INTRODUCTION
This map displays a natural colour satellite image of the Lao PDR and parts of the surrounding countries. It was taken from the Google Earth 5.0 historical imagery at the end of the wet season of 2010, which is based on an ortho-rectified, mosaicked and colour-balanced Landsat-7 image. It shows the basic categories of land cover, provincial and district boundaries, as well as water sources.

The topography of the Lao PDR is characterized by two main geographical zones – the central plains along the Mekong River and the mountainous regions to the north and along the eastern border with Vietnam. The country is rich in natural resources such as minerals, water, and forests. This image shows its extensive forest coverage, which is visibly higher than that of the neighbouring countries. At the end of the wet season, the country is at its greenest; the northern regions as well as the Annamite Mountain Range along the border with Vietnam especially embody this abundance. The different shades of green indicate biomass density, where darker shades of green indicate higher density. The green turns into ochre for agricultural land, irrigated areas, urban centres and mines.

Although agricultural land accounts for only 7.9 percent of the total land area of the Lao PDR, the agricultural sector employs more than 75 percent of the country’s labour force and contributes up to 26 percent of the GDP (FAO, 2014). More than 60 percent of the agricultural land (including perennial crops, annual crops and permanent pasture land) is dedicated to rice cultivation, while other important economic crops include maize, coffee, sugarcane, cassava and industrial tree crops such as rubber, teak, eucalyptus, acacia and agarwood.

The percentage of urban households in the country has reached 31 percent and engagement in non-farm economic activities has increased. Still, nearly half of all urban households remain engaged in agricultural activities, maintaining links with the agricultural sector.

The light blue colour on the map indicates rivers, bodies of water, and hydroelectric dam reservoirs. The Lao PDR has historically had most of its largest settlements centred around waterways, thus the country’s major urban and economic centres today (Vientiane, Pakxe, Savannakhet and Luang Prabang) are located along the Mekong River. The river supports economies and livelihoods throughout its entire basin, functioning as a lifeline for the whole nation and the entire Mekong Region. Regionally, it serves as a commercial route connecting the Lao PDR with its neighbouring countries through bridges and navigable waterways; it generates energy and revenue via hydro power projects and its fisheries provide a stable source of protein, thus contributing to food security.

The ongoing integration of the Lao PDR into the ASEAN Economic Community, combined with the economic impacts of growth in neighbouring ASEAN countries and China, have generated high demand for the Lao PDR’s natural resources.
The Lao PDR is situated in Southeast Asia, in the heart of the Indochinese peninsula, at a Latitude of 14° – 23° N and longitude of 100° – 108° E. Its topography can be divided into three main categories: uplands, lowlands and plateaus. The uplands or plateau regions cover around 75 percent of the country’s surface. The highest peak is Phou Bia Mountain at 2,820 metres above sea level (masl) in Xiengkhouang and the lowest point is 70 masl along the Mekong River in Champasak Province, near the Cambodian border.

Northern Lao PDR is highly mountainous. The Annamite Mountains run from the northwest to the southeast of the country, largely along the Vietnam border. Plateau areas are found mainly in Xiengkhouang Province, in Khannouan and in Champasak. The lowlands encompass around 25 percent of the country’s area and stretch from Vientiane Capital, along the Mekong River, and south to the Cambodian border.

The climate of the Lao PDR ranges from subtropical to tropical. Under the Köppen climate classification system, it is classified as Am (tropical monsoon climate), Aw (tropical wet savanna climate), and Cwa (monsoon-influenced humid subtropical climate). Two defined seasons characterize the Lao PDR’s climate: the dry season and the wet season. The dry season begins in November and lasts until April, while the wet season runs from May through October. The five climate graphs on the map illustrate monthly precipitation as well as monthly average temperature in different areas of the country. The graphs demonstrate how rainfall increases during the wet season and is heavier in the regions around Pakxe and Phongsaly. While the majority of the Lao PDR experiences warm temperatures year-round, some areas of Phongsaly and Houaphan reach much colder temperatures during the dry season than the rest of the country due to their higher altitudes.

The map also shows the national and main road network. The Lao PDR is a landlocked country, thus it depends greatly on road transport for economic development. In recent decades, the expansion of the road network has been followed by a substantial growth in the number of vehicles across the country. However, remote areas still experience minimal traffic due to the low volume of economic activity occurring there. Despite significant improvements in the road network quality in the last decades, many roads are still in poor condition. Waterways are another important means of transportation in the Lao PDR, and the Mekong and Nam Ou Rivers are important natural channels for large-draft boat transportation. Finally, ten airports have been built in the Lao PDR, three of which offer international flights: Vientiane Airport, Luang Prabang Airport and Pakxe Airport.
A2 Relief, climate, and transportation networks
A3 Administrative divisions

The Lao PDR is a landlocked country located in the heart of Southeast Asia, with a geographical area of 236,800 km². It is bordered by China to the north, Vietnam to the east, Cambodia to the south, Thailand to the west and Myanmar to the northwest.

This map shows the administrative divisions of the Lao PDR as of 2011, including provincial and district boundaries, with their respective capitals, bodies of water, national roads and other main roads. The district codes illustrated on the map are also listed on the bottom left with their respective district names. The Lao PDR is divided into 16 provinces (referred to as khoueng in Lao language) and one prefecture (kampheng nakhone), also known as Vientiane Capital (nakhone luang viengchan). The provinces are then divided into 143 districts (meuang) which are the secondary administrative divisions. The lowest administrative units are villages (ban), of which there are 8,643 in total.

The number of districts and villages has changed since the establishment of the Lao PDR. These changes were part of a process driven by the Government of the Lao PDR’s (GoL’s) stated aim of improving accessibility and providing effective administrative governance as well as socioeconomic and cultural development through strategic use of its limited resources. The Population and Housing Census of 2005 reported 133 districts and over 11,000 villages. As a result of these processes of rural restructuring the total number of districts increased to 143 by 2011, while the number of villages decreased to 8,643, largely through consolidation and resettlement. Vientiane prefecture, once part of Vientiane Province, was formed in 1989. To address security issues, Xaisomboun Special Zone (khetphiset) was established in 1994 by merging parts of Bolikhamxai, Vientiane and Xiengkhouang Provinces. Xaisomboun Special Zone was dissolved in 2006 and its districts transferred to Vientiane and Xiengkhouang Provinces. In 2013, Xaisomboun Province was re-established.

The most populous province is Savannakhet, which also has the largest area at 21,775 km². Vientiane Capital is the second most populated (with 820,940 inhabitants) and has the highest population density, with 180 inhabitants per km². Xekong Province is the least populated, with only 113,048 inhabitants and a population density of 11 inhabitants per km².

Vientiane Capital has been the capital of the country since the 16th century. The metropolitan area is home to the national government’s administrative offices, foreign embassies and many major businesses. Due to the high rate of urbanisation, Vientiane Capital has experienced a significant population increase during the last decades, with an average population growth rate of 3.1 percent per year between 1985 and 2005 (JICA, 2011).

The provincial and district boundaries do not always align with natural geographic features such as rivers, streams, mountain ridges, valleys, and so on. This is because the boundary delineation process was mainly based on the history of administrative governance ties and mutual agreement between districts and provinces, rather than geographic features.
A4 Accessibility of villages

The map indicates overall road accessibility at the village level, along with provincial and district boundaries, and provincial capitals. Year-round access is concentrated mainly in the lowland areas along the borders with Thailand. Even though more than 65 percent of villages have year-round road access, many other areas are still only accessible in the dry season and some villages are not accessible by road at all throughout the year.

More remote areas, indicated in red, are located primarily in the north, along the eastern border and near major mountain ranges, including western and southwestern Luang Namtha, southeastern Bokeo, southern Oudomxai, the hilly areas of Luang Prabang, northwestern Houaphan, eastern Bolikhamxai and the majority of Phongsaly Province. The eastern part of Khammouan, northeastern Xekong and Salavan adjacent to border with Vietnam and southern Champasak are difficult to access as well. The geographical features of these places limit the development of a solid transportation network. In addition to road access limitations because of difficult terrain, large parts of the National Biodiversity Conservation Areas (NBCAs), are inaccessible by road due to conservation-related regulatory measures. Orange indicates the areas accessible by road only in the dry season. Seasonally accessible villages are commonly found in northern and eastern Lao PDR and along the Annamite Mountain Range. In yellow are the most accessible areas, mainly located on the west side of the country, along the main highways and the Mekong River. The road connections in these areas facilitate trade with neighbouring countries via east-west and north-south economic corridors.

More than 75 percent of the Lao PDR is mountainous and relatively rich in water resources, with many rivers and small streams. 90 percent of the country’s area is located in the Mekong River Basin, while roughly 25 percent of the entire Mekong River Basin itself falls within the territory of the country (FAO, 2016). Despite the many benefits of Lao PDR’s abundant water resources, the density of rivers and streams also presents an obstacle to the modernisation of road-based transportation networks. Inaccessibility due to the mountainous terrain and dense river networks is further exacerbated by low population densities and an abundance of small, dispersed rural communities, making infrastructural and commercial investments costly.

Due to the frequent occurrence of natural disasters such as flash floods, landslides, and storms, maintenance of the road network is necessary - and costly - throughout the year. Due to budget limitations, road damage from natural disasters often goes unrepaired, cutting off remote villages and creating challenges for delivering assistance. It is important to highlight that this map specifically indicates differing degrees of domestic road access, but it does not account for accessibility through other modes of transportation or accessibility from other countries. People living along the Mekong River and some of its tributaries may, for example, also use water as means of transport; and border regions may be well-connected to markets in other countries while being relatively disconnected from domestic services and economic infrastructure.
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A5 Accessibility of markets

The market is the physical place where production meets consumer demand. In developing countries, markets create income-generating opportunities and can contribute to poverty and hunger reduction. Adequate market access is of crucial importance for farmers because markets allow them to acquire farm inputs and farm services and to deliver their agricultural produce to potential buyers.

This map illustrates the accessibility of markets in terms of travel time. The colour ranges from green to red to show the travel time from a specific location to the closest market. The regions shown in green enjoy quick and easy access to markets, whereas for those coloured red it takes 10 hours or more to reach the nearest market. Market locations are distinguished by those that are permanent markets (yellow) and temporary markets (blue).

Markets tend to be located in provincial and district capitals, areas close to national and main roads, and the lowlands in general, especially in the Mekong River Plain. The density of markets is highest in the Vientiane Capital City area. In mountainous regions and regions with limited road access, indicated in red on the map, reaching a market can be difficult.

Around 150 to 200 villages are located in these difficult-to-reach areas, where most inhabitants engage in subsistence-based agriculture and only sporadically sell their surpluses to markets.
A5 Accessibility of markets

Administrative divisions:
- Province capital
- Province boundary
- District boundary
- Water
- National roads and main roads

Accessibility to markets:
- Permanent market
- Temporary market
- Village without market

Travel time in hours:
- > 10
- 10 - 1
- < 1
A6 Main land types

This map illustrates the three main land types present in the Lao PDR, which relate primarily to the slope of agricultural land. The green colour indicates lowland areas, primarily located along the Mekong River. The brown colour indicates upland areas, which dominate the northern and eastern parts of the country. The yellow colour shows the plateau areas located between the uplands and the lowlands.

The GoL organizes development planning around three general land types: the lowlands, the uplands, and the plateau areas. The lowlands are characterized by rain-fed and/or irrigated farming along the Mekong River and its tributaries where crops are cultivated mainly for commercial purposes. The most common crops cultivated on this type of land are rice, maize, cassava, sugarcane, soybean and banana. In the uplands, which are found primarily in the northern and eastern mountainous regions, the population engages more commonly in shifting cultivation, agroforestry and tree plantations. The GoL considers many traditional forms of shifting cultivation to be damaging to the environment and soil nutrients, resulting in a number of policies historically aimed at eradicating shifting cultivation practices, and more recently toward stabilizing and reducing the area under shifting cultivation. Rubber has been proposed as an alternative to shifting cultivation and has been promoted widely, with mixed results. The plateau and shallow slope areas are mainly used for the production of maize, cardamom, coffee and tea.

The Agricultural Development Strategy to 2025 and Vision to 2030 aim to promote commercial agricultural production and increase the export of cash crops. Rice production for export is especially encouraged in the central and southern lowland areas, e.g. in Khammouan, Savannakhet, Salavan and Champasak. Coffee is encouraged on the Bolaven Plateau in Champasak, Salavan and Xekong. The volume of tea production has also increased significantly in the upland areas of Phongsaly and in the plateau areas of Xiengkhouang. The high volumes of maize produced and exported from Bokeo, Oudomxai, Xayabouly, Xiengkhouang and Houaphan to neighbouring countries is one of the key achievements of the commercialization policy.

It is important to note that there are limitations to categorising the main land types by topography only, as land use practices and priorities are highly diverse and differ from area to area within the country.
A6 Main land types