9% Slightly sloped land with a slope between 9 and 30% Steeply sloped land with a slope greater than 30%	The eight classes of slope data derive from FAO Soils Portal (Fischer et al., 2008), reclassified into three classes in ArcGIS (ESRI, 2011)
Accessibility	Measured by travel time (in hours) from the area under land-based investment implementation to the nearest provincial capital	Calculation in ArcGIS (ESRI, 2011) using the 2015 PHC data (Epprecht, Bosoni, et al., 2018) following the approach suggested by Epprecht et al. (2008)

pany interviews, and the types of jobs offered to or accepted in each village as reported by former land users, disaggregated by gender. Second, we summarized wages by nature of job, such as type of job, nature of employment including salaried or seasonal labor, and phase of operation including development or operational. Compensation schemes vary, including salary and daily- or productivity-based wages (e.g., per hectare of weeding). For ease of comparison, all compensations were converted into daily wages[2]. Monthly salaries were divided by 21.75 working days. Area-based wages were estimated as requiring approximately 10 person-days to clear one ha of vegetation, calculated by dividing the area-based wage by the daily rate paid for similar jobs in the same province. For hole digging-based wages for tree planting, we estimated that one worker digs approximately 150 holes per day. We consider this to be realistic, as it equates to daily wages for similar work in the same province (see Hett et al., 2020). We then compared the wages to the 2015 official minimum wages (MLSW. 2015).

Finally, we categorized types of jobs into high- and low-quality job. A high-quality job refers to a fixed-term contract that requires technical skills with wages equal or greater than the national official minimum wages; a low-quality job refers to a seasonal job that does not require technical skills or with wages lower than the national official minimum wage. While this method does not capture differences in the precarity of various compensation schemes, such as employment benefits, this allows for comparison of monetary compensation.

5.3.4. Transformation of rural livelihoods

Finally, we link the results of our analysis on employment to livelihood contexts to gain a more comprehensive understanding

[2] Jobs for which wages are paid monthly include management, technical expert, transport, and security positions. Soil preparation, planting, and weeding were reported based on productivity (per hole, seedling, or by area).

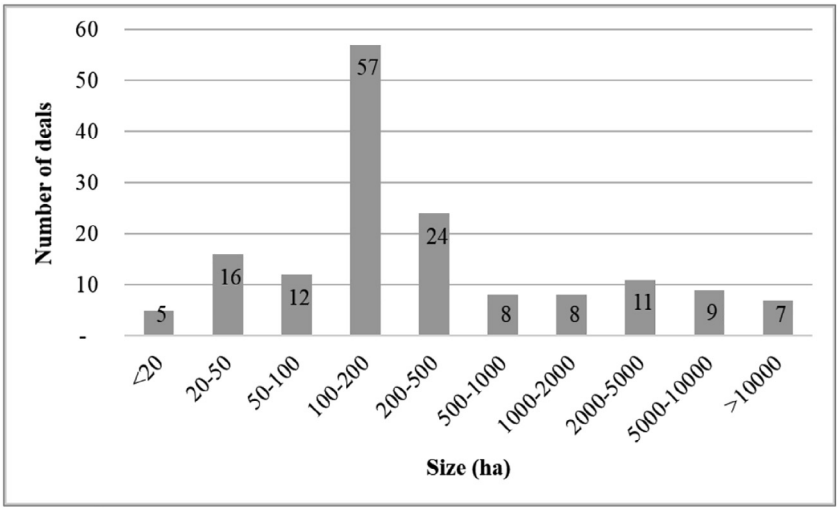

Figure 2. Distribution of granted area size of sample land deals.

of the transformation of rural livelihoods induced by land-based investments and implications for precarity. We categorize villages that were included or excluded from employment opportunities based on interviews with former land users. Inclusion in employment is defined as villages with at least one peasant employed with a land-based investment. Importantly, inclusion or exclusion is based on the existence of employment. We link this inclusion or exclusion to land dispossession and changes in access to livelihood resources created by the deal. Lastly, we examine reasons given for exclusion as reported by excluded former land users.

6. Results

6.1. Livelihood contexts of sampled villages

6.1.1. Main economic activities

After the implementation of the land deals, agricultural production remained the most important activity for local livelihoods (Figure 3). The majority of affected villages (86%, n = 240) reported lowland or upland rice production (the staple food in Lao PDR) as the primary economic activity. Livestock raising and cash crop production were reported as the second and third most important economic activities, accounting for 65% (n = 182) of the secondary economic activity and 64% (n = 179) of the tertiary economic activity. Employment was not the primary activity in any of the villages, appearing only as of the third most important activity in a small proportion of villages (6%, n = 18).

6.1.2. Land dispossession and change in access to farmland and livelihood resources

Not all villages experienced loss of individual land to investments; approximately one-third of affected villages reported loss of only communal land, such as forest and pasturelands. The remaining 60% of affected villages experienced some degree of individual land loss (Table 3). On average, 25% of households experienced individual land loss per village (min = 0.31%, max = 100%, SD = 28%). The majority of households lost individual land in only 10% of affected villages, and in only 3% of villages did all households experience individual land loss. Households who did lose land, however, lost substantial amounts. Households lost an average of 2.61 ha (min = 0.17 ha, max = 13.04, SD = 2.28), greater than the national average landholding by smallholders in Lao PDR of 2.4 ha per household (MAF, 2014).

Annual crop deals were associated with the highest proportion of households experiencing individual land loss per village. Perennial and large-scale deals resulted in the highest average amount of land loss per household (see Table 3-A and Figure 4). The extent of land dispossession also differed between origin of investors, with a greater extent of loss occurring in foreign investments (Table 3-B).

Figure 5 presents the changes in access to farmland, availability of NTFPs and wild animals, and the number of livestock since the establishment of land-based investments in an affected village. Overall, perennial crops had the greatest adverse impacts on access to farmland compared to other commodities, with nearly three-fourths (n = 146) of affected villages claiming that access to farmland has decreased. Most villages affected by perennial crops (88%, n = 173) and annual crops (88%, n = 36) deals experienced decreases in the availability of NTFPs and wild animals. Livestock deals did not affect the availability of these resources, and most villages experienced increased or unchanged numbers of livestock.

In total, only 15 villages did not experience either individual land dispossession or decrease in access to farmland, availability of NFTPs and wild animals, and the number of livestock since the establishment of a land-based investment.

6.2. Jobs created by land-based investments

On average, land-based investments created 0.5 jobs per hectare of developed area (min = 0.005, max = 12, SD = 1.36), and nearly 90% (n = 72) of deals offered less than one job per hectare. Deals invested in perennial crops created the greatest absolute number of jobs due to larger-scale deals, while only a small number were generated by livestock deals. Results of regression model 1.a revealed that a greater number of jobs per hectare was created by operational compared to development stage deals ($\beta = 0.16$, $p < 0.05$). Relationships to size, type of commodity, and interaction variables were not significant (Table 4).

The results of the ANOVA also suggest that there is no statistically significant difference in the mean number of jobs per hectare across crop types and livestock ($F(7, 106) = 0.96$, $p = 0.47$) as presented in Table 5.

In general, although our data show that a significant absolute number of jobs was created by land-based investments (Table 6), most were in the form of seasonal and low-skilled jobs such as land clearing, digging holes for crop planting, crop planting, weeding, and harvesting. Many jobs requiring technical skills, such as man-

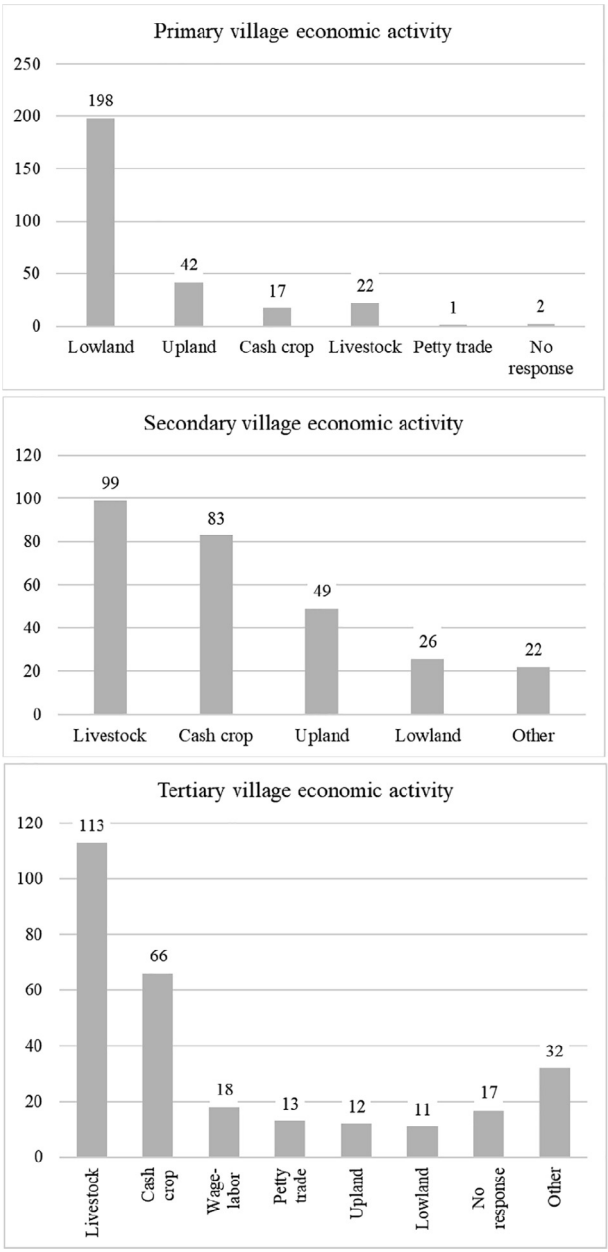

Figure 3. The three most important economic activities in affected villages based on interviews with village committees.

agement, technical experts, and harvesting were fulfilled by foreign migrants.

Notably, many land deals, especially perennial crops (51%, n = 35), far exceeded the GoL's allowances on hire of foreign labor. Results of regression model 3 on foreign labor (Table 7) suggests that foreign investments tend to employ more foreign labor compared to domestic deals ($R^2 = 0.20$, $F(7, 73) = 2.56$, $p < 0.05$). The share of foreign labor employed by foreign investments is approximately 15% higher than in domestic investments ($p < 0.05$). The model suggests that there are no statistically significant interaction effects between the size of land deals and the origins of investors.

6.3. Peasant engagement in employment with land-based investments

6.3.1. Degree of peasant engagement

The degree of peasant engagement in employment with land-based investments measured as the share of the total working-age population in the village employed by the investment varied across types of land deals and contexts. Employment was not created in all affected villages. Overall, two-thirds of affected villages (n = 175) reported that at least one former land user in the village was employed by the land-based investments at the time of assessment. Annual crop deals employed former land users in 70% of affected villages and perennial crop deals employed former land users in 68% of affected villages; and livestock deals created employment in roughly one-third of affected villages. In the majority of total affected villages, <20% (mean = 45%, min = 0.06%, max = 971%[3], SD = 110%) of the working population was employed by the investments.

Results from the regression model on the degree of peasant engagement in wage-labor indicated a significant association with the operational phase, extent of individual land dispossession, accessibility of targeted regions, and the interaction between size and commodity type (Table 8). The predictors in this model explained 14% of the variation ($R^2 = 0.14$, $F(12, 202) = 2.96$, $p < 0.01$). A higher share of peasants engaged in employment with land deals occurred in perennial crop deals and foreign deals, at approximately 10% and 7% higher than annual crop deals and domestic deals respectively, but these effects are not significant ($p = 0.16$ and $p = 0.10$ accordingly). Notably, while the model of total job creation suggests that more jobs are created during the operational phase, the model on peasant engagement suggests that former land users are more likely to engage in wage-employment during the development phase ($\beta = -5.99$, $p = <0.10$). This suggests that peasants are less likely to benefit from the jobs created during the operational phase.

Significantly, the model further suggests a positive relationship between the share of peasants engaged in wage-employment and the extent of individual land dispossession. A one percent increase in the proportion of households who lost individual land is associated with a 0.18% ($p < 0.01$) increase in the share of peasants engaged in wage-labor. The model also reveals that a higher degree of peasants engaged in employment in remote areas. With a one hour increase in mean travel time to the nearest provincial capital, the share of peasants engaged in wage-labor with land deals is expected to increases 1.80% ($p < 0.10$).

Finally, while there is not a statistically significant in relationship between the share of peasants engaged in wage-labor and land-deal size, the model suggests that there is an interaction effect between size and commodity type. The negative interaction indicates a decreasing share of peasants engaged in wage-labor of 0.002% ($p < 0.10$) with a one ha increase in perennial crop deal size.

6.3.2. Quality of jobs offered to peasants

Table 9 presents the type and number of jobs filled by former land users in our sample. Nearly 90% of the total 26,000 jobs employing former land users were low-skilled and/or seasonal jobs. Most of these were during the development phase, and included land clearing, digging holes for crop planting, planting, weeding, or application of agrochemicals. More than 70% of these jobs were created by perennial crop investments, followed by 14% by annual crop deals. Nearly two-thirds of all jobs in land-based investments employed women, although the proportion of female and male workers varied across commodities and types of jobs. In perennial crops, female and male laborers were equally employed, while livestock deals employed 96% women. By type of job, an equal or greater share of women was employed in seasonal and low-skilled jobs. Higher skilled jobs were primarily filled by men.

[3] Means that one villager were employed to function multiple types of job. In this paper, we calculated number of jobs accepted by former land users in the village as compared to total working-age population.

Table 3
Number of households in affected villages with individual land loss based on interviews with former land users.

A) By type of commodity						
Type of commodity	Affected villages with individual land loss		Percentage of households with individual land loss in the affected village			
	Number[a]	Percentage[a]	Mean	Min	Max	SD
Annual crops (n = 41)	33	80%	18	0.31	82	19
Livestock (n = 44)	15	34%	13	0.70	45	15
Perennial crops (n = 197)	120	61%	28	0.31	100	30
Total (N = 282)	**168**	**60%**	**25**	**0.31**	**100**	**28**
B) By origin of investors						
Origin of investors	Affected villages with individual land loss		Percentage of households with individual land loss in the affected village			
	Number[a]	Percentage[a]	Mean	Min	Max	SD
Domestic (n = 83)	36	43%	15	0.64	53	16
Foreign (n = 177)	124	70%	29	0.31	100	30
Joint venture (n = 22)	8	36%	10	0.31	30	10
Total (N = 282)	**168**	**60%**	**25**	**0.31**	**100**	**28**

[a] Remaining affected villages lost communal land, such as forest or pasture land.

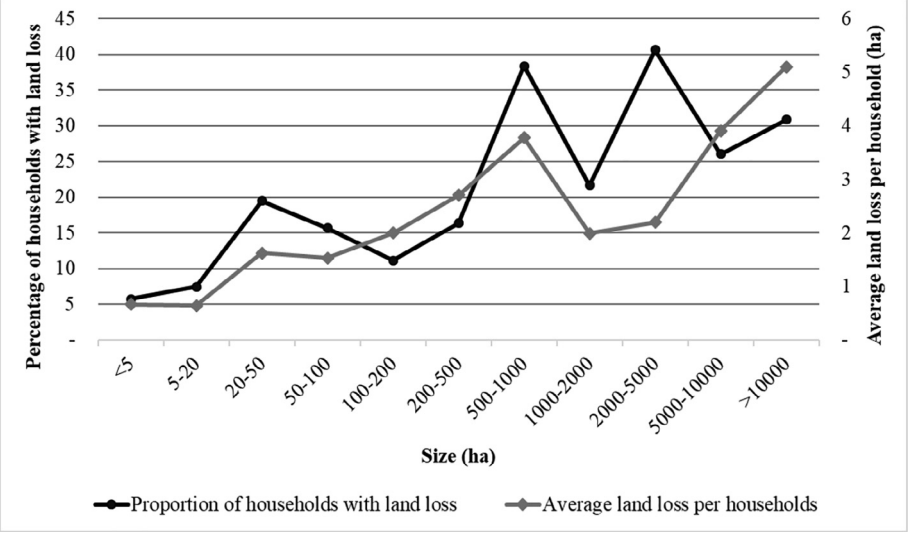

Figure 4. Individual land loss and size of land-based investments.

Compensation for salary-based jobs was consistently higher than seasonal or low-skilled jobs, particularly among crop deals (Table 10), while wages for seasonal and low-skilled jobs varied across commodity types. In annual crop deals, the highest wages are paid for applying agrochemicals and the lowest wages are for soil preparation, including clearing and digging. In contrast, perennial crop deals paid the highest wages for hole digging and the lowest wages for applying fertilizer. The wages for harvesting in perennial crops are higher than for weeding and applying agrochemicals. In livestock deals, the highest wages are paid for harvesting, including fodder collection, and the lowest for digging holes to plant fodder.

Compensation for salaried-based employees was generally significantly higher than the 2015 Lao PDR official minimum wages of approximately 5.6 USD/day[4], with the exception of security guards. In contrast, wages for seasonal and low-skilled jobs were primarily lower than the official minimum wage (Table 10).

[4] The exchange rate in 2015 was 1 USD = 8,105 Lao Kip (https://www.xe.com/currencytables/?from=USD&date=2015–01-05).

6.3.3. Transformation of rural livelihoods

Two-thirds (n = 109) of affected villages that experienced employment creation also experienced land dispossession and/or adverse impacts to access to livelihood resources, as reported by former land users. In the 32% (n = 56) of villages that did not experience land dispossession, adverse impacts on access to other livelihood resources were still felt. Only 10 villages did not experience either land dispossession or adverse impacts on access to livelihood resources.

Employment was not created by land-based investments (or refused by former land users) in 107 affected villages. Of these, land dispossession or adverse impacts to access to livelihood resources occurred in all but five villages, and in 55 villages, land-based investments caused individual land dispossession with or without adverse impacts on access to livelihood resources. On average, 16.20% of households in these 55 villages lost individual land to land-based investments (Min = 1, Max = 100, SD = 20.86). In the remaining 47 villages, peasants did not experience individual land loss, but did experience decreased access to livelihood resources including farmland, NTFPs and wild animals, and livestock (Figure 6).

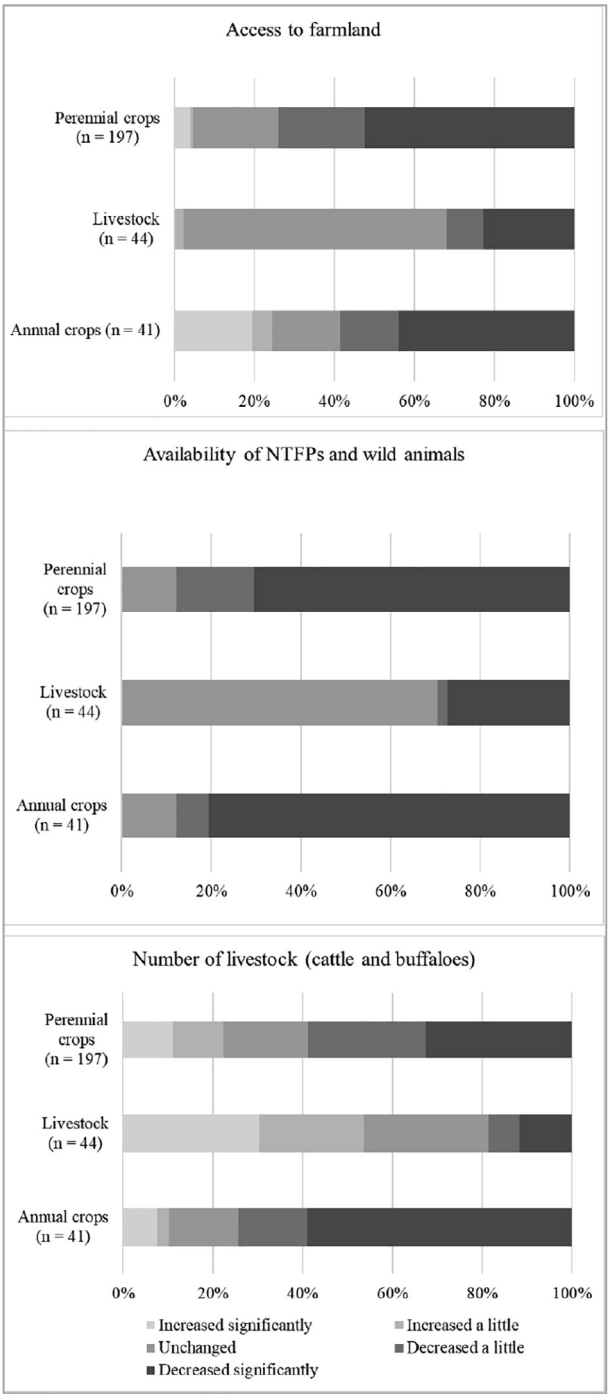

Figure 5. Change in access to farmland, availability of NTFPs and wild animals, and number of livestock in affected villages based on interviews with former land users.

Former land users in affected villages reported several reasons for the lack of employment generation, including, notably, refusal of employment opportunities (Figure 7). The most common reason included investors using their own labor (n = 22 villages), low wages (n = 13), villagers never being approached with employment opportunities (n = 9), and workers ceasing employment after experiencing poor working conditions (n = 8). Many villages (n = 37) could not provide an explanation for the lack of employment. Further, although more than half of affected villages (n = 188) stated that they did not receive any training, in most cases lack of skills was not a reported obstacle for former land users to engage in employment with land-based investments (Figure 8). The remaining half of villages (n = 135) received land preparation, cultivation techniques, application of agrochemical, and harvesting training from investors.

7. Discussion

7.1. Land-based investments introduce precarity rather than contributing to the transformation from resource- to wage-based livelihoods

Our results support the hypothesis that the number of jobs created by land-based investments and peasant engagement in wage employment varies across types of investments and contexts. They further suggest that although land-based investments transform peasants' access to land and associated resources in affected villages, their contribution to rural transformation from resource- to wage-based livelihoods is limited. Despite the generation of wage-employment by land-based investments, smallholder agriculture continues to prevail as the primary economic activity throughout our sample. Wage-employment directly with land-based investments was the third most important economic activity in only a handful of villages (see 6.1.1).

Conceptualizing our analysis and results within the precarity framework facilitates the identification of several important distinctions. First, in keeping with Rigg et al. (2016), our findings suggest that peasants may experience a decrease of traditional vulnerability through engaging in wage employment, as employment is created within land-based investments and a large number of former land users engage in these opportunities. However, livelihoods became more precarious as employment opportunities were observed to be largely seasonal, limited to early phases of the investment cycle, provided sub-minimum wage compensation, or excluded local communities entirely. Second, we expand on Rigg et al. (2016)'s triangular conceptualization of the relationship between precarity and traditional vulnerability by revealing that the relationship between traditional vulnerability and precarity is neither direct nor proportional, and can thus lead to differentiated outcomes – also, and importantly, in terms of gender. Increases in precarity are not necessarily coupled with decreases in vulnerability. Due to loss of access to land and other natural resources that are traditional components of local resilience strategies, vulnerability may actually increase along with precarity. This increase in traditional vulnerability caused by new limitations to access to resources such as NTFPs, especially impacts women, who are primarily responsible for household food security. Significantly, the strong relationship between employment and land dispossession indicates peasants engage in wage employment out of necessity rather than choice. In a significant number of villages, peasants were not only expelled from land and resources but also excluded from employment opportunities with land-based investments as a substantial number of jobs were filled by foreign migrants. These adverse impacts disproportionately affect disadvantaged peasants with fewer resources including women (Oya & Pontara, 2015; Rigg, 2020). In the small number of villages where individual land dispossession and access to resources were not an issue, peasants were able to maintain their traditional livelihoods and employment created by land-based investments presented an opportunity to supplement income.

It is notable, however, that our analysis does not account for indirect, spillover employment generation, such as downstream employment throughout the value chain (Maertens & Fabry, 2019; Watanabe et al., 2009) or indirectly in accompanying non-farm sectors such as restaurants and retail shops (Baird et al., 2018; Gironde, Golay, Messerli, Peeters, & Schönweger, 2014). In

Table 4
Determinants of the number of jobs created by land-based investments.

	Coefficients	Standard error	t - value	p-value
Main effects				
Constant	**0.12**	**0.13**	**0.90**	**0.37**
Size	−8.33	0.00003	−0.32	0.75
Annual crops	reference			
Perennial crops	0.13	0.13	1.04	0.30
Livestock	0.15	0.15	0.99	0.32
Development phase	reference			
Operational phase	0.16	0.08	2.12	0.04**
Flatland	reference			
Slope	−0.10	0.08	−1.33	0.19
Steep slope	−0.23	0.14	−1.68	0.10
Interaction effects				
Annual crops # Developed area	reference			
Perennial crops # Developed area	−0.00002	0.00003	−0.66	0.51
Livestock # Developed area	−0.0004	0.0003	−1.04	0.30
Number of observations = 106 R^2 = 0.16				
F(8, 97) = 2.37 R^2 – adjusted = 0.09				
p-value < 0.05**				

Note: Positive coefficients indicate that as the independent variable increases, the dependent variable (here, the number of jobs created per ha) correspondingly increases. Negative coefficients indicate the inverse. The significance levels: * 0.1; ** 0.05; *** 0.01.

Table 5
ANOVA comparisons of number of jobs created by land-based investments by type of crops and livestock.

				Turkey's HSD Comparisons						
Type of commodity	n	Mean	SD	Rubber	Pulpwood	Flex crop	Fruit	Livestock	Aromatic tree	Coffee or tea
Rubber	35	0.16	0.20							
Pulpwood	9	0.06	0.06	1.00						
Flex crop	12	0.25	0.31	1.00	1.00					
Fruit	7	0.42	0.25	1.00	1.00	1.00				
Livestock	29	0.55	2.18	0.90	0.96	1.00	1.00			
Aromatic tree	4	0.21	0.26	1.00	1.00	1.00	1.00	1.00		
Coffee or tea	3	0.7	0.57	1.00	1.00	1.00	1.00	1.00	1.00	
Other	8	1.21	1.05	0.34	0.51	0.65	0.91	0.86	0.87	1.00
F(7, 106) = 0.96 and p-value = 0.47The significance levels: * 0.1; ** 0.05; *** 0.01.										

Table 6
Type and number of jobs created within land-based investments based on company interviews.

	Annual crops (n = 15)		Livestock (n = 34)		Perennial crops (n = 69)		Total (N = 118)		GoL's limits for shares of foreign labor
Type of jobs	Total number of jobs	Share of foreign labor	Total number of jobs	Share of foreign labor	Total number of jobs	Share of foreign labor	Total number of jobs	Share of foreign labor	
Management	10	10%	24	17%	124	69%	**158**	**57%**	25%
Technical expert	45	11%	31	6%	550	43%	**626**	**38%**	25%
Transport	213	38%	26	0%	94	15%	**333**	**29%**	25%
Security guard	11	0%	22	0%	170	2%	**203**	**2%**	25%
Clearing land	0	0%	3	0%	2442	0%	**2445**	**0%**	15%
Digging	0	0%	75	0%	3445	0%	**3520**	**0%**	15%
Planting	1201	0%	122	0%	6065	0%	**7388**	**0%**	15%
Weeding	1300	0%	98	0%	7400	0%	**8798**	**0%**	15%
Applying agrochemicals	19	89%	7	0%	1242	0%	**1268**	**1%**	15%
Applying fertilizer	160	0%	50	0%	4872	1%	**5082**	**0%**	15%
Harvesting	1265	0%	35	0%	3722	28%	**5022**	**20%**	15%
Other	78	0%	76	0%	2607	4%	**2761**	**4%**	15%
Total	**4302**	**2%**	**569**	**1%**	**32,733**	**5%**	**37,604**	**4%**	

both cases, measuring these impacts remains a challenge (see Meemken & Bellemare, 2020). Generated employment may also be filled by neighboring communities (Anti, 2021; Deininger & Xia, 2016), limiting the impact within local communities. These opportunities undoubtedly play an important role as sources of cash income, in poverty reduction and livelihood transformation, with gendered effects, warranting further investigation. However, they are beyond the scope of our current analysis and data, which is limited to employment directly generated by land-based investments and associated impacts.

Our results indicate that land-based investments alone do not generate sufficient employment to sustainably transform resource- to wage-based livelihoods, and that household members are affected in different ways. Alternative opportunities both within and beyond the agricultural sector to absorb labor crowded out from traditional livelihoods are needed (T. M. Li, 2009; Nolte & Ostermeier, 2017). Through this analysis, we identify three processes through which land-based investments transformed the property and labor relations, impacting both vulnerability and precarity: i) dispossession without proletarianization; ii) disposses-

Table 7
Effects of types of land deal on the share of foreign labor employed by land deals based on company interviews.

	Coefficients	Standard error	t - value	p–value
Main effects				
Constant	**11.65**	**8.21**	**1.42**	**0.16**
Size	0.002	0.02	0.07	0.95
Annual crops	reference			
Perennial crops	−8.68	6.56	−1.32	0.19
Livestock	−14.58	9.07	−1.61	0.11
Domestic	reference			
Foreign	15.14	6.33	2.39	0.02**
Joint venture	7.22	9.18	0.79	0.43
Interaction effects				
Domestic # Developed area				
Foreign # Developed area	−0.001	0.02	−0.06	0.95
Joint venture # Developed area	−0.002	0.02	−0.09	0.93
Number of observations = 81 R^2 = 0.20				
F(7, 73) = 2.56 R^2 – adjusted = 0.12				
p-value < 0.05**				

Note: Positive coefficients indicate that as the independent variable increases, the dependent variable (here, the share of foreign labor) correspondingly increases. Negative coefficients indicate the inverse. The significance levels: * 0.1; ** 0.05; *** 0.01.

Table 8
Determinants of peasant engagement in employment with land deals as reported by former land users.

	Coefficients	**Standard error**	**t - value**	**p – value**
Main effects				
Constant	**−0.07**	**7.60**	**−0.01**	**0.99**
Size	0.001	0.001	0.80	0.43
Annual crops	reference			
Perennial crops	9.70	6.80	1.43	0.16
Livestock	0.81	8.66	0.09	0.93
Domestic investment	reference			
Foreign investment	6.56	3.98	1.65	0.10
Joint venture investment	5.85	6.44	0.91	0.37
Development phase	reference			
Operational phase	−5.99	3.32	−1.8	0.07*
Percentage of households with individual land loss in the village	0.18	0.06	2.80	0.006***
Flatland	reference			
Slope	−1.70	3.53	−0.48	0.63
Steep slope	−0.93	7.69	−0.12	0.90
Accessibility	1.80	0.95	1.88	0.06*
Interaction effects				
Annual crops # Developed area				
Perennial crops # Developed area	−0.002	0.00	−1.77	0.08*
Livestock # Developed area	−0.0004	0.01	−0.04	0.97
Number of observations = 215 R^2 = 0.14				
F(12, 202) = 2.70 R^2 – adjusted = 0.09				
P-value < 0.01***				

Note: Positive coefficients indicate that as the independent variable increases, the dependent variable (here, peasant engagement in employment) correspondingly increases from the constant or reference value. Negative coefficients indicate the inverse. The significance levels: * 0.1; ** 0.05; *** 0.01.

Table 9
Type and number of jobs filled by former land users based on interviews with former land users.

	Annual crops (n = 41)		Livestock (n = 44)		Perennial crops (n = 197)		Total (N = 282)	
Type of jobs	Total number of jobs	Share of female labor	Total number of jobs	Share of female labor	Total number of jobs	Share of female labor	Total number of jobs	Share of female labor
Management	2	0%	0	0%	3	0%	**5**	**0%**
Technical expert	13	0%	0	0%	14	7%	**27**	**7%**
Transport	16	0%	5	0%	5	0%	**26**	**0%**
Security guard	19	0%	11	27%	48	2%	**78**	**5%**
Clearing land	10	40%	20	45%	2,868	57%	**2,898**	**56%**
Digging	42	12%	800	100%	3,347	47%	**4,189**	**57%**
Planting	1914	15%	955	96%	3,743	57%	**6,612**	**51%**
Weeding	231	71%	930	98%	4,029	62%	**5,190**	**68%**
Applying agrochemicals	40	0%	13	0%	358	27%	**411**	**24%**
Applying fertilizer	113	29%	880	97%	2,951	60%	**3,944**	**67%**
Harvesting	1090	69%	20	100%	831	52%	**1,941**	**62%**
Other	99	56%	60	42%	528	45%	**687**	**46%**
Total	**3,589**	**36%**	**3,694**	**96%**	**18,725**	**55%**	**26,008**	**58%**

Table 10
Average wages by nature of employment, phase of operation, and types of the land deal based on interviews with former land users.

Type of job	Nature of employment 1 = Salaried employee 2 = Seasonal labor 3 = Not specified	Phase of operation 1 = Development 2 = Operational 3 = Both 4 = Not specified	Job quality	Average wage per day (Lao Kip)			2015 official minimum wage (Lao Kip) (MLSW. 2015)
				Annual crops	Livestock	Perennial crops	
Management	1	3	High	161,000	N/A	92,000	45,000
Technical expert	1	3	High	112,000	N/A	75,000	45,000
Transport	1	3	High	64,000	58,000	96,000	45,000
Security guard	1	3	High	41,000[a]	46,000	36,000[a]	45,000
Clearing land	2	1	Low	38,000[a]	55,000	34,000[a]	45,000
Digging	2	1	Low	28,000 [a]	23,000[a]	58,000	45,000
Planting	2	1	Low	47,000	53,000	43,000[a]	45,000
Weeding	2	3	Low	52,000	41,000[a]	39,000[a]	45,000
Applying agrochemicals	2	3	Low	101,000	60,000	38,000[a]	45,000
Applying fertilizer	2	3	Low	50,000	45,000	35,000[a]	45,000
Harvesting	2	2	Low	41,000[a]	68,000	42,000[a]	45,000
Other	3	4	N/A	38,000[a]	65,000	47,000	45,000

[a] Wage is lower than the 2015 official minimum wage. N/A = Not applicable meaning there is no peasant employed in this type of job, or unspecified type of job.

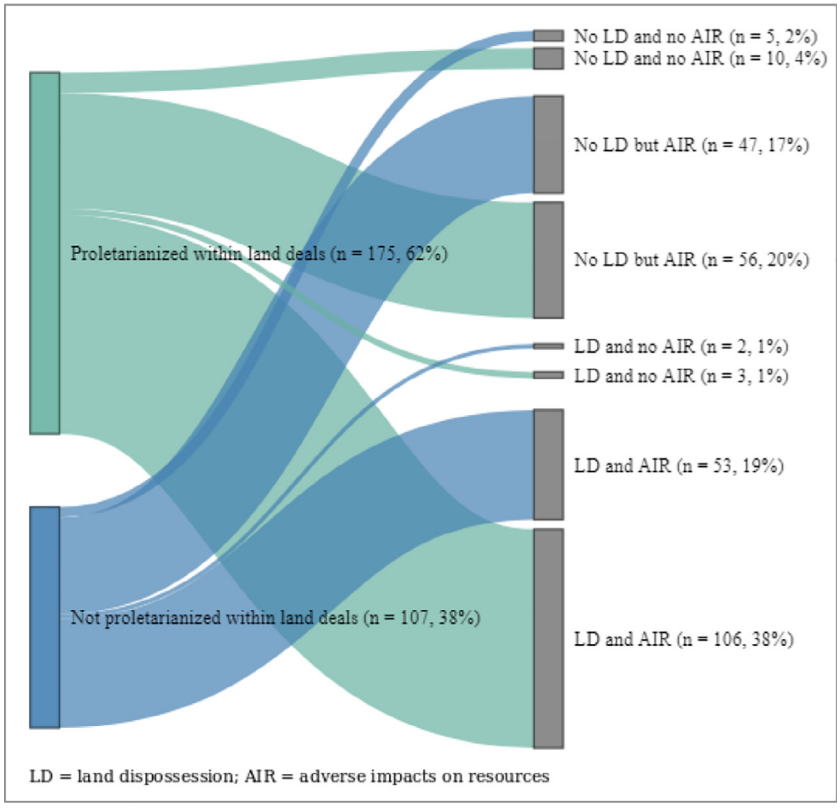

Figure 6. Sampled affected villages classified by proletarianization within land-based investments, land dispossession and change in access to livelihood resources.

sion with limited proletarianization; and iii) adverse incorporation into semi-proletarianization. These processes are further elaborated below.

7.1.1. Dispossession without proletarianization

In more than one-third of our sample, former land users were both expelled from individual and communal land, as well as excluded from wage-labor opportunities created by land-based investments as described in Section 6.3.3. Borras and Franco (2013) refer to this process as 'dispossession without proletarianization' supporting T. M. Li's critique of global land-based investments' relationship with host countries, as requiring their land but not their labor (2011). In many cases, peasants are entirely excluded from wage-labor opportunities from the onset, having never been approached by investors at all (Figure 7). In other cases, investors relied solely on foreign or internal labor, e.g., family

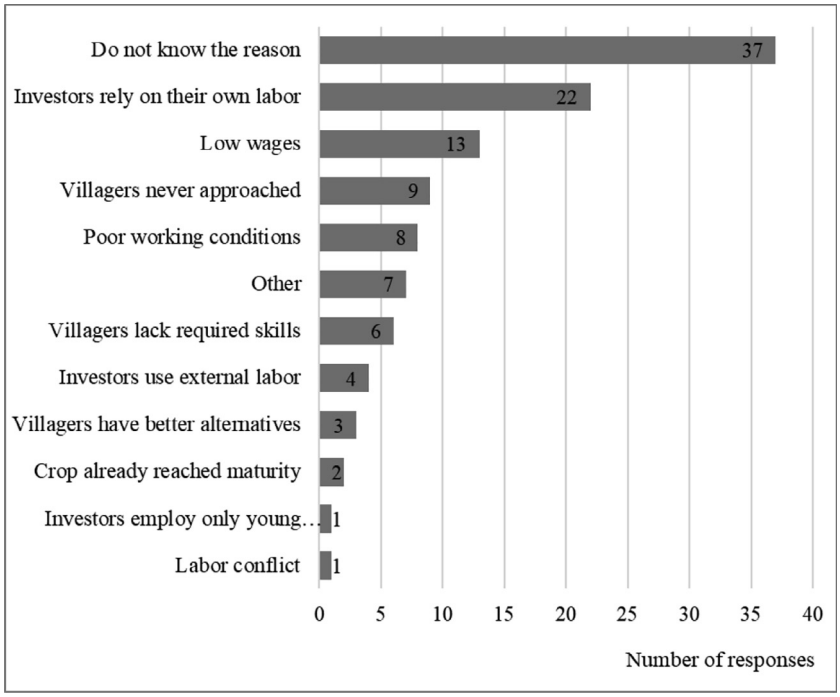

Figure 7. Reasons for employment exclusion or refusal based on interviews with former land users (N = 107).

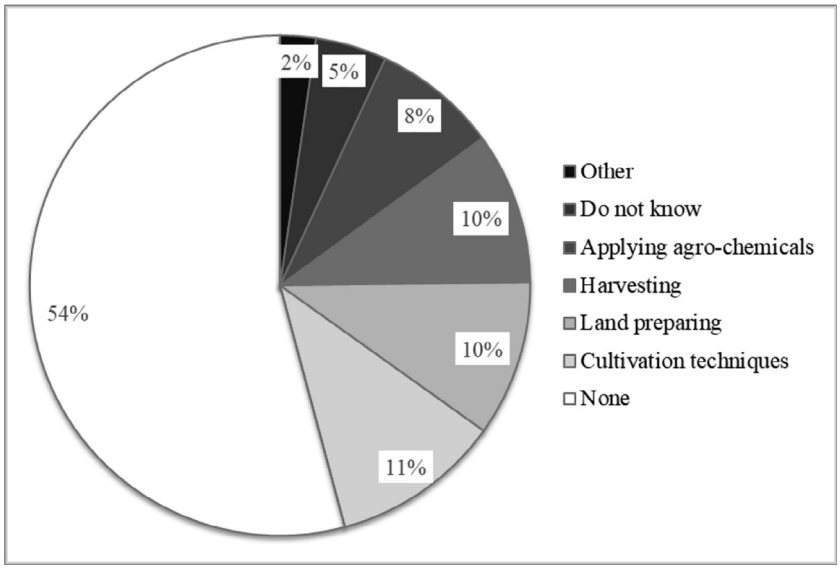

Figure 8. Type of training provided to workers by investors aggregated by share of villages that reported a respective training (N = 282).

members, rather than hiring local labor. This has been observed among small-scale domestic land investments in Lao PDR, which are often run as family businesses (Hett et al., 2020) that rely exclusively on family labor (Lui & Chiu, 1999; Newman & Gertler, 1994). In cases where peasants refused employment, reasons included low wages, poor working conditions, or the availability of more attractive alternatives.

While our data does not provide baseline livelihood profiles of peasants prior to the land-based investments, we see from the overview of the village economies (see 6.1.1) that the rural population continues to rely on land and other resources for their livelihoods and resilience strategies (see also Section 4). The separation of peasants from their land and forest without sufficient alternatives may not only push peasants into precarious conditions, but also contribute to increasing traditional vulnerability in the reproduction of poverty in rural areas and devaluation of agricultural livelihoods, especially in the medium and long term (see Hickey & du Toit, 2007; Hutchison & Wilson, 2020; Li, 2011). Our findings show that these livelihood and resilience strategies are threatened by land-based investments echoing the critique of Haller et al. that land deals are not only the process of farmland grabbing in the Global South but also "resilience grabbing" (2020, p. 2). A large number of villages were excluded from proletarianization, and many households lost significant amounts of individual land to investments; in some cases, the loss exceeded the average smallholder landholding in Lao PDR of 2.4 ha/household (MAF, 2014). The exist-

ing data precluded investigation of how land-based investments affected land use rights, but our findings did show that many land deals caused a significant decrease in the availability of these resources as presented in Figure 5. Heightened constraints to traditional livelihoods as well as exclusion from proletarianization by the land-based investment reduce the overall options available to rural populations, leading to a concurrence of increasing precarity and traditional vulnerability.

7.1.2. Dispossession with limited proletarianization

The second process we observed was dispossession with only limited proletarianization. Although land-based investments created a significant absolute number of jobs, there was only limited engagement in wage-employment by former land users. Employment was more likely in the case of large-scale perennial crop investments as presented in 6.3.1. There are several contributing factors to this process. First is the nature and fulfillment of these created jobs. Within foreign investments, a high proportion of jobs was filled by foreign workers, particularly in positions requiring higher skills and in the operational phase (see 6.2). Foreign investments also resulted in significant land dispossession. This may be due to the skill level of foreign workers out-competing locals, or that investors prefer foreign labor due to the lack of legal protections that may ease exploitation (Kenney-Lazar, 2012; Lewis, Dwyer, Hodkinson, & Waite, 2015; Li, 2011; Oya, 2013b; Pye et al., 2012; Tappe & Nguyen, 2019), although the conditions of migrant workers are beyond the immediate scope of this paper.

Further, while our results confirm suggestions that the number of jobs would increase during the operational phase of a land deal (Cotula, 2014; Deininger & Byerlee, 2011), they further reveal that fewer former land users are employed during this phase compared to the development phase. This may be explained by operational jobs requiring more technical skills, and as noted in Figure 8, skills training was not offered by investors in over half of our sample. Thus, former land users may have been unwilling to accept the remaining low-quality jobs available to them. Our results show that jobs with land-based investments were primarily low wage or seasonal. Relying on these jobs may be a strategy to cope with the immediate losses in the initial years of the investment, referred to by Oya and Pontara as "survival strategies" (2015), but are by no means attractive or even realistic livelihood options in the long run. Former land users may instead turn to more attractive options in the later phase of the investment, such as the expansion of smallholder production or emigration (Andriesse & Phommalath, 2012; Barney, 2012; Manivong et al., 2014; Nanhthavong et al., 2020; Rigg, 2007).

Secondly, characteristics of land-based investments that lead to more land dispossession also correspond to less employment generation. For example, large-scale land deals produced more individual and communal land dispossession than small-scale deals, yet generate less employment. This may be due to greater capital substitution of labor in large-scale deals, such as mechanization, and was observed in particular among land deals in the central and southern regions. Further, while perennial crops have been suggested to require higher labor inputs than annual crops (Deininger & Byerlee, 2011; Nolte & Ostermeier, 2017), this is not supported by our observations. Perennial crop deals result in greater individual and communal land dispossession than other deal types, and interaction between scale and perennial crop investments show a negative effect on the share of peasants engaged in wage-labor with land deals (see Table 8). In Lao PDR, perennial crops are the most prevalent form of land-based investments both in terms of size and number, and are more likely to affect multiple villages, thus posing a significant risk of land dispossession with limited proletarianization to local communities.

7.1.3. Adverse incorporation into semi-proletarianization – Women in particular

Our results show that the former land users who engaged in wage employment were only semi-proletarianized, with no cases of full proletarianization. Those that were proletarianized were primarily employed in low quality, seasonal wage jobs and maintained their traditional livelihoods as smallholders for subsistence or market purposes, as presented in Figure 3, although this is subject to change in the longer term as the proletarianization process continues to develop (see Oya, 2013b). Results from regression analysis indicate that proletarianization is more prevalent where land-based investments caused greater extents of individual land dispossession or in more remote areas. This may be due to two reasons. First, with greater land dispossession, displaced households who did not retain sufficient land to sustain their livelihoods were forced to engage in low-quality wage-labor within the investments to compensate for their lost livelihoods. Second, proletarianization within the land-based investments may be more prevalent in remote areas, due to the limited availability of alternatives (Epprecht et al., 2008; Nanhthavong et al., 2021). This includes alternative employment, such as those more readily available or attractive options in provincial capitals, or prohibitively high costs of clearing previously uncultivated land for agricultural expansion (Nanhthavong et al., 2020; Epprecht, Weber, et al., 2018; MAF, 2014; Mccarthy, Vel, & Afiff, 2012; Oxfam, 2011). Further, the labor force in more remote areas may have lower levels of employment skills, such as lower rates of literacy (LSB, 2016), limiting their ability to engage in other opportunities.

Further, our analysis reveals a gender dimension to these employment dynamics. Women are more likely than men to be involved in precarious wage-labor with land-based investments. Not only do they tend to accept certain jobs, but a higher share of women also enter into low-quality jobs such as seasonal work with lower wages, as elaborated in Table 9 and Table 10. This general trend could be explained by the fact that in Lao PDR, women play an important role in farming and collecting NTFPs for food and income (ADB, World Bank, 2012; Ireson, 2013). When evicted from these resources, the pressure to look for alternative income sources increases. In contrast, men are more likely to travel further distances or temporarily emigrate to take jobs with higher-wages such as in the non-farm sector (see also ADB, World Bank, 2012; FAO, 2018). This reflects an overall trend in Southeast Asia of women being more likely to enter into low-paying jobs due to lack of employable skills and household gender roles, such as child rearing and ensuring food security (Elias, 2020; Joshi, 2018). Further, empirical evidence from other countries suggests that it is easier for investors to exploit and depress wages when hiring women due to comparatively little bargaining power and a low degree of unionization (Behrman et al., 2012; Elson & Pearson, 1981). Female labor may come with the additional advantage to exploit the labor of children who accompany their mothers to their workplace (De Schutter, 2011).

The labor division between women and men in land-based investments is determined by wages rather than physical strength. This contrasts with traditional gendered divisions of labor in Lao PDR and also the prevailing discourse on gender roles (ADB, World Bank, 2012; Douangphachanh, Idrus, Phommavong, & Jaquet, 2021). For instance, heavy manual jobs such as land clearing and digging holes for crop planting are traditionally carried out by men. However, our data show that more women are employed in these functions. This is an impressive illustration of Boserup's classic argument that the gendered division of labor in agricultural production depends on ideology and power relations, rather than on "objective" criteria such as physical strength (Boserup, 1970).

While compensation for high-skilled labor in our sample was much higher than the official 2015 minimum wages in Lao PDR, former land users rarely benefit from these positions, as they are primarily filled by foreign workers. On the contrary, local people were often paid wages below the minimum wage. While further investigation is needed to compare between the wages paid by land-based investment and returns from smallholder agricultural production, low wages were one of the most common reasons given for refusal of employment with land-based investments (Figure 7). This finding is in stark contrast to the notion that land-based investments will bring employment opportunities and higher wages to rural areas (Deininger & Byerlee, 2011). The release of surplus labor from traditional livelihoods and the addition of immigrant labor places downward pressure on already low, rural wages (Harvey, 2003; McCarthy, 2010; Stoler, 1995). This resonates with the classic Marxian framing of this process as an exploitation of surplus labor for value addition in capitalist accumulation (Cleaver, 2001).

7.2. Potential measures to minimize precarization and maximize benefits for peasants

In order to evaluate potential measures, policy or otherwise, that may minimize the precarization of rural livelihoods and maximize benefits of land-based investments for peasants for both men and women, we turn to Standing (2011) criteria for labor security. These include labor market security, employment security, job security, work security, skills reproduction security, income security, and representation security. While there has been some debate on the precision of these criteria (Mosoetsa, Stillerman, & Tilly, 2016), it is nonetheless evident that the jobs and labor market created by land-based investments are largely unlikely to provide labor security and are thus inherently precarious in their nature. Further, it must be acknowledged that precarity's inverse, "standard employment," conceptualized as the post-World War II era, Fordist structure of production and secure employment in high income countries, has never existed in Lao PDR's developing and agrarian context. Indeed, in this sense, standard employment is a historical and geographic exception, and the debate on the "feminization of labor" has partly tried to capture exactly this (Bhattacharya & Kesar, 2020; Bieri, 2014; Chant, 2014). In Lao PDR, the relatively low level of industrialization has called for few workers. Historically, the majority of workers were comprised of civil servants and employees of state-owned enterprises (SOEs), expanding only minimally in recent periods to include scant numbers of workers from (primarily garment) manufacturing and mining sectors (Fry, 2008) during a relatively late state in industrial history, when standard regulations of jobs were already starting to be dissolved as a result of international capital investments searching for the cheapest possible labor. Further, women continue to spend a significant amount of their time a day on unpaid domestic work (Sripasert & Nguyen, 2020). Although the number of workers is increasing in Lao PDR, it is unsurprising that the labor regulatory framework and infrastructure are not sufficiently developed to buffer against the negative effects of employment creation in the context of land-based investments, let alone their gendered impacts, and would certainly not meet the criteria to ensure standard employment in a Western European sense.

Even so, the concept of precarity provides a useful framework for disaggregating and examining the components of secure and insecure employment and the varying degrees to which regulations may support this security. With a view to precarity, employment outcomes of land-based investments appear in multiple dimensions, not least also revealing their gendered aspects that were additionally highlighted through our qualitative inquiries. Access to land, namely for women, and non-market related reproductive or care-activities are major contributors to resilience – thus reducing vulnerability and, as a matter of fact, precarity of the entire household. By analyzing outcomes for women and men separately, the gendered functions within the risk-minimizing economic strategy and the mechanisms through which they might be impeded are illuminated, shedding a light on women's particular exposure as their economic role in the household is subject to high pressure. This is instructive for potential measures to improve employment opportunities for local populations, including the need to factor gender differences into preventing adverse outcomes for one or the other. Thus, within the context of land-based investments, the task at hand is to minimize precarization and particularly, to avoid the concurrence of increasing precarity and traditional vulnerability – a dynamic which is particularly harmful to women, as it increases their work burden to an unbearable degree but is often not capture, as women's work in providing household food security and care work often remains underreported in standard data. Additionally, given the inevitability of precarity emerging within land-based investments, it is also necessary to consider alternative investment models. We propose measures to these two ends in the subsequent sub-sections.

7.2.1. Minimizing precarization and enhancing benefits for peasants

Many aspects of Standing's criteria for labor security are stipulated in the Lao Labor Law (GoL, 2013). These include: minimum wages for income security; hiring and firing regulations, requirements for employment contracts, and protection against arbitrary dismissal for employment security; occupational hazard, health, and safety regulations for work security; and caps on the hire of foreign labor for job security. Yet, as evident by the consistent violation of these regulations by the investigated land investments, particularly the payment of sub-minimum wages and excess of foreign labor, these regulations are not well implemented or enforced. Improving enforcement of these regulations presents a challenge, particularly given the minimal resources available to local administrative bodies. Nonetheless, one promising measure may be ensuring awareness of labor regulations by sub-national administrative bodies, such as provincial and district authorities, and their increased participation in the approval and monitoring processes of land-based investments. Evidence from our study suggests that locally managed investment projects are more likely to adhere to the parameters of the investment agreement and labor regulations. Particular attention should be paid to aspects demonstrated to be frequently violated, including minimum wages, preferential hire of local labor before foreign labor, and provision of formalized employment contracts. This particularly accounts for vulnerable groups such as women who are more likely to depend on precarious wage-labor with land-based investments due to a lack of means to engage in other opportunities outside the agriculture sector, as presented in 6.3.2. Formalization of employment would also potentially increase state revenue through income taxes (Elveren, 2010; Gerard & Bal, 2020).

In cases where peasants are excluded from employment due to lack of necessary skills, the provision of skills training and contributions to long-term human capital development would contribute to skills reproduction security. Immediately applicable skills, such as tapping of rubber trees for latex harvesting, could be provided directly by investors and could be a provision of investment agreements, or through government-sponsored vocational training and certification. For more complex skills and longer-term human resource investments, investors can support younger generations and students from the affected communities to enroll in relevant courses at technical colleges. This model has been implemented by some investors in the Lao mining sector, such as Lane Xang Mineral Limited, and Phu Bia Mining (LXML,

2019; PanAust, 2021). For all of these suggested interventions, a gender-responsive format will have to be developed so as not to exacerbate existing gender inequalities.

One aspect of labor security that is notably absent within the Lao labor context is the aspect of representation security, which Standing (2011, P. 10) defines as, "possessing a collective voice in the [labor] market, through, for example, independent trade unions." The only trade union body in Lao PDR, the Lao Federation of Trade Unions (LFTU) has been characterized as an official apparatus of the party-state rather than an independent organization dedicated to the representation and advancement of workers' rights (Fry, 2008, 2012; Stuart-Fox, 2008). Membership of the LFTU has historically been dominated by civil servants and employees of SOEs, and there has been little private sector recruitment in recent periods (Fry, 2008). Further, while avenues for dispute settlement are delineated in the Labor Law (GoL, 2013), official channels are often out of reach and prohibitively costly to remote communities. In this absence, community education and awareness raising of labor laws and workers' rights is an important step towards representation and collective bargaining. Due to the remoteness and often agricultural nature of many of the communities affected by land-based investments, grassroots approaches and use of existing agricultural groups and cooperatives (GoL, 2020) may serve as a suitable infrastructure for community awareness raising. Additionally, sub-national units of the LFTU should be strengthened in order to support the emerging rural workforce.

7.2.2. Context-based and alternative investment approaches

Despite these efforts, there are aspects of employment generated by land-based investments that are inherently precarious. The majority of jobs created by land-based investments are seasonal and temporary as they are limited to the development phase of the investment life cycle, and thus do not provide either income or job security. Further, few members of the affected communities benefit from these opportunities, while there were many cases of significant land and resource dispossession. In these cases where there is a concurrence of precarization and increasing traditional vulnerability, it is essential to protect and maintain land-use rights and access to communal resources, particularly for women, that form local resilience strategies. The exemplary scenarios of semi-proletarianization in our sample were cases where households who did experience dispossession still maintained enough land to continue agricultural production and were able to supplement their incomes through wage-employment with land-based investments. This indicates the need to avoid total dispossession of households, particularly in remote areas where alternative livelihoods options are limited. Additionally, dispossession should also be avoided for households that are particularly vulnerable or have limited means to adapt to the economic transition, such as female-headed households and the elderly (Rigg, Salamanca, Phongsiri, & Sripun, 2018).

Further, it is clear that land-based investments alone cannot provide labor market security to local communities. The density of jobs created by the land-based investments is relatively small, and the majority are seasonal jobs provided during the development phase as presented in 6.2. Our results particularly caution against large-scale, capital-intensive land-based investments that result in large degrees of dispossession yet generate low levels of employment. Smaller investments are more likely to have better outcomes in terms of employment for local communities. Additionally, alternative investment models and the development of up- and down-stream economic activities that could potentially generate larger amounts of employment and less dispossession should be considered. These include, for example, smallholder engagement in commodity value chains (Cramb, Manivong, Newby, Sothorn, & Sibat, 2017) and outgrower schemes alongside concessions, in which peasants maintain their land and also potentially benefit from the partnership in production (see De Schutter, 2011). A large body of study has been dedicated to smallholder-led avenues, documenting both positive effects (e.g. Herrmann & Grote, 2015; Herrmann, 2017; Ahmed, Abubakari, & Gasparatos, 2019; Friis, 2013) as well as negative effects (e.g. German, Schoneveld, & Gumbo, 2011; Meemken & Bellemare, 2020), and the need for context-specific consideration. Further, developing the agro-processing industry can add value to existing agricultural products as well as potentially create local jobs (see Chitonge, 2021; Owoo & Lambon-Quayefio, 2018; Wilkinson & Rocha, 2009). These developments would also contribute to create spill-lovers into adjacent services and off- and non-farm sectors (Maertens & Fabry, 2019; Watanabe, Jinji, & Kurihara, 2009; Wilkinson & Rocha, 2009).

This illustrates a classic trade-off between rapid economic growth through large-scale, capital-intensive agricultural production (Collier & Dercon, 2014; World Bank, 2008) and more incremental growth through labor-intensive approaches. The latter potentially generates more employment to the benefit of a greater proportion of the rural population, including women, thus enhancing human well-being and reducing poverty (see Carroll, 2020). The results and impacts of these developments are, of course, not uniform and require scrutiny, e.g. through econometric methods and counterfactual comparison, but also contextualization via in-depth qualitative approaches in the Lao setting.

8. Conclusion

This paper explores the effects of land-based investments for agricultural purposes on rural employment, focusing on their contribution to the transformation from resource- to wage-based livelihoods in rural areas. The paper draws insights from a recent, unique national dataset on land concessions in Lao PDR containing key data on the main characteristics, implementation processes, and impacts, including land and resource dispossession, and employment across socio-ecological contexts. Our results reveal varying degrees of land and resource dispossession and proletarianization within land-based investments experienced by former land users, highlighting also gendered effects. Rather than contributing to rural transformations from resource- to wage-based livelihoods, in the majority of cases, land-based investments transformed property and labor relations in a manner that pushed peasants into precarious conditions or contributed to increasing precarity alongside with increasing traditional vulnerability. Three processes of proletarianization were observed: i). dispossession without proletarianization; ii). dispossession with only limited proletarianization; and iii). adverse incorporation into semi-proletarianization. These processes are especially prevalent in the cases of large-scale, capital-intensive land deals, such as perennial crops. In our sample, large-scale investments triggered greater individual and communal land dispossession than in small-scale deals, employed a significant proportion of foreign workers, and were located in remote areas where alternative development opportunities are scarce. Women are more vulnerable to downgrading of livelihood opportunities compared to men, with potentially devastating effects to their economic function and thus social status in the community. This is due to intra-household divisions of labor, ideological gender roles that may inhibit women's mobility, their skill level, and lack of means to engage in higher quality jobs outside of land-based investments.

We conclude that promoting land-based investments as a pathway of rural development, especially to drive the transformation from resource- to wage-based livelihoods, is not being effective in the absence of development opportunities in other sectors and

furthermore can exacerbate existing forms of vulnerability. Though land-based investments may become an important driver for agricultural growth, market integration, and trade in developing countries, these investments do not benefit peasants at large, and risk augmenting an often landless, surplus labor force in rural areas. These processes severely threaten the host countries' ability to achieve the 2030 Agenda for sustainable development.

Our findings highlight the need for policy intervention to minimize precarization and avoid the concurrence of increasing precarity and traditional vulnerability in order to maximize benefits for peasants – both men and women – and thus contribute towards positive rural transformation. It is urgent to establish social safety nets to ease the burden of transitions already underway, particularly for vulnerable groups less able to adapt their livelihoods, and to enhance the enforcement of government regulations in place to protect and promote rural laborers. Larger rural transformation will require further employment generation within and beyond agriculture to absorb surplus labor displaced by land-based investments, as well as encouraging employment and technology upgrading, such as through outgrower schemes and agro-processing.

While our analysis has focused on employment directly generated by land-based investments and associated processes, future research is still needed to assess the impacts of indirect employment generation and spillovers from land-based investments, as well as the conditions of foreign migrant workers. Understanding the nature and transformations of rural employment is particularly urgent in light of the furthering regional integration, such as through the ASEAN Economic Community (AEC), which provides the basis for free movement of goods, capital, and labor, and presents significant potential economic and social transformations for Lao PDR and other countries in the region.

Declaration of Competing Interest

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

Appendix

Table A1
Company interviews by type of land-based investments.

Type of commodity	Number of companies	Developed area (ha)	Origin of investors			Phase of operation	
			Domestic (ha[a])	Foreign (ha[a])	Joint venture (ha[a])	Development phase (ha[a])	Operational phase (ha[a])
Annual crops	15	27,252	5 (412)	8 (26,647)	2 (193)	4 (251)	11 (27,001)
Livestock	34	4808	31 (4158)	3 (650)	0	21 (3234)	13 (1574)
Perennial crops	69	98,465	24 (3277)	37 (73,772)	8 (21,416)	24 (28,446)	45 (98,465)
Total	**118**	**130,525**	**60 (7847)**	**48 (101,069)**	**10 (21,609)**	**49 (31,931)**	**69 (98,594)**

Source: 2017 LCI. Table by authors.
[a] Developed area refers to the area has been developed up to the time of assessment.

Table B1
Number of deals and developed area by types of land-based investments included in the analysis.

Type of commodity	Number of sampled villages	Number of deals	Developed area (ha)	Origin of investors			Phase of operation	
				Domestic (ha[a])	Foreign (ha[a])	Joint venture (ha[a])	Development phase (ha[a])	Operational phase (ha[a])
Annual crop	**56**	**33**	**33,823**	**16 (1119)**	**13 (27,237)**	**7** (228)	**12 (6025)**	**32 (28,737)**
Sugarcane	25	4	26,315	1 (148)	3 (26,168)	0	0	4 (26,315)
Cassava	5	5	393	4 (293)	1 (100)	0	1 (N/A)	4 (393)
Other	26	24	7115	11 (678)	9 (969)	4 (228)	9 (1875)	15 (1254)
Livestock	**44**	**41**	**6871**	**36 (4314)**	**8 (2556)**	**0**	**23 (3234)**	**18 (3637)**
Cattle	39	36	6636	33 (4129)	3 (2506)	0	23 (3234)	13 (3402)
Other	5	5	235	3 (185)	5 (50)	0	0	5 (235)
Perennial crop	**182**	**90**	**125,679**	**30 (5322)**	**49 (97,356)**	**8 (22,731**	**31 (45,968)**	**48 (78,771)**
Rubber	115	57	76,953	22 (4413)	33 (71,509)	2 (1031)	18 (19,739)	39 (57,214)
Eucalyptus or acacia	44	12	46,609	2 (159)	6 (24,767)	4 (21,683)	8 (25,389)	4 (21,220)
Agarwood	7	5	798	3 (638)	1 (143)	1 (17)	3 (681)	2 (117)
Coffee	7	7	591	1 (35)	3 (286)	3 (270)	2 (163)	5 (428)
Banana	4	4	348	1 (67)	3 (281)	0	0	4 (348)
Other	5	5	380	1 (10)	3 (370)	1 (N/A)	2 (160)	3 (220)
Total	**282**	**164**	**166,373**	**82 (10,755)**	**70 (127,149)**	**15 (23,229)**	**66 (55,227)**	**98 (111,145)**

Source: 2017 LCI. Table by authors.
[a] Developed area refers to the area has been developed up to the time of assessment. N/A = No data available.

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