

# Rice and Remittances: Crop Intensification Versus Labour Migration in Southern Laos

Vongpaphane Manivong · Rob Cramb · Jonathan Newby

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**Abstract** Despite being a low-income, agriculture-based country with a subsistence orientation, Laos is in the early stages of a major economic transformation whereby rural households have been experiencing rapid change in their farming and livelihood systems. Some households have begun to engage in semi-commercial farming while others have adopted labour-oriented or migration-oriented livelihood strategies. This paper explores how rural households in six villages in the lowlands of Champasak Province in southern Laos make a living. These villages vary in their access to irrigation and to markets. Nevertheless, in all villages, long-term migration of younger household members to neighbouring Thailand has come to play a large role in household livelihood strategies. In some cases this is necessary to meet the household's consumption requirements; in most, it is part of a diversified strategy in which rice farming still plays a significant role, though still largely for subsistence. The paper examines some of the issues involved in attempting to promote intensive, market-oriented rice farming in a context of an emerging on-farm labour shortage combined with an increasing flow of remittances from migrant family members.

**Keywords** Migration · Remittances · Rice intensification · Livelihood strategy · Rural poverty · Laos

## Introduction

The intensification of rice production has long been a central goal of Southeast Asian governments, though not necessarily of Southeast Asian farmers. As James Scott (2009) has demonstrated, the classical states of mainland Southeast Asia, such as Pagan, Ayutthaya, Angkor, and Champa, were 'paddy states', dependent on gathering and holding onto a concentrated population of lowland rice farmers in strategic locations. Lowland rice cultivation supported the maximum population in a given area in a sedentary mode of production that was both 'legible' to and within easy reach of the state apparatus, facilitating the taxing of rice surpluses and the mobilisation of labour for state-building and warfare. However, the availability of 'non-state spaces', especially in the forested uplands, provided a refuge for those seeking to escape the impositions of lowland states. This gave rise to an entrenched prejudice on the part of state functionaries in favour of 'civilised' lowland rice growers, who became the ethnic majority, and against 'primitive' upland farmers of various ethnic minorities.

There has thus been a long-term, historical tension between intensification of rice production in lowland plains on the one hand and migration in pursuit of alternative livelihoods on the other. This tension has carried through into the contemporary era. Modern Southeast Asian states are still 'rice-centric' in their policies for food security and are lured by the promise of 'green revolution' technologies (high-yielding varieties, inorganic fertilisers, irrigation) to pursue more labour-intensive production regimes, even in circumstances where farm labour has been, or has become, due to urbanisation, a relatively scarce resource. The push for rice self-sufficiency has been accentuated by the recent instability in global markets for food grains. At the same time, while the refuge provided by 'non-state spaces' has been virtually eliminated by the reach and power of the modern nation-state, economic

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V. Manivong (✉)  
Agriculture and Forestry Policy Research Centre, National  
Agriculture and Forestry Research Institute, Vientiane, Laos  
e-mail: v.manivong@gmail.com

R. Cramb · J. Newby  
School of Agriculture and Food Sciences, The University of  
Queensland, St Lucia, Australia

development in the region has meant that rural households now have a wider range of alternative livelihoods, including both in-situ production of non-rice crops, trees, and livestock for domestic and regional markets, and migration to urban centres and internationally to take up wage employment (Ellis 2000; World Bank 2007).

In this paper we examine the tension between the government policy of rice intensification in Lao PDR (Laos) and the rapidly emerging trend towards livelihood diversification, particularly through international migration. Following Boserup, the term ‘intensification’ is used here to encompass both greater use of labour and other inputs to increase per-hectare yields and increased utilisation of land (notably through irrigated double cropping) to increase annual production from the available area (that is, increased cropping intensity) (Boserup 1965). In other words, the term is used to indicate a ‘land-saving’ rather than a ‘labour-saving’ path of technical change (Hayami and Ruttan 1985). This is also the sense in which the term is used by policymakers in Laos.

Laos is categorised as one of the Least Developed Countries with a Gross Domestic Product (GDP) per capita in 2007 of USD 700 and a ranking of 130 out of 177 in the International Human Development Index (MPI and UNDP 2009). Over 70 % of the population lives in rural areas and largely depends on subsistence rice agriculture (National Statistics Centre 2005). However, the agricultural sector has been undergoing a major transition in recent years. Some households are moving into what the World Bank (2007) characterises as ‘market-oriented farming’ (more than 50 % of farm output sold) while other households have adopted livelihood strategies that are ‘labour-oriented’ (more than 75 % of income from wage or non-farm employment) or ‘migration-oriented’ (more than 75 % of income from transfers such as remittances). Others can be considered ‘diversified households’ that combine various activities including farming, non-farm employment, and migration (with no one of these contributing more than 75 % of total income) (World Bank 2007:75–76). The World Bank considers these are all potential ‘pathways out of poverty’ for subsistence-oriented rural households.

Though the national economy has been growing and the incidence of poverty has been reduced from 46 % in 1993 to 27 % in 2008, regional inequalities have increased (MPI and UNDP 2009). Many areas have chronic rice deficits even though rice self-sufficiency has reportedly been achieved at the national level (World Food Programme 2007). Concerned with the problem of rice insufficiency, the Government of Laos (GoL) is focusing on increasing the productivity of rice-based farming systems in the lowlands through the use of high-yielding varieties, increased use of fertiliser, improved management practices, and increased cropping intensity (measures that have been successful in the densely-populated rice bowls of neighbouring Vietnam). The emphasis is on irrigated

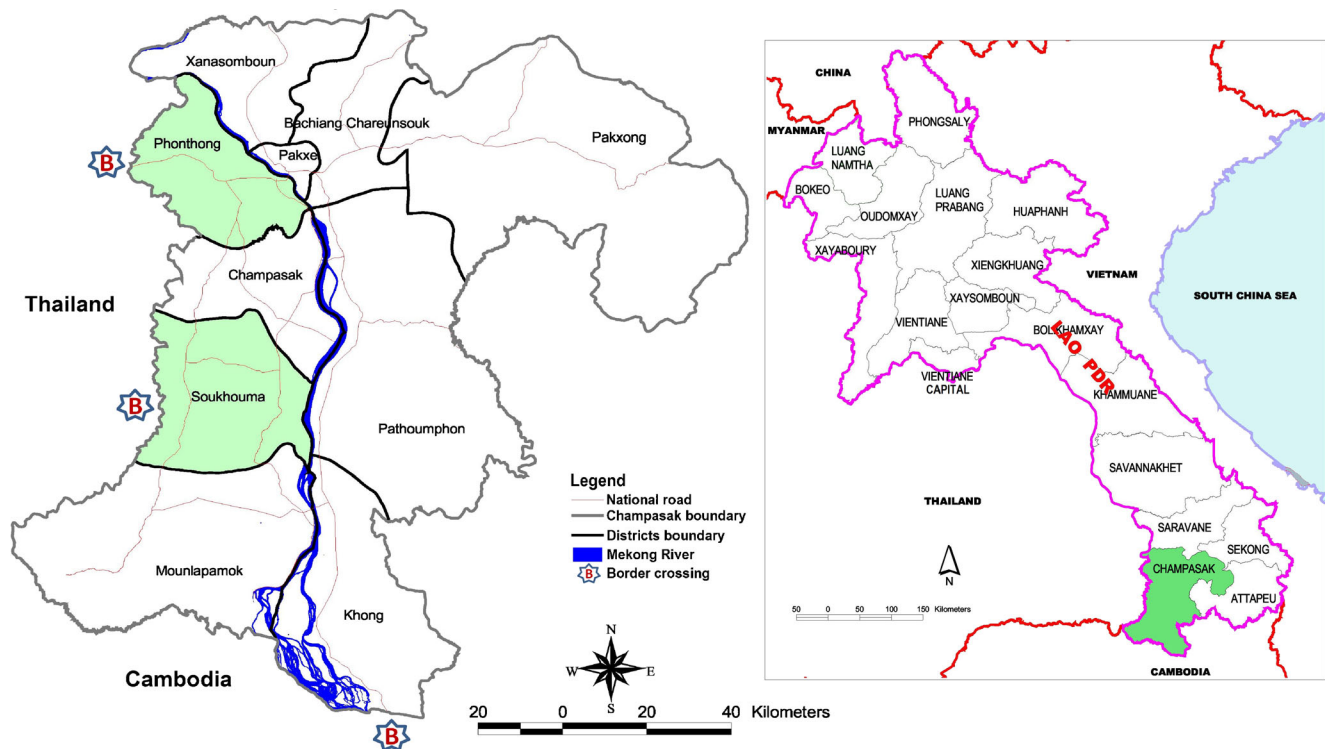
districts but increased yield and output targets have also been set for rainfed lowland areas, which make up around 70 % of the total rice area—only 13 % of the total area is irrigated (Eliste and Santos 2012).

However, in recent years increasing numbers of farm workers from southern Laos have migrated to work in Thailand. Economic growth and industrialisation in Thailand have increased employment opportunities, attracting labour from rural areas as well as the neighbouring countries of Myanmar, Laos, and Cambodia (Thongyou and Ayuwat 2005), while skilled Thai workers have migrated temporarily to work in higher-paid employment in other countries, especially in the Middle East (Rigg and Salamanca 2011). The influx of migrant labour from Laos to Thailand has resulted from fewer employment opportunities and lower relative wage rates in Laos (Deelen and Vasuprasat 2010). Labour migrants draw on their social networks of relatives, friends, and other villagers with experience of working in Thailand to find jobs, accelerating the flow of workers to Thailand (Thongyou and Ayuwat 2005). The key issue, then, is whether the intensification of rice production, as envisaged by the GoL, can provide the returns to labour to compete with the alternative employment opportunities in Thailand.

The paper explores the determinants and impacts of labour- and migration-oriented livelihood strategies in Champasak Province, a major rice-growing province in southern Laos (and once an agrarian kingdom or ‘paddy state’ in its own right) that is also well-known as a source of migrant labour to neighbouring Thailand (Fig. 1). We address two key research questions: What are the implications of labour migration for the GoL’s rice intensification strategy in this region? Is labour migration a ‘pathway out of poverty’ for rural households in the study area (as envisaged by the World Bank) or just a survival strategy?

## Labour Migration and Rural Livelihoods

Migration has long been one of the livelihood strategies available to rural households, often combined with other strategies (such as farm production, agricultural wage employment, or non-agricultural work), thus contributing to livelihood diversification and risk mitigation. Ellis (2000) classifies labour migration into four types. ‘Seasonal migration’ refers to temporary migration in response to the agricultural calendar, with individuals normally moving out during the lean period and returning during the peak period. ‘Circular migration’ refers also to temporary migration but occurring in response to the demand for labour and not necessarily associated with agricultural seasons. ‘Permanent migration’ (rural–urban migration) is when household members move to work in urban areas for a long time and transfer money home (remittances). ‘International migration’ involves household



**Fig. 1** Location of study districts in Champasak Province

members migrating either temporarily or permanently to work in foreign countries.

There are many reasons behind the movement of rural labour, and the implications for poverty are complex. Ellis (2000) highlights that migration can occur due to ‘pull’ or ‘push’ factors, or a combination of both. Differences in income are the major pull factors, while the risks to household food security and incomes associated with seasonal variation in production, market failures, resource scarcity, and natural disasters are the key push factors. The relative importance of these two sets of factors varies among regions and individual households. The World Bank (2007) argues that labour migration occurs mainly in response to ‘income gaps between the origin and the destination’, that is, a pull factor. Similarly, Rigg (2007) suggests the main cause of labour migration in Southeast Asia is the opportunity for higher income or higher wage rates and the ability to transfer money home. However, Li (2009) cautions that labour migration may not be a ‘pathway out of poverty’ but a temporary stop-gap for the extreme poor, who find themselves ejected when they become surplus to the requirements of their employers in the urban industrial sector (e.g., because of an economic downturn), without necessarily having the option simply to return to their home villages and resume subsistence farming, particularly in densely populated regions of Indonesia where rights to farming land are fiercely contested. Likewise, in analysing youth migration from central Laos to Thailand, Barney (2012)

argues that decisions to migrate cannot be disconnected from broader issues of agrarian change. For example, the allocation of large areas of village land to powerful outsiders effectively coerces members of dispossessed households to migrate as a survival strategy.

Labour migration has affected rural livelihoods and the agricultural sector in various ways. A crucial issue is the linkage between migration and agricultural intensification (Scoones 2009). Out-migration causes a shortage of labour in the agricultural sector when rural people, especially young workers, go to work in non-farm activities in other areas of the country or even in other countries (Rigg 2007). According to Rigg (2005), even apart from migration, many villages in Southeast Asian countries such as Thailand, Indonesia, the Philippines, and Malaysia have become ‘de-agrarianised’ in that most residents earn the greater proportion of their income through non-agricultural employment in nearby towns (while still maintaining crop and livestock production as subsidiary activities). Migration and non-farm employment in general may thus limit agricultural intensification, in the sense defined earlier, which normally requires increased labour input over the farming year.

On the other hand, the remittances from migrant family members can help reduce the capital and labour constraints of poor households. Migration may therefore encourage agricultural intensification, or at least help to maintain output levels with less family labour, if remittances can be used to hire

labour or purchase agricultural inputs such as seeds, fertilisers, livestock, and labour-saving equipment (McDowell and de Haan 1997). Rigg (2007) and Deelen and Vasuprasat (2010) found that some households who receive remittances are able to invest more in agricultural production or even engage in new investment activities such as trading, contracting, or other rural businesses, especially when migrant family members return home with skills and money. However, one of the key issues is whether remittances are available for agricultural investment or are needed for buying food and other consumption needs to meet the shortfall in the household's income and food supply. Moreover, Barney (2012) has pointed out that remittances can enable some farmers in Laos to plant up part of the village commons with permanent crops such as rubber, thereby creating hardship for other households without the necessary capital.

In countries experiencing labour mobility, the labour shortage in agricultural production can sometimes be filled with labour from more remote areas within the country where wage rates are lower. The labour shortage can also lead to absorbing labour from other countries. For example, Malaysia obtains workers for both industrial and agricultural employment from countries such as Indonesia, Thailand, and Bangladesh while, as noted already, Thailand obtains cheap labour from Laos, Cambodia, and Myanmar (Rigg 2006). It may be that outmigration from more productive areas of Laos, namely the irrigated and partly-irrigated lowlands of southern Laos, will draw in labour from poorer areas, such as the rainfed lowlands or remote uplands.

Over time, labour migration leads to change in the demographic structure of rural households such that old people are left with responsibility for farming activities. This has already occurred in East Asia—more than half the agricultural labour-force was aged over 65 in Japan in 2000 (Rigg 2006) and 39 % of the farm population was aged over 60 in South Korea in 2005 (Gurung *et al.* 2009). In Southeast Asia this pattern is appearing in countries like Thailand (Rigg and Salamanca 2011). Those remaining farmers have to adjust their farming patterns by hiring additional labour or applying labour-saving production technology, especially farm machinery. Another scenario is that they may simply produce less or even leave their land unproductive. Rigg (2006) cites Bangladesh as an example of farmers' adaptation to the labour shortage where the availability of remittances from rural–urban (including international) labour migration has created the capability to use more farm machinery and increase the productivity of agricultural labour.

The movement of people from farm to non-farm employment and from rural to urban areas is occurring in Laos, but the process has not developed as rapidly as in other transforming countries. All types of migration listed by Ellis (2000)—seasonal, circular, rural–urban, and international—are found in Laos, and sometimes the movement falls into

more than one category. People sometimes go to work off-farm in other areas within the country on a seasonal basis, e.g., in large rubber plantations, and come back to their villages to help their families in agricultural activities during peak periods (Baird 2009; Kenney-Lazar 2010). Some younger household members go for longer periods to work in towns, sending money home. Phouxay and Tollefsen (2011) report that more young rural people, an increasing proportion of whom are women, go to work in large towns, especially Vientiane Capital, where more jobs are available such as in garment factories or the services sector.

Moreover, as noted, many young workers cross the border to work in neighbouring Thailand for extended periods in agriculture, construction, transport, and other sectors (Rigg 2007), and this is now by far the most important type of labour migration. According to a report by MPI and UNDP (2009), there could be up to 300,000 migrant workers from Laos in Thailand—nearly 8 % of the Lao labour force. Most migrant workers leave Laos illegally (less than 5 % are registered) but more than half then register with the authorities in Thailand as the registration procedures in Laos are stricter and more expensive than in Thailand. Though most Lao workers thus have legal status in Thailand, it seems clear from migrant testimonies that they are vulnerable to serious exploitation while living and working there (Barney 2012).

Now that most labour migration in Laos is on a long-term basis, including both rural–urban and cross-border migration, there is a shortage of labour in rural communities, especially during the peak seasons of planting and harvesting. This has pushed up the rural wage rate in Laos (e.g., in Chamapsak, farmers reported a wage of LAK 25,000 [USD 3.10] per day in 2008 and LAK 50,000 [USD 6.20] per day in 2012). Labour migration, however, has also given positive returns to the economy. The report by MPI and UNDP (2009) revealed that remittances from overseas Lao workers, mainly in Thailand, contributed nearly 7 % of GDP in 2008. According to Rigg (2007), the main reason for labour migration in Laos, as in other Southeast Asian nations, is the opportunity of receiving higher wages and sending money back to support rural families.

## The Study Area

The paper draws on a larger study of rural households in Champasak Province in southern Laos, where market-oriented, labour-oriented, migration-oriented, and diversified livelihood strategies are all evident (Fig. 1). Rice production is the main farming activity for almost all farmers in the province. Rice in the lowlands is grown in both rainfed conditions in the wet season (May to November) and where the necessary infrastructure is available in irrigated conditions in the dry season (December to April). Glutinous rice (the preferred



staple) is grown more than non-glutinous rice. Rice is planted primarily for household consumption, but the surplus is sold. A variety of non-rice crops is grown in small home gardens. Villages located along the Mekong River or its tributaries also grow maize, vegetables, and other crops in river-bank gardens as the water levels recede in the dry season. Some farmers in irrigated areas grow non-rice crops in part of their rice fields in the dry season. A proportion of these crops are consumed by the household while the rest is sold.

Livestock is one of the major sources of household income in the province. Large ruminants, especially cattle and buffalo, also play a vital role as a store of wealth for the household; they are sold when there is an urgent need for cash. These large livestock used to provide draught power for land preparation but are now being widely replaced by two-wheeled tractors. Small livestock such as pigs and poultry are raised for household consumption, but sometimes for sale as well. As the province is drained by the Mekong River and its tributaries, fishing is widely practised and provides a crucial source of protein for the household as well as a source of income.

Rural households in Champasak Province also collect timber and non-timber forest products (NTFPs) such as bamboo shoots, mushrooms, and wild vegetables, both for direct consumption and sale. Hunting of aquatic and wild animals such as frogs and monitor lizards, porcupines, or deer is also practised. Handicrafts such as baskets, mats, and woven silk and cotton textiles are well-known products in the province. Raw materials for making baskets, such as rattan and bamboo, can be collected from the forest. Sale of handicraft products provides additional cash income to many households.

While rural households in Champasak Province typically still grow rice as their main livelihood activity, their livelihoods have become increasingly diversified as the economy of the province develops and opportunities for off-farm and non-farm employment increase. Young people seek non-farm employment in towns or in neighbouring Thailand, motivated mainly by the prospect of greater employment opportunities and higher wages.

Two districts in the province were selected as the study sites. Soukhouma represents remote and poor districts while Phonthong represents more accessible and better-off districts; it is close to the provincial capital, Pakxe. Both districts have border checkpoints with Thailand. The districts can each be classified into three distinct agro-economic zones, depending on access to markets and to water for irrigation. Villages in Zone 1, adjacent to the Mekong, have good market access and an irrigation system capable of supporting rice or other crops in the dry season. Villages in Zone 2, in a band to the south-west of Zone 1 in each district, have reasonable market access and can irrigate crops to some degree by pumping directly from streams that flow into the Mekong (as well as from ponds and groundwater). Villages in Zone 3, further to the south-west, have poor road access and no access to supplementary irrigation. In Soukhama, Zone 3 abuts a major

protected area that stretches from the middle of the district west to the Thai border (Fig. 1).

The research design involved selecting one village from each zone in each of the two districts, making a total of six study villages. The codes representing the districts and villages used throughout the paper are shown in Table 1. With approval from provincial, district, and village authorities, a single-visit household survey was undertaken in May 2011 in these six villages. Thirty households were selected at random from each village, for a total of 180 respondents. This was followed by case studies of specific household types within the survey villages in September 2011 and a revisit interview with these households in May 2013, both undertaken by the first author. Six employees of the Agriculture and Forestry Policy Research Centre, the Southern Agriculture and Forestry Research Centre, and the District Agriculture and Forestry Offices were trained as enumerators. Household interviews were conducted in Lao, the first language of the first author, the interviewers, and the respondents, and generally required about 1 h. The completed questionnaires were reviewed by the first author at the end of each day. Interviews with the selected case-study households, conducted by the first author, were semi-structured and provided more detailed information than that generated by the structured interviews.

Data from the household survey were analysed using the IBM SPSS Version 20 statistical package. In particular attention was given to a comparison of means and proportions between districts (D1, D2) and between villages (V1, V2, V3) within each district. Where a significant difference is reported, this refers to the results of an ANOVA (means) or chi-square test (proportions), with the level of significance set at  $p=0.05$  unless otherwise stated.

As the main issue addressed in this paper is the allocation of family labour between alternative activities, particularly rice production and labour migration, it is important to characterise the household labour force at the outset. Generally, a Lao farming household comprises a nuclear family (a couple and their unmarried children) or, depending on the stage in the domestic cycle, a stem family (a couple, one married child and spouse, and grandchildren). The household has at its disposal

**Table 1** Study villages by district and agro-economic zone

	D1=Phonthong	D2=Soukhouma	Village types/zones
V1	Phaling	Boungkeo	Zone 1 - irrigated village
V2	Oupalath	Khoke Nongbua	Zone 2 - partially irrigated village
V3	None Phajao	Hieng	Zone 3 - purely rainfed village

a primary and secondary labour force. The primary labour force is made up of adult, full-time workers. The secondary labour force comprises part-time workers—either older children (aged 10 to 15) who go to school and help the family farm during the weekend, or elderly members of the family who work a few hours a day on lighter tasks or take care of their grandchildren. Larger households typically have a larger and more diverse labour force, while single-parent households with young children in general have only one worker. To reflect the household's situation, the full-time equivalent (FTE) household labour force was used in this analysis and is referred to as the 'household labour force'. This was estimated as the number of full-time workers (regardless of gender) plus the number of part-time workers, valued at one-third of a full-time worker. On average, a household in the study area had 6.6 members and 4.5 FTE workers, but the size of the household labour force varied considerably from 1.0 to 10.3 FTE workers, with a pronounced mode at 2.0 FTE workers. These statistics did not vary significantly between districts or among villages.

### Rice Cultivation in the Study Sites

Rural livelihoods in the survey villages involve various farming activities including crop and livestock production, but rice cultivation dominates. About 81 % of the survey households owned paddy land (i.e., fields bordered by bunds capable of retaining water for wet rice cultivation), with an average area of 2.4 ha, ranging from 0.2 to 10 ha; there was no significant difference in land ownership between districts or among villages. There was a high level of utilisation of this paddy land, again across all the villages. In the 2010 wet season (WS 2010), most households with paddy land (71 %) planted rice in all their land, while 10 % rented additional paddy land. Of the households with no paddy land, 94 % rented land from others to grow rice.

Dry-season rice was also produced in the irrigated villages (V1) in each district but at a lower level of land utilisation. About 43 % of households in these villages had land with access to the irrigation supply, with an average area of 1.2 ha. There was no significant difference between the two districts in this respect. Altogether 71 % of households in the irrigated villages planted rice in the 2010–11 dry season (DS 2010–11) on their own or on rented land.

Lowland rice production systems in the survey area have been changing over the past two to three decades as farmers take up new practices, particularly improved rice varieties, inorganic fertilisers, and mechanisation. However, yields, total household production, and marketed surpluses have not greatly increased.

Farmers have widely adopted improved or modern varieties (MVs), gradually replacing the traditional varieties (TVs). Indeed, most households in all villages grew at least one MV

that had come out of breeding programs in Laos or neighbouring countries. Over 90 % of households that grew rice in WS 2010 used only MVs. However, around 21 % of the farmers in V3-D1, the remote village with no irrigation, still grew only TVs.

In Laos there has been limited use of inorganic fertilisers. However, increasingly farmers are applying some inorganic fertilisers to their rice. Around 87 % of the households growing rice in WS 2010 used inorganic fertilisers. The proportion in each village ranged from 69 to 100 %. The average usage rates of nitrogen (N), phosphorus ( $P_2O_5$ ), and potassium ( $K_2O$ ) across all the survey villages were around 17 kg/ha, 12 kg/ha, and 3 kg/ha, respectively—well below the conservative recommendation developed by Linquist and Sengxua (2001) of 60–30–30 kg/ha of N- $P_2O_5$ - $K_2O$ . Households with 1 ha or less were likely to apply more N per hectare than those with larger areas. This suggests that households with larger areas required less fertiliser to meet their self-sufficiency goals and lacked the economic incentive to lift production further, and/or that households had a limited budget for fertiliser purchases. The limited use of fertiliser reflects both the low returns and high risks, in terms of both yield and price, associated with higher levels of use, as demonstrated by Newby *et al.* (2013).

Many farmers in the survey villages have adopted mechanisation. The most widely adopted form of mechanisation has been the hand-held, two-wheeled tractor. While these machines are multi-functional, they reduce the amount of labour required for land preparation significantly. Of the households surveyed, 55 % now own two-wheeled tractors. Adoption of tractors had extended into more remote areas where rice productivity remained low and almost no surplus rice was produced. While the technology is not divisible like seed or fertiliser, the extent of adoption is not surprising given the versatility of the tractors and the amount of labour saved in both production and non-production activities, e.g., transport to regional centres.

Another commonly used form of mechanisation is for threshing. Almost all farmers surveyed now threshed their rice by machine, either a self-operated, foot-powered machine or one powered by their tractor. Alternatively, they hired a tractor-powered threshing service. Only a handful of households still threshed their rice manually.

While farmers have adopted mechanisation for land preparation and threshing, transplanting and harvesting have largely remained labour-intensive manual operations. Transplanters, drill seeders, and harvesters were only beginning to be utilised in the past few years and only in limited areas. The first combine harvesters are now operated by contractors in Champasak Province. In the survey villages, mechanical harvesting appeared for the first time in DS 2010–11 in V1-D1.

Monthly labour requirements for 1 ha of WS rice production are shown in Fig. 2.<sup>1</sup> This demonstrates the sharp peaks in labour use during transplanting in June and harvesting in November. Though some farmers used labour exchange or hired labour to finish these tasks quickly, these labour peaks remained the main constraint to expanding rice production, despite the almost universal mechanisation of land preparation. Conversely, the loss of family labour due to migration meant a scaling back of production in almost direct proportion to the number of labour units—for example, a household with four adult workers could transplant and harvest around 2 ha, but if two of these workers were absent in Thailand, the remaining two could manage only 1 ha. Farmers in similar environments, such as northeast Thailand, have adopted direct seeding practices such as broadcasting to help reduce the labour peak associated with transplanting, but this means an increased requirement for weeding and/or a reduction in yields (Pandey *et al.* 2002). Nevertheless, as noted, direct seeding has not yet been widely adopted in the study area.

The cultivated rice area in WS 2010 averaged 2.3 ha per household, but ranged from only 0.2 ha to 9.2 ha (Table 2). The WS 2010 rice yield averaged about 1.8 t/ha, little more than in the 1990s (Pandey and Sanamongkhoun 1998), and ranged from less than half a ton to 5.2 t/ha.<sup>2</sup> The official target for WS rice is 4 t/ha. On average, for those with access to irrigated land, about 0.8 ha of paddy land was planted with rice in DS 2010–11, but the range was 0.1 ha to 2.0 ha. The DS 2010–11 yield averaged around 3.5 t/ha and ranged from 1.2 to 6.2 t/ha. The official target for DS rice is 5 t/ha. Nearly 70 % of the households sold some rice, on average about one-third of the rice harvest from either WS 2010 or DS 2010–11 or both. The size of the surplus had increased from about 16 % in the 1990s (Pandey and Sanamongkhoun 1998), but still did not meet the World Bank's (2007) definition of 'market-oriented' (greater than 50 % of output sold); at most, we could say that those farmers selling surplus rice were 'market-entrant' or 'semi-commercialised'.

Thus, though the majority of farmers in the survey area had adopted new production technologies (improved varieties, inorganic fertilisers, and mechanisation), rice yields and total production per household had increased only marginally. Modern rice varieties were widely planted, but most modern varieties had been used for many years and there had been little yield improvement since they were first disseminated in the 1990s. Similarly, while use of inorganic fertilisers had

increased, the application rates were far lower than the modest recommended rates, further limiting yields. As demonstrated by Newby *et al.* (2013), despite the Government's urging to increase fertiliser rates to achieve the yield targets, it was not profitable for farmers to do so, given prevailing prices and costs, and this was consistent with the practices of farmers in the survey area. The adoption of two-wheeled tractors was the most dramatic change, but this had not helped boost yields or total production—rather it had decreased labour requirements in specific production phases and obviated the need for draught animals.

While rice production is an important activity for household food security, some households are sometimes not self-sufficient in rice. From the WS 2010 harvest to the WS 2011 harvest, about 27 % of the households did not have enough rice for household consumption; their average deficit was 4 months, ranging from 1 month to the whole year (for the few that did not plant rice in 2010). However, over half of the rice-insufficient households in 2010 actually sold some of their rice harvest to get money for urgent household needs (such as paying for medical expenses, paying off their tractors, and buying fertilisers) and subsequently purchased rice for household consumption.

In sum, rice production in all the study villages is primarily a low-yield, subsistence-oriented activity, or at most a semi-commercial activity. Almost all households grow rice, at least in the wet season. Some grow insufficient for their needs and some produce a small surplus for sale, especially the minority with access to dry-season irrigation. However, the latter are not 'market-oriented' rice producers; rather, most farmers appear to view rice production as a platform on which to construct a diversified livelihood strategy in which the use of family labour within and beyond the farm is the key element.

### Labour Migration in the Study Sites

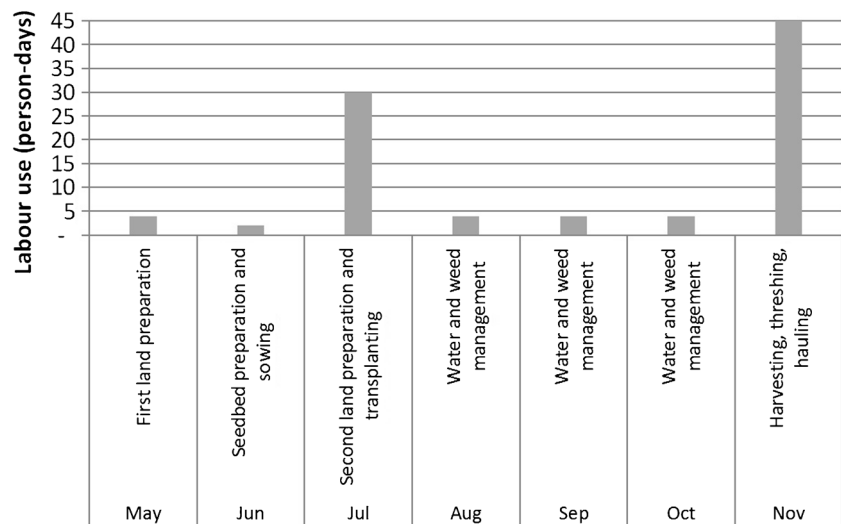
Rural livelihoods in the survey villages have become increasingly diversified. Some farm households are engaged in off-farm or non-farm employment locally or elsewhere within Laos, while many households also have members working long-term in Thailand.<sup>3</sup> Only 15 % of the survey households utilised their household labour exclusively for their own

<sup>1</sup> This is based on the current farmers' practices for rice cultivation—the use of a two-wheeled tractor for land preparation, manual transplanting and harvesting, and threshing by tractor-powered thresher.

<sup>2</sup> The yields for both WS 2010 and DS 2010–11 are the reported paddy (i.e., unmilled rice) yields, calculated from farmers' estimates of cultivated area and production. When cross-checked with case-study farms and field experiments, these estimates appear reasonably accurate to two significant figures (i.e., plus or minus 0.1 t/ha).

<sup>3</sup> By 'off-farm work' we here mean working off their own farm but on neighbouring farms or private farms such as rubber plantations, usually within the same village or general location. 'Non-farm employment' refers to non-agricultural work such as construction work that may be local or elsewhere in Laos (such as in the capital, Vientiane). In the latter case, workers would return to the village only occasionally. 'Working in Thailand' means working either in agricultural or non-agricultural employment in Thailand, involving migration away from the village with only intermittent return.

**Fig. 2** Monthly labour requirements for 1 ha of WS rice production



agricultural production, mainly rice farming. The remaining 85 % used some of their labour to earn additional income from either off-farm employment, non-farm employment in Laos, work in Thailand, or some combination of these options. Surprisingly, this did not differ significantly between districts or between villages within each district, suggesting that pull factors are the predominant influence.

Some households had members engaged exclusively in either off-farm employment, non-farm employment, or employment in Thailand, but others pursued a combination of these activities. The greatest proportion (36 %) had members working only in non-farm activities in Laos, followed by working only in Thailand (27 %). Around 12 % had members working in non-farm employment in Laos and in Thailand.

Most households used household labour for their own rice production; however, off-farm employment was a source of cash income for a few poor households (11 %) with limited paddy land (Table 3). The incidence of off-farm employment within each district was higher in V1 and V3 than in V2. Some farms in V1 (with irrigation) employed workers during the DS, and a number of poor households in the more remote village (V3) resorted to off-farm work to earn cash income. One of the reasons for the low incidence of off-farm employment in V2 was that most households in these villages also utilised their family labour to grow vegetables and other non-rice crops in home and river gardens as they had access to additional water sources through pumping from streams, fishponds, or groundwater bores.

For households pursuing off-farm work, the average number of household members doing so was 1.7, ranging from 1 to 4. The most common type of off-farm employment was rice planting and harvesting (as noted above, the peak activities in the crop season). Off-farm work was mainly undertaken in the wet season; only 20 % undertook off-farm work in the dry season. Off-farm work was normally carried out in the village

in which the household resided. The wage rate for rice planting and harvesting in 2010 was LAK 30,000 (USD 3.70) per day.<sup>4</sup> Average annual off-farm income for households engaging in off-farm employment was about LAK 600,000 (USD 75), but the range was from LAK 90,000 to LAK 2.8 million (USD 11–349). For these households, the contribution of the off-farm income to total income<sup>5</sup> averaged 7 %, with a higher proportion in the remote villages (V3) of up to 19 %.

While only a few households engaged in off-farm employment, non-farm employment within Laos was one of the main livelihood activities for many of the households surveyed. Around 53 % of the households had one or more members working in non-farm activities in Laos during the preceding year (Table 3). This was significantly higher in D2 (64 %) than D1 (41 %); however, no significant differences were found among villages within each district. Though V1-D1 and V1-D2 had similar demographic features and locations, for a range of historical reasons the latter (V1-D2) had over three times as many people working as government officials, traders, or technicians, as well as a higher number of retail shops, two-wheeled tractors, threshing tractors, motorbikes, and boats with engines. Similarly, V3-D2 had a higher incidence of non-farm employment than V3-D1, in this case because the former had a market in the village and a border trade with Thailand (37 retail shops were registered there, compared with only five shops in V3-D1).

For households with non-farm work, the average number of household members so engaged was 1.4, but ranged from 1 to 6 (Table 3). Non-farm work included construction (30 %);

<sup>4</sup> 1 USD=8,027 LAK, May 2011

<sup>5</sup> Total (gross) income includes the income from rice even if not sold, sale of vegetables and other non-rice crops, sale of livestock, sale of NTFPs, off-farm earnings, non-farm earnings, and remittances. Remittances here were the net transfers (deducting costs such as transfer fees).



**Table 2** Rice production data for 2010–11

	D1			D2			Total (n=180)
	V1 (n=30)	V2 (n=30)	V3 (n=30)	V1 (n=30)	V2 (n=30)	V3 (n=30)	
Mean WS cultivated area (ha)	2.5 (n=28)	2.4 (n=29)	3.5 (n=29)	1.5 (n=29)	1.7 (n=30)	2.4 (n=28)	2.3 (n=173)
Mean WS yield (t/ha)	1.7 (n=28)	1.9 (n=29)	1.1 (n=29)	2.2 (n=29)	2.1 (n=30)	1.7 (n=28)	1.8 (n=173)
Mean DS cultivated area (ha)	0.8 (n=17)			0.8 (n=26)	2.0 (n=1)		0.8 (n=44)
Mean DS yield (t/ha)	3.4 (n=17)			3.6 (n=26)	2.0 (n=1)		3.5 (n=44)
% of households that sold rice	60.0	66.7	73.3	86.7	70.0	60.0	69.4
Rice sales as % of rice harvest	36.0 (n=18)	39.2 (n=20)	31.7 (n=22)	30.2 (n=26)	34.5 (n=21)	26.6 (n=18)	32.9 (n=125)
% of households with rice shortage in 2010–11	6.7 (n=30)	13.3 (n=30)	56.7 (n=30)	13.3 (n=30)	36.7 (n=30)	33.3 (n=30)	26.7 (n=180)

government services such as teachers, district agricultural staff, nurses, soldiers, and policemen (28 %); rural services such as land preparation by tractor, sawing wood, rice threshing by tractor, and motorbike repair (14 %); retail shops and services including food shops and salons (9 %); and small trading such as buying and selling vegetables, NTFPs, and scrap metal (9 %). Non-farm work was primarily in the village of residence (48 %), in a nearby village (12 %), or in the district town (7 %), hence these workers could also contribute part of their time to rice production and other farm activities. People also went to work in other districts in Champasak Province (11 %) and even in other provinces (7 %). Around 54 % of the households engaged in non-farm employment worked for the whole year while about 44 % worked only in the dry season. The average annual income from non-farm work within Laos was LAK 8.3 million (USD 1,035), ranging up to LAK 96 million (USD 11,960). The contribution of this non-farm income to total income averaged around 30 %; this did not differ significantly between districts nor among villages in each district.

As mentioned, a major new livelihood strategy was to seek work in Thailand. Around 43 % of households had one or more member working in Thailand (Table 3). Labour migration was found in all the survey villages, even in more accessible and irrigated villages with more potential to employ family labour (and hired labour) on-farm. In fact, against initial expectations, the incidence of migrants from the poor and remote villages was significantly lower ( $p=0.10$ ) than for the better-situated villages. V3-D2 had the lowest proportion of households with members working in Thailand. This was because (as noted above) people in this village had other sources of income from the forest—collecting NTFPs and hunting aquatic or wild animals—as well as operating trading businesses in the border market.

On average, households with migrant workers had just over two people working in Thailand, but the range was from 1 to 6. The average age of those working in Thailand was 24, ranging from 15 to 41. Of those households with members working in Thailand, about 27 % had only men absent, the same proportion had only women absent, and 46 % had both

**Table 3** Features of off-farm and non-farm employment within Laos and labour migration to Thailand

	D1			D2			Total (n=180)
	V1 (n=30)	V2 (n=30)	V3 (n=30)	V1 (n=30)	V2 (n=30)	V3 (n=30)	
% of households with members working off-farm	13.3	3.3	13.3	16.7	3.3	13.3	10.6
Mean income from off-farm work (million LAK)	0.4 (n=4)	0.8 (n=1)	0.6 (n=4)	0.4 (n=5)	0.1 (n=1)	1.2 (n=4)	0.6 (n=19)
Off-farm income as % of total income	1.3 (n=4)	1.7 (n=1)	8.6 (n=4)	2.6 (n=5)	1.1 (n=1)	19.2 (n=4)	7.0 (n=19)
% of households with non-farm work	33.3	53.3	36.7	63.3	56.7	73.3	52.8
Mean income from non-farm work (million LAK)	4.6 (n=10)	7.8 (n=16)	3.5 (n=11)	7.5 (n=19)	13.7 (n=17)	9.4 (n=22)	8.3 (n=95)
Non-farm income as % of total income	19.5 (n=10)	29.0 (n=16)	33.2 (n=11)	24.5 (n=19)	33.2 (n=17)	33.3 (n=22)	29.6 (n=95)
% of households with workers in Thailand	56.7	53.3	53.3	33.3	50.0	10.0	42.8
Mean income earned from remittances (million LAK)	9.5 (n=16)	15.1 (n=14)	3.6 (n=16)	10.1 (n=10)	5.8 (n=13)	8.0 (n=2)	8.6 (n=71)
Remittances as % of total income	22.0 (n=16)	36.8 (n=14)	26.4 (n=16)	39.0 (n=10)	28.5 (n=13)	41.4 (n=2)	30.0 (n=71)

men and women absent. The number of migrant workers averaged 38 % of the household's FTE labour force; this was not significantly different among villages, varying only from 32 to 42 %. A regression analysis of the number of migrant workers on a range of household variables showed that the size of the household labour force was a major predictor of the number of migrants, with a statistically significant coefficient of 0.5 (Manivong 2014). This implies that for every additional two workers in the household, one would likely be absent in Thailand. A further implication is that households were first ensuring that there was enough labour to meet their subsistence requirements for rice and releasing additional labour to earn higher returns away from the village.

Work in Thailand included construction (36 %), retail (22 %), working in rubber and sugarcane plantations (18 %), factory work (12 %), housework (7 %), and others (6 %). Monthly wage rates differed among types of work, but averaged THB 5,000–6,000 (USD 167–200)<sup>6</sup> for farm labour, housework, construction work, working in shops, or factory work. Working in rubber plantations (tapping) could earn up to THB 10,000 (USD 333) per month. Most migrant workers (84 %) remained in Thailand for the whole year, returning for only a short period, particularly during the Lao New Year festival, while around 16 % went only in the dry season. Around 92 % of the households with members working in Thailand received remittances in 2010, on average about LAK 8.6 million (USD 1,070) per year, but the remittances ranged from LAK 134,000 up to LAK 55.6 million (USD 20–6,930). Remittances contributed about 30 % of the total income of these households. Considering all the survey households, about 39 % received remittances from Thailand and the contribution of remittances to total income averaged around 12 %.

Households in different circumstances pursued migration for different reasons. In terms of Ellis's (2000: 55–57) dichotomy, most households migrated by 'choice', taking up opportunities for higher and more diversified income, while some migrated from 'necessity', being obligated to work as labourers to help the household survive. Nevertheless, as the analysis of case study households showed (Manivong 2014), this distinction is difficult to make in practice, as 'choosing' to pursue higher incomes can be viewed as a matter of 'necessity', given the relative poverty of the household in Laos. Moreover, these higher incomes are traded off against the risks and vulnerabilities associated with migrating 'informally' or illegally, and the hardships involved in living cheaply to accumulate savings, not to mention the separation from children, family, and home. In addition, as emerged during revisits to case-study households, some households for which migration was initially deemed to be from necessity found they had new opportunities to get ahead rather than just survive once

the migrants returned—for example, by investing their savings in a small coffee plantation.

In general, there is no doubt that remittances from Thailand contributed substantially to household income by providing scarce cash resources. For households with rice deficits, off-farm earnings and remittances helped to meet daily food requirements and other household necessities. For households producing sufficient or surplus rice, remittances could contribute to working capital and investment in farm assets such as the purchase of inorganic fertilisers, two-wheeled tractors, and water pumps. Investment in house construction was also common.

In sum, while some poorer households (11 %) were dependent on working for wages at peak times on their neighbours' farms, a much larger number of households from across the land-ownership and agro-economic spectrums (82 %) combined subsistence-oriented (or at most, semi-commercial) rice farming with non-farm employment in Laos or Thailand, including 43 % with one or more members who were migrant workers in Thailand. The impact of this external employment on the household labour force available for rice farming and the contribution of wages and remittances to household income were substantial.

### Household Livelihood Strategies

The process of agrarian transition in the study area and the wider Mekong region has led to the emergence of a diversity of rural household types from the predominant subsistence-oriented paddy farming household that prevailed until about two decades ago. The livelihood strategies of survey households were analysed according to the degree to which mobile household resources (labour and capital) were directed into agricultural production for the market, off- and non-farm activities, or migration. Adapting the World Bank's typology outlined in the "Introduction" (World Bank 2007: 75–76), five broad types of household orientation were identified—subsistence-oriented farming households, semi-commercial farming households, labour-oriented households, migration-oriented households, and households with diversified livelihoods (Table 4).

Subsistence-oriented farming households were those producing paddy rice exclusively for household consumption or selling less than 20 % of total production. These households produced rice close to their subsistence needs and cash income was derived mainly from agricultural activities such as rice, vegetable production, and livestock-raising, with some contribution from NTFP collection and hunting. Wages and salaries contributed less than 50 % of total cash income, as did remittances. Only 17 % of households remained in this

<sup>6</sup> 1 USD=30 THB, May 2011

category, concentrated in the more remote, purely rainfed villages (V3) in each district (Table 4).

Semi-commercial farming households included those that were making regular production decisions with a view to supplying the market, whether for rice, livestock, or other products such as corn and watermelon. Using rice production as the main indicator, households were classified as semi-commercial if they sold more than 20 % of their total rice production. This is considerably less than the World Bank's criterion of 50 % for 'market-oriented farming', hence the use of the term 'semi-commercial' to reflect a somewhat lower degree of market orientation. In any case, only 16 % of households, half of them in the irrigated, accessible village in the more prosperous district (V1-D1), fell into this category (Table 4).

Labour-oriented households engaged in local agricultural labour markets, self-employment, or wage employment in the non-farm economy. These households earned a large part of their cash income from off-farm and non-farm activities (less than 20 % was derived from own-farm activities), and had no surplus rice to sell, although they typically achieved their subsistence requirements. Fourteen per cent of households fell into this category, 40 % of them from V3-D2, the remote village with a high degree of involvement in cross-border trade in NTFP (Table 4).

Migration-oriented (or remittance-dependent) households were those whose main income was from remittances from migrant household members. These households tended to have no surplus rice to sell but attained rice self-sufficiency in good years. This was the smallest group, accounting for only 11 % of households, scattered across the six villages (Table 4).

Diversified households (combining two or more livelihood strategies) included those where agriculture, labour income, and remittances all contributed to the household's cash income. Agriculture accounted for at least 20 % of cash income, with the remainder derived

from wages and other labour income of resident members and/or from remittances sent by migrant workers. These diversified households had the resources (land, labour, water, capital) to maintain reasonably productive cropping and livestock systems. While some household members were involved in non-farm activities or regularly migrated to Thailand, farming activities remained important, both for subsistence and cash income. Remittances could therefore be used largely for productive investments (whether in farming or business) rather than to underpin the subsistence needs of those remaining on the land. Diversified households were by far the most common type, accounting for 43 % of the survey households. They were the dominant group in all villages, except for V1-D1, where they were just outnumbered by semi-commercial farmers, and V3-D2, where subsistence-oriented households and labour-oriented households (mainly engaged in NTFP trade) were slightly more common (Table 4).

Thus labour migration to work in Thailand was a major phenomenon in all the study villages and has become an important additional source of livelihood for the majority of households, particularly those following a diversified strategy. What are the implications for the policy of rice intensification? It has been shown that most households fully utilise their available paddy land in the WS with the aim of producing their subsistence needs and perhaps having a small surplus to sell. Some have to rent additional land to achieve this target, while some have sufficient land that they can make a portion available to others. The evidence presented above indicates that households retain enough household labour on the farm, typically the senior married couple, to ensure they meet their subsistence target. However, if there is additional labour, such as a younger married couple or unmarried sons and daughters, this labour is preferentially allocated to non-farm employment, mainly in Thailand, rather than to intensification of rice production, whether through yield-increasing activities in the

**Table 4** Emerging household types based on dominant livelihood activities (no. of households)

Household types	D1			D2			Total	%
	V1 (n=30)	V2 (n=30)	V3 (n=30)	V1 (n=30)	V2 (n=30)	V3 (n=30)		
Subsistence-oriented farming	1	5	8	3	4	10	31	17.2
Semi-commercial farming	14	4	3	4	3	0	28	15.6
Labour-oriented	1	4	3	3	4	10	25	13.9
Migration-oriented	1	5	4	4	4	1	19	10.6
Diversified	13	12	12	16	15	9	77	42.8
Total	30	30	30	30	30	30	180	100.0

WS or by expanding cultivation of DS rice.<sup>7</sup> The migration of labour not only affects the household's capacity to intensify rice production but increases the overall scarcity of farm labour in the village, as reflected in the sharply increasing agricultural wage rates in the study area. Hence labour-scarce households are also constrained from intensifying rice production because of the increased cost of hired labour.

While the widespread adoption of mechanised land preparation has reduced the labour requirement for this activity, the factor limiting rice production was still the labour available for the intensive activities of transplanting and harvesting. Only four of the survey households had tried direct seeding to reduce the labour requirement for transplanting, and mechanical harvesters had only just appeared in the survey districts. It is likely that direct seeding and mechanised harvesting will eventually be adopted, as in neighbouring rice-producing countries (Thailand, Cambodia, and Vietnam). While this will lift the labour constraint on cultivated area, it will do nothing to increase yields. In fact, direct seeding in northeast Thailand has resulted in increased weed problems, thereby reducing yields (Pandey *et al.* 2002). Hence these innovations do not conform to the Government's policy of rice intensification.

The increased monetary and opportunity cost of labour means that, after meeting subsistence requirements, farmers look for activities with a high cash return to labour. Thus, in the irrigated and partially irrigated villages (V1 and V2), farmers allocated scarce labour (and capital) to crops such as corn, water melon, and vegetables, rather than produce extra rice for sale. The higher returns to non-rice and non-farm activities meant that increased use of yield-increasing inputs on rice, especially fertiliser, were not considered a worthwhile use of scarce capital.

## Conclusion

The evidence from the study villages indicates a sharp contradiction between the government's policy of rice intensification and the trajectories being pursued by rice-growing households, even in villages with access to irrigation. The positive inducement of higher incomes from non-farm employment, especially through international migration, is transforming rural livelihoods, despite the risks and personal hardships involved. The diversification of livelihoods has not

been associated with agrarian differentiation as such but, as in other countries where international migration has come to play a significant role, has provided an alternative to landed wealth or 'natural capital' as the basis for household prosperity. Nevertheless, it would not be true to say that the study villages have become 'de-agrarianised'—a mere 'shell' to accommodate non-farm labour—as argued by Jonathan Rigg (2005). Even less is it a case of the peasantry being transformed into a landless, rootless proletariat (Hayami 1998). Rice farming still remains an essential foundation for the diversified livelihoods that rural households are pursuing. Hence innovations and interventions that can enable households to achieve their essentially subsistence goals in more labour- and cost-efficient ways will strengthen this foundation and thus give more scope to improve household livelihoods. However, such interventions are unlikely to be consistent with the government's policy of rice intensification.

Labour migration to Thailand is likely to continue to be a common livelihood strategy for farming households in Champasak, whether they are diversified households or (less commonly) migration-oriented households. Whether by choice or necessity, migration is allowing some household members (younger men and women) to support themselves independently of farm resources, while the flow of remittances is augmenting household consumption and, for many households, their capacity for investment (though not necessarily in rice production). The increase in employment opportunities in Thailand has resulted in lower availability of family labour for rice-farming and higher rural wage rates. Hence, farming systems will need to adapt to these labour constraints and the associated higher wage rates. Attempts to intensify rice production (and other components of the farming system), by increasing per-hectare yields and cropping intensity, need to take account of the implications for labour use and the returns to labour. The opportunity cost of using family labour for agricultural activities is increasing and labour has become the binding constraint. Hence returns to labour (rather than land) should be central to the assessment of new agricultural technologies and practices, as well as the evaluation of agricultural policies. While the government may be tempted to subsidise yield-increasing inputs (especially fertiliser) and artificially support the price of rice to align farmers' incentives with its rice production targets, the well-documented failure of these policies elsewhere (notably, the growing government stockpile of rice in neighbouring Thailand as a consequence of its price support policy) should cause it to reconsider.

The overwhelming impression from this research is that Lao farmers are caught up in and contributing to a much larger regional process of agrarian transition which government intensification policies will be hard-pressed to counter. To the extent that their judgements about the relative returns to their household complement of labour are correct, rural

<sup>7</sup> Labour could be used in many ways to increase yields, from land-levelling, bund maintenance, improved water control, more attention to pest and weed control, completing operations from transplanting to harvesting in a more timely fashion, through to giving more time to post-harvest operations, especially drying. In addition, increased yields in themselves require more labour for harvesting.



households in Laos are spontaneously following trajectories that, if not exactly a ‘pathway out of poverty’, are at least making them somewhat better off in the sense of having higher and more diversified income streams and greater food security. As discussed, this is not yet a case of ‘de-agrarianisation’—rice production for subsistence and perhaps a small surplus is still central to the strategies most households are following, as well as the production of non-rice crops and livestock. However, the changes underway are transforming the rural economy from its role as the solid foundation of the ‘paddy state’ to becoming the rural hinterland, not just of a rapidly developing Lao economy but of a wider regional economy.

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