AGRICULTURAL OVERVIEW
B1 Agricultural land

Agricultural land refers here to the share of the country’s total land area that is arable, and is used to produce annual crops, to cultivate permanent crops, or as permanent pasture. The total area of agricultural land in the Lao PDR increased by 53 percent between 1999 and 2011, from 976,000 ha to 1.49 million ha. The proportion of agricultural land increased from 4.4 to 7.9 percent of the country’s total land area.

Despite this increase, the Lao PDR still has a low proportion of agricultural land compared to neighbouring countries. In Cambodia, for instance, the area used for agricultural production is 31.5 percent of the country’s total area, in Thailand 38.7 percent, in Myanmar 19 percent, and in Vietnam 33.1 percent (FAO, 2014). This low percentage is due to its mountainous terrain, low population density, lack of capital investment for agricultural conversion and government policies relating to forest conservation. Further, since the Lao PDR has limited infrastructure, this also partially limits agricultural expansion in some areas. The presence of unexploded ordnances (UXOs) dropped during the American bomb raids of the 1970s are also a limiting factor in many areas. UXOs affect all provinces in the country and the most affected lands are often left unused due to the risks posed by cultivation and development. Agricultural land area calculations also underestimate areas used for shifting cultivation, as many fallows are classified as forest land in the 2010/11 Agricultural Census, despite being an integral part of shifting cultivation, used for cultivating fallow species, including a high diversity of Non-Timber Forest Products (NTFPs).

This map also shows the total potential area, suitable but not currently used for agricultural production, and compares it to the amount of agricultural land. Thus the label, “potential area suitable for agriculture” refers to land that is suitable for cultivation but is not cultivated. These areas include the land affected by UXOs, bamboo forests, and other types of uncultivated land. The smaller map focuses on the provincial level, highlighting the ratio between used and potential agricultural land.

In northern Lao PDR there are relatively large areas of potential agricultural land. In the provinces of Phongsaly and Xiengkhouang, for example, used land accounts for 25 and 34 percent of the total potential area for agriculture respectively. The large ratio of potential to used agricultural land in Phongsaly may be related to the province’s poor access to transport networks, markets and government services. Xiengkhouang Province has the largest area of unused but potential agricultural land, with 172,000 ha of potential agricultural land. This is not surprising, given the large amount of UXOs in the province, which have been an obstacle to its agricultural development. Other UXO-affected provinces (e.g. Savannakhet, Khammouan and Xekong) also have relatively large areas of potential agricultural land (171,000, 158,000 and 60,000 ha respectively), suggesting a causal relationship between UXO presence and potential but unused agricultural land.

In contrast, in the provinces of Xayabouly, Vientiane, Luang Namtha, Bokeo and Champasak, the land devoted to agriculture is at least two times the amount of potential land, evincing a high usage of agricultural land, often for commercial purposes. The inclination towards commercial agriculture in these regions could be due to a combination of adequate geographic, infrastructural and institutional features. Almost all of the provinces mentioned above have large areas of lowland plains in proximity to the Mekong River and its tributaries, good road networks, low presence of UXOs, and relatively developed market institutions; these characteristics make these provinces particularly suitable for commercial agricultural activity.
**B2 Irrigation facilities**

An efficient irrigation system is necessary to ensure that water is available for agricultural development as well as for use by other sectors. Irrigated agriculture plays a vital role in contributing to domestic food security and poverty alleviation. The Lao PDR is better supplied with more freshwater sources than its neighbours in the region. In 2012, the Lao PDR reported a freshwater availability of 53.78 thousand cubic metre per capita, compared with 5 - 33 thousand cubic metres per capita in other countries in the region. The rate of freshwater withdrawal is also one of the lowest in the region, suggesting that the Lao PDR has significant potential for improving its irrigation systems.

The Government of the Lao PDR made important public investments during the second half of the 1990s to support the installation of 8,000 irrigation pumps along the Mekong River and its tributaries in the plains areas of Vientiane, Savannakhet and Khammouan Provinces. As a result, the country’s total irrigated area increased from 0.17 million ha in 1995, to 0.41 million ha in 2011 (Pavelic et al., 2016). In the Lao Agricultural Census 2010/11 farmers were asked whether they used irrigation for their crops during the 2010 wet season and the 2010/11 dry season. The answer was used to estimate the percentage of villages with irrigation facilities.

This map shows the percentage of irrigated agricultural land at the village level. 38 percent of villages do not have any irrigated agricultural land, while more than half of villages reported that between 1 and 40 percent of their agricultural land is irrigated. Most irrigated agricultural land is located in the north and in the centre of the country. In the provinces of Phongsaly, Luang Namtha, Bokeo, Oudomxai, Houaphan, Xayabouly and Vientiane, the majority of villages have irrigation facilities. As the semi-circle diagram shows, 73 percent of villages (344 out of 438) in Xayabouly Province have irrigation systems. By contrast, only 17 percent of villages in Attapeu Province have irrigation systems, 21 percent in Khammouan and 27 percent in Savannakhet.

The irrigation facilities used in the Lao PDR range from permanent weirs to reservoirs, pump schemes, private pump installations, gates and dykes, temporary weirs and gabions. 29 percent of irrigation facilities in the country are temporary weirs. Permanent weirs account for 16 percent of all irrigation facilities in the Lao PDR, while pump schemes, particularly popular in western Champasak, Khammouan, and Vientiane Capital, make up to 8 percent of the total irrigation facilities. Gabions count for 7 percent, while gates and reservoirs count for 3 and 4 percent respectively.

Not all irrigation facilities are in consistent functioning order. The map highlights how villages in central and southern Lao PDR are more exposed to irrigation problems. The main irrigation problems that farmers face are not only related to the lack of irrigation facilities, but are also linked to high water fees and maintenance costs of the irrigation systems. In Savannakhet Province a particularly high percentage (80 - 95 percent) of villages experience irrigation problems across several districts.

Despite the country’s wealth in freshwater resources and rainfall, the irrigation systems in the Lao PDR remains limited and, in some areas, inefficient.
B2 Irrigation facilities

Percentage of irrigated agricultural land at village level (6043)
- 0 % (3290)
- > 0 - 10 % (2351)
- > 10 - 20 % (955)
- > 20 - 40 % (1130)
- > 40 - 60 % (536)
- > 60 - 80 % (254)
- > 80 - 100 % (118)

Comparison of number of villages with and without irrigation facilities at province level

Irrigation facilities
No irrigation facilities

Number of villages and their irrigation facility types at province level
- Temporary wells
- Permanent wells
- Channels
- Gates & dikes
- Pumps & reservoirs
- Braners
- Other
- No irrigation

Percentage of villages with irrigation problems at district level (143)
- > 8 - 20 % (5)
- > 20 - 40 % (23)
- > 40 - 60 % (46)
- > 60 - 80 % (60)
- > 80 - 95 % (11)
B3 Shifting and rotating cultivation

Shifting cultivation refers to a farming practice also known as “swidden” or sometimes “slash-and-burn agriculture”. It is a crop growing method under which farmers clear a plot of land by cutting down trees and shrubbery before burning it. Usually, the land is left fallow after harvesting for a period long enough to allow the vegetation to recover. Once recovered, the land can be cleared and used again to grow mostly rice crops. Although practiced for centuries, especially in Southeast Asia, there is a wide, open debate around the sustainability of shifting cultivation. The GoL regards shifting cultivation as a primitive production form, associated characterized by low output productivity, inefficient use of land and human resources, and deforestation. As a result, at the 1989 National Forestry Conference, the Lao Government sought to reduce shifting cultivation and regulate villagers’ agricultural practices in the uplands through forest land allocation. Introduced in the early 1990s, the Land and Forest Allocation Program was meant as a mechanism to stabilize and eventually eradicate shifting cultivation (Fujita and Phanvilay, 2008). More recently, the GoL has promoted rotational shifting cultivation involving a three-plot approach with shorter fallow periods. The sustainability of this approach is highly debated.

Located in the north of the country, Phongsaly Province has a high number of villages engaged in shifting cultivation. Phongsaly is also the least accessible province in the country; as can be seen from the smaller map of village road accessibility, only 34 percent of its villages have full-year road access. There is therefore an observable negative correlation between villages engaged in shifting cultivation and road accessibility. In the south, Xekong Province also has a low percentage of villages with all-year road access, and meanwhile, numerous villages practice shifting cultivation. Shifting cultivation is also widely practiced in the provinces of Luang Namtha in the northwest and Houaphan in the northeast. Farmers in Phongsaly, Oudomxai, Luang Prabang, Xiengkhouang and Khammouan favour rotating cultivation systems over shifting cultivation practices; this cultivation practice is sometimes disproportionately associated with certain ethnic groups dominant in these provinces.
B4 Agricultural population

Agriculture is the main economic activity for the Lao population. It employs an estimated 75 percent of the total workforce, and contributes to 25.5 percent of GDP (FAO, 2010). Female farmers are responsible for over half of all agricultural activities.

Agricultural households are defined as households operating 200 m² or more of agricultural land either in the wet season or dry season. The average agricultural household size is 5.7 people, with a sex ratio (number of men per 100 women) of 101.1 at the national level. The majority of households (65 percent) have landholdings of 0.5 and 2.99 ha. Close to 27 percent have landholdings of 3 ha and above, and they account for 58 percent of the total farmland in the country. Female farmers are employed an estimated 75 percent of the total workforce, and they account for 58 percent of the total farmland in the country.

With 79 percent of its households (108,600 households) in agriculture, Savannakhet Province (137,300 households) has the highest absolute number of agricultural households. By contrast, Xekong has only 12,900 agricultural households. In Phongsaly, out of the total 29,200 households, 28,100 (96 percent) are agricultural households, making the province the most reliant on agriculture in the country.

Interestingly, as can be seen in Table 1, the proportion of agricultural households between 1999 and 2011 decreased in all provinces except Phongsaly, where it increased slightly. In Vientiane Capital, the percentage of agricultural households declined significantly from 50.1 to 32.1 percent, this is mainly due to the rapid urban expansion experienced by the capital in the last decade.

At least one agricultural household is present in every village in the Lao PDR, with the exception of forty villages. These villages are located within urban areas as well as on the shores of lakes and reservoirs, where households rely on fisheries or aquaculture for their livelihoods.

This map shows the share of agricultural households at village level. The darker shades of green indicate a higher percentage of agricultural households in the village. In the north, the northeast and the southeast, there is a particularly high percentage of agricultural households, while urban and peri-urban areas have a lower proportion. In more than 34 percent of all villages (2,956 villages), the share of agricultural households exceeds 90 percent, while in 67.7 percent of the villages (5,851 villages) the share of agricultural households exceeds 99 percent, and in 34 percent of the total farmland in the country.

The province level inset map shows that between 90 and 96 percent of the households in Kayabouly, Ouondomxai, Phongsaly and Houaphan are engaged in agricultural activities. In the provinces of Bokeo, Luang Namtha, Salavan, Xekong and Attapeu, between 80 and 90 percent of households are engaged in agriculture. In Vientiane Capital, the most urbanized area in Laos, only 32 percent of households are still considered agricultural households. The ratio in the other provinces ranges between 55 and 80 percent.

The average agricultural household size is 5.7 people, with a sex ratio (number of men per 100 women) of 101.1 at the national level. The average agricultural household size is 5.7 people, with a sex ratio (number of men per 100 women) of 101.1 at the national level. The average agricultural household size is 5.7 people, with a sex ratio (number of men per 100 women) of 101.1 at the national level. The average agricultural household size is 5.7 people, with a sex ratio (number of men per 100 women) of 101.1 at the national level. The average agricultural household size is 5.7 people, with a sex ratio (number of men per 100 women) of 101.1 at the national level.

### Table 1: Total number of households and agricultural households and share of agricultural households in total households in 1999 and 2011

<table>
<thead>
<tr>
<th></th>
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<tr>
<td>Vientiane Capital</td>
<td>97,000</td>
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<td>48,600</td>
<td>42,800</td>
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<td>96.2</td>
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<td>26,200</td>
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<td>33,400</td>
<td>44,600</td>
<td>93.3</td>
<td>92.3</td>
</tr>
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<td>20,800</td>
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<td>18,800</td>
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<td>Luang Prabang</td>
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<td>55,700</td>
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<td>81.3</td>
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<td>Houaphan</td>
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<td>36,900</td>
<td>42,200</td>
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<td>Khammouan</td>
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<td>51,100</td>
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<td>Savannakhet</td>
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<td>108,600</td>
<td>85.3</td>
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<td>41,300</td>
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<td>Xekong</td>
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<td>12,900</td>
<td>92.4</td>
<td>86.0</td>
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<td>70,200</td>
<td>75,400</td>
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<td>71.3</td>
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<td>Attapeu</td>
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<td>14,800</td>
<td>19,100</td>
<td>90.2</td>
<td>84.1</td>
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<td>Total</td>
<td>790,000</td>
<td>1,019,400</td>
<td>660,300</td>
<td>781,600</td>
<td>83.6</td>
<td>76.7</td>
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</table>
B4 Agricultural population

Share of agricultural households at village level (5643)
- 0 % (40)
- > 0 - 25 % (310)
- > 25 - 50 % (277)
- > 50 - 75 % (733)
- > 75 - 90 % (1432)
- > 90 - 99 % (2895)
- > 99 % (2956)

Share of all households that are agricultural households
Total households: 130,000 hh
Agricultural households: 10,000 hh, 7,000 hh, 2,000 hh

Share of agricultural households at province level (17)
- > 30 - 55 % (1)
- > 55 - 80 % (5)
- > 80 - 90 % (7)
- > 90 - 99 % (4)
Per capita, the Lao PDR is the most heavily bombed country in the world. Although all 17 provinces of the Lao PDR are affected by Unexploded Ordnances (UXOs), the most affected areas are located along the Annamite Mountain Range, close to the Vietnamese border. During the 2nd Indochina War (1964 - 1973) more than 2 million tonnes of ordnance were dropped across the country as part of the United States’ Secret War in the Lao PDR. This war effort aimed to support the Royal Lao Government against the Pathet Lao, and to constrain supply routes along the so-called “Ho Chi Minh Trail” that ran through the Lao PDR, serving as key supply routes for Vietnamese communist insurgents in South Vietnam.

This map shows the area of agricultural land (in ha) affected by UXOs at village, district and province level. The bombings devastated many villages and displaced hundreds of thousands of civilians in the midst of the war. Moreover, it is estimated that of the 270 million cluster munitions dropped, 30 percent malfunctioned and remained unexploded on site. Since then, UXOs have killed, injured, and maimed more than 50,000 people from 1964 to 2008. Today, UXOs continue maiming and killing people, while hindering socioeconomic development and food security in affected areas (UXO-NRA, 2014).

Xiengkhouang Province is the most UXO-affected province in both absolute numbers of UXOs dropped and percentage of the total area affected. Today, 53,900 ha of agricultural land (about 90 percent of the province’s total agricultural land) are still contaminated by UXOs. Savannakhet and Salavan Provinces follow Xiengkhouang in terms of absolute agricultural area affected, with 27,000 ha and 24,100 ha, respectively. Though smaller in terms of absolute area, the agricultural land affected in Xekong and Khammouan Provinces by UXOs constitutes more than 25 percent of the total.

According to the National Social-Economic Development Plan (UXO Lao, 2013) there is a significant correlation between the presence of UXOs and poverty. UXOs limit agricultural production and development in general, from infrastructure construction to tourism development. Today, the Lao government, supported by other governments and international organizations, is trying to eradicate UXOs to make the future brighter in UXO affected areas.
B5 Agricultural area affected by UXO

UXO affected agricultural land at village level:
- > 0 - 50 ha
- > 50 - 250 ha
- > 250 - 500 ha
- > 500 - 1000 ha
- > 1000 - 5000 ha

UXO affected agricultural land at province level:
- < 100 ha not labeled
- 2000 ha
- 5000 ha
- 10000 ha

Percentage of agricultural land affected by UXOs at province level (17):
- 0 - 1 % (4)
- > 1 - 10 % (7)
- > 10 - 25 % (5)
- > 25 - 50 % (2)
- > 50 - 75 % (6)
- > 75 - 90 % (1)
B6 Ratio of market to subsistence oriented households

Around 259,000 agricultural households (33 percent of all agricultural households in the Lao PDR) produced mainly for market, compared to only 6 percent of agricultural households in 1998/99 (ACO, 2012). The main crop produced is rice, which accounts for 70 percent of the total cultivated area. Other important crops include maize, coffee, sugarcane, cassava, banana and industrial tree crops (such as rubber, eucalyptus and acacia).

This map illustrates the percentage of market-oriented and subsistence-oriented agricultural households at village level. The areas in the south of Xayabouly and on the Bolaven Plateau in the east of Champasak have a stronger market-orientation. As highlighted by the inset map on the bottom left, Xayabouly is the only province in the Lao PDR where more than half of agricultural households are market-oriented in their production systems, wherein maize predominates, followed by cotton, peanuts, Job’s tears, and cowpeas. The Bolaven Plateau is mainly focused on coffee production and secondarily on cardamom. Other important areas for market-oriented agriculture are found in southern Luang Prabang, in western Phongsaly and central Oudomxai. In these three provinces, more than 25 percent of all agricultural households are commercial producers.

As shown by the largest pie chart on the small map, Savannakhet Province has the highest number of agricultural households, more than 75 percent of which are subsistence producers. In Attapeu Province, more than 85 percent of agricultural households are subsistence-oriented, making Attapeu the least market-oriented province in the Lao PDR. In Khammouan, more than 80 percent of agricultural households are subsistence farmers. Figure 1 gives detailed information about the agricultural production in 1999 and 2011 primarily for market per province.

While the majority of Lao farmers remain subsistence producers, cross-comparison with the 1998/99 census indicates that the Lao PDR is undergoing a major agricultural transition away from subsistence towards more agricultural commercialization.

Figure 1: Percentage of agricultural production primarily for market in 1999 and 2011 per province
B6 Ratio of market to subsistence oriented households

Percentage of market and subsistence oriented agricultural households at village level (8643)

- **Market**
  - 95 - 100% (515)
  - 90 - 94% (427)
  - 85 - 89% (416)
  - 80 - 84% (438)
  - 75 - 79% (475)
  - 70 - 74% (499)
  - 65 - 69% (471)
  - 60 - 64% (426)
  - 55 - 59% (406)
  - 50 - 54% (384)
  - 45 - 49% (406)
  - 40 - 44% (371)
  - 35 - 39% (338)
  - 30 - 34% (319)
  - 25 - 29% (293)
  - 20 - 24% (247)
  - 15 - 19% (203)
  - 10 - 14% (141)
  - 5 - 9% (108)

- **Subsistence**
  - 0 - 5% (51)
  - 5 - 9% (108)
  - 10 - 14% (141)
  - 15 - 19% (203)
  - 20 - 24% (247)
  - 25 - 29% (293)
  - 30 - 34% (319)
  - 35 - 39% (338)
  - 40 - 44% (371)
  - 45 - 49% (406)
  - 50 - 54% (426)
  - 55 - 59% (475)
  - 60 - 64% (499)
  - 65 - 69% (471)
  - 70 - 74% (438)
  - 75 - 79% (416)
  - 80 - 84% (427)
  - 85 - 89% (413)
  - 90 - 94% (375)
  - 95 - 100% (515)

No response: (40)
B7 Gender dimensions of wages and heads of households

Aside from performing long hours of domestic work, women take part in many agricultural activities to secure food and income. Although women are major contributors to the agricultural sector, due to the lack of sex-disaggregated statistical data, their contribution often remains invisible and greatly under-evaluated in economic accounts. Gender equality is a key priority of the GoL, which seeks to promote gender equality between men and women in all sectors. It is a core development objective within the commitment to improve people’s livelihoods and living standards (ADB and the World Bank, 2012).

In the agricultural sector, gender concerns were integrated into specific programs and projects through a number of measures. MAF has recently developed a policy for the advancement of women in agriculture and forestry, which is based on six goals. Two of the main goals are the integration of gender analysis and gender-disaggregated data, information, and statistics into the MAF planning cycle, and the increase in rural women’s access to and control over resources and benefits.

In the 2010/11 Agricultural Census, village heads were asked to compare the wages of agricultural labour for women with the cost of agricultural labour for men. In 29 percent of villages, the village head did not respond to the question, whereas in 67 percent of the villages wages were reported as being the same, in 3 percent women were reported to earn more than men, and in 1 percent of villages men were reported to earn more than women.

In Luang Namtha women’s agricultural wages are higher than men’s agricultural wages in 6.2 percent of the villages. Khammouan Province and Vientiane Capital follow the same trend with women’s agricultural wages are higher than men’s in 4.4 and 3.9 percent of villages respectively.

In contrast, 3.2 percent of villages in Oudomxai Province reported that men’s agricultural wages are higher than women’s agricultural wages. Bokeo and Luang Prabang Provinces present the same pattern with percentages of 2.5 and 2.3 respectively.

The province level histograms compare the percentages of villages in which men earn more than women, and vice versa. In Bokeo, for instance, men’s wages are higher than women’s wages in 2.5 percent of the villages. Meanwhile, in the same province, women’s wages are higher than men’s in 2.1 percent of the villages. Oudomxai and Luang Prabang present the same trend. In contrast, in central Lao PDR, women’s agricultural wages are higher than men’s, while the southern provinces do not present any visible pattern.

Traditionally, the husband is recorded as the head of the household in the Lao PDR, which explains the rather low number of female-headed households. Most female heads of household are widows, while some are divorced and/or one spouse has migrated to cities or abroad, which influences the households structure. Population movement might therefore be a reason that the highest share of female-headed households are found in central Lao PDR where migration to Thailand is most prominent.
B7 Gender dimensions of wages and heads of households

Comparison of wages at village level (8643)
- Female wages higher (247)
- Equal (5798)
- Male wages higher (121)
- No response (2477)

Comparison of wages as percentage of total villages at province level

Comparison of female headed to total households
Total agricultural households Total female headed households

Percentage of female headed households at district level (143)
- > 1 - 5%
- > 5 - 10%
- > 10 - 20%
- > 20 - 24%
The majority of the Lao population lives in rural areas and engages in a diversity of subsistence and income generating activities. Their livelihoods rely heavily on natural farming systems and forest-based resources. External as well as internal factors influence the kinds of livelihood activities performed, including: government policy, geographic location, ethnicity, access to markets, knowledge, and technology, among other factors.

The main income sources at village level are divided into four main categories: non-timber forest products (NTFPs), crops, livestock, and fish. The map shows that crop production is the main agricultural income source in 54 percent of the total villages, especially in the northern provinces. Although 49 percent of all farm households collect fruits and vegetables from the forest, and 55 percent collect mushrooms, only 614 villages rely primarily on NTFPs for household income. Village level collectors sell NTFPs at local markets as well as to traders. Livestock activities in the Lao PDR are mainly for household consumption; only 4 percent of the villages in the country classify livestock as the main agricultural income source. Cattle, buffaloes, pigs, and poultry are the main types of livestock raised. Fishing is also a vital activity for many farm households in the country. It is the main income-generating activity of 68,200 farm households nationally. Although less common than fishing, aquaculture is the main source of income for about 1,000 households in the whole country. In this map, fishing and aquaculture are merged together and are reported as main source of agricultural income in 33 villages through the whole country.

Crop production is the main income activity for most of the villages in the north and for the majority of the villages in the southern provinces of Salavak, Xekong and Champasak. As shown by the smaller inset map, households in Xayabouy earn more than 75 percent of their total income from crop production. Household income in Attapeu, Savannakhet, Khammouan and Vientiane Capital is generated primarily from a range of activities that fall outside of collecting NTFPs, cultivating crops and livestock, or fishing. The map illustrates how the villages that reported NTFP collecting as their principal income source are mainly located in mountainous areas and in the centre and north of the country, as well as in eastern Attapeu and southeastern Champasak. The inset map shows how NTFPs are the main agricultural income source in the most southern district of Phongsaly Province, Khua District and in the northernmost district of Luang Prabang Province, Phonthong District. Bolikhon District, in western Bolikhon, presents a particularly high degree of diversification in its income generating activities.

In summary, crop production is the main source of income for farmers in 88 districts, while 52 districts, mostly located in the centre of the country, have other main income sources not explicitly listed during data collection. NTFPs are the main income source in two districts in total. Remarkably, in one district in Bolikhon (Bolikhon) the majority of the households reported no single main income source but instead cited multiple income generating activities as equally important.

As mentioned above, different factors influence agricultural income sources. More specifically, regional market dynamics, from traditional cross-border trade with neighbouring countries to market-oriented policies implemented more recently by the GoL, are principal drivers in the transition toward market-oriented agriculture. In addition to regional market dynamics, recent economic developments in neighbouring countries also affect household livelihoods and farming systems in the Lao PDR. The main impact has been a widespread shift in the orientation of agricultural production activities from subsistence to commercial production, especially in northern Lao PDR (see B6).
B8 Source of agricultural income
B9 Natural disasters: Flood, drought and landslides

The climate of the Lao PDR is tropical and divided into a wet and a dry season. The wet season occurs from May to October. The Lao PDR is also affected by tropical storms coming often from the South China Sea and cyclones. Flooding occurs along the Mekong River and its tributaries, but is of a sporadic nature and with a typical duration of several days. Landslides induced by heavy rainfall occur frequently in steep upland areas and often accompany tributary flooding. On average, severe floods occur every fifth year and severe drought occurs every second year. However, in recent years, the occurrence of flooding and drought has increased.

The map shows the types of natural disasters occurring in the Lao PDR at the village level. Drought occurs throughout the country, but most drought events occur in western Champasak, Salavan and Savannakhet, and in the northeastern part of the country in Xiengkhouang, Houaphan and Luang Prabang Provinces. Floods occur less frequently than droughts but remain common along the Mekong River flood plains and its main tributaries throughout the country. In central and southern Lao PDR, especially in Khammouan, Savannakhet and Attapeu, and in the south of Xayabouly and Bokeo, drought and flood often occur in the same year.

In addition to drought and flood, landslides occur in the mountainous areas of northern and southern Lao PDR. Some villages even experience all three - flood, drought, and landslides – mainly in the eastern mountainous areas of Salavan and Xekong Provinces. Villages where all three disasters have been reported are also found in the mountains of northern Lao PDR, especially northern Oudomxai Province. Central Lao PDR is less prone to natural disasters than the southern and northeastern parts of the country.

This map shows the 2011 status of the disasters and gives a broad understanding of the spatial distribution of different types of disaster occurrences, as reported. Natural disasters have significant impacts on livelihoods, especially in rural areas where subsistence agriculture remains predominant.

Rain-fed rice cultivation constitutes more than 90 percent of the rice growing area in the country, whereas only about 6 percent of rice growing areas have access to irrigation facilities. Drought occurrence therefore has a significant impact on the total annual rice production of smallholder farmers. According to Schiller et al. (2006), drought and flood regularly destroy rice harvests. Drought, as the map shows, can affect larger areas than flooding, as floods are more localized and concentrated in their destruction. Drought is known to occur at two times of the year: the early monsoon season and the late monsoon season. In the latter season, drought can take the greatest toll on cultivation. Flash floods tend to occur more frequently in areas with a high degree of damaged forest coverage and/or heavy land exploitation.

The impacts of natural disasters vary across the Lao PDR. Vulnerability to natural disasters is influenced by many factors such as access, institutional preparedness, early warning systems, etc. Often the most remote areas are the most highly-affected economically and socially by natural disasters. This is particularly true in the case of eastern Xekong and Salavan, which are prone to the three main natural disasters and are also among the poorest areas of the country. Current information lacks the necessary precision and accuracy to ensure evidence-informed planning and decision-making. Data collection and sharing should therefore be improved in the future to build a better strategy for disaster management.
B10 Credit facility and selling agricultural produce

Although interest rates in the informal sector can be as high as 20 percent per year, interest rates for agricultural households for farming operations remain limited to 13 percent in the Lao PDR. However, different credit facilities are available to farmers including public banks, foreign banks, private domestic banks, microfinance institutions, and village development funds. In terms of agricultural marketing facilities, farmers sell their produce through various channels: direct sale in the village local market, buy-back arrangements through contract farming, direct sales to processing companies, and selling through intermediaries or brokers in the same village or nearby villages.

Overall, 51 percent of all villages have access to credit facilities as can be seen on the main map. Villages with credit access are sparsely distributed throughout the country, with a higher density in the northern provinces of Oudomxai, Luang Prabang and Xiengkhouang, and the southern province of Champassak. These villages are more likely to be located in areas with good road connectivity. Vientiane Capital is the most credit accessible, with 82 percent of its villages able to access credit. The provinces of Bokeo and Xayabouly follow, with 60 percent each. Houaphan and Savannakhet on the contrary, are the two provinces with the lowest percentage of villages with credit access, with only 28 percent and 27 percent of villages respectively. Village development funds are the main credit source, adopted by a large proportion of the villages in each province, particularly Vientiane Capital, Xayabouly, Bokeo, Houaphan, Khammouan and Savannakhet. Public banks are another key source of credit reported by a high proportion of the villages in almost all provinces. Microfinance is also important, especially for villages located in Luang Namtha, Xayabouly and Attapeu.

The inset map at the bottom left shows in which villages farmers engage in market transactions, as well as province level trends indicating in which channels they sell their produce. In approximately 88 percent of all villages in the Lao PDR, farmers sell part of their agricultural produce, whereas the remaining 12 percent produce exclusively for their own consumption or for exchange for other goods. As is shown in the province-level graphs, selling to traders from other villages is the most common way to market produce, followed by selling to traders from the same village. Selling via contract farming schemes, directly to processors, and at village markets are less common channels nationally, but are predominant in the north, especially in Houaphan, where more than half of all villages engage in contract farming.

While about half of the total villages have credit facilities, not everyone has access to credit. A GIZ survey on semi-formal and formal providers of microfinance in the Lao PDR indicates that access to formal financial services is extremely limited for the rural poor. This remains one of the biggest challenges even though there has been significant progress in recent years. The utilisation of different channels for marketing agricultural produce, such as contract farming or direct sales to processing companies, reflects the degree of agricultural commercialisation. The emergence of contract farming throughout the northern provinces, especially Houaphan, Luang Namtha, Xayabouly, Oudomxai and Bokeo, is mainly a result of the trade relations between these provinces and neighbouring countries with strong market demand – China, Thailand and Vietnam.

Road connectivity is another important factor for both access to credit and market institution development. Roads reduce the costs of transport and make trade more convenient, thus increasing market connections as well as the capacity of households to add value to the land and housing, which are the main assets used as forms of collateral for credit.
B10 Credit facility and selling agricultural produce

Credit facility in village (8643)
- No credit facility in village (4203)
- Credit facility in village (4370)
- No response (10)

Percentage of villages using each type of credit facility at province level

- Public bank
- Foreign bank
- Private domestic bank
- Microfinance
- Village development fund
- Other credit facility
- Credit type not specified

Manner of sale at province level
- Contract farming
- Processing companies
- Trader in village
- Trader in other village
- Village market
- Other
- Not specified

Sale of agricultural produce at village level (8643)
- Farmers do not sell (1024)
- Farmers sell (7608)
- No response (11)