Opportunities for Development Cooperation in Lao Strategic Sectors

Renewable Energy, High-Value Agriculture, and SME Development

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THE ISSUE

- **Renewable energy, high-value agriculture, and small and medium-sized enterprises (SMEs) are three economic sectors of strategic importance for U.S.-Laos development cooperation.** These sectors are critical to Laos’s economic vibrancy and employment but face challenges with scaling, productivity, and skilling.

- **Innovative technologies of the Fourth Industrial Revolution can strengthen these sectors.** Floating solar panels, flex grids, and wind farms can complement Laos hydropower sources and enable a more diversified energy mix, while digital resources can improve agricultural practices and expand business literacy.

- **The U.S. Agency for International Development (USAID) can support SMEs through training programs and exposure exercises that can enhance the business and technical skills of entrepreneurs.** Post-Covid-19, there is significant opportunity to develop the ecotourism segment.

INTRODUCTION

Taking advantage of its mountainous topography and the Mekong River flowing through the country, Laos has extensively developed its hydropower capacity. As of 2021, the country has 78 operational hydropower dams and has signed memorandums of understanding for another 246 projects along the Mekong River and its tributaries. At the same time, the Mekong Basin provides local communities with their livelihoods through fishing and growing commercial crops like rice and coffee. Laos also has a very vibrant set of SMEs, which make up an overwhelming majority of businesses in Laos. SMEs currently account for over 80 percent of all employment (including agricultural SMEs) but contribute less than 20 percent of the country’s gross domestic product. Most of these small firms engage in retail and wholesale trade and other services such as tourism.

These sectors, however, face major obstacles to continued growth. Agriculture is dominated by subsistence, small-scale farming, with many farmers struggling to produce enough food for their families. Laos experiences high levels of malnutrition in many areas of the country. Laos’s agricultural sector needs increased mechanization and irrigation, while farmers need better skills and access to finance. The sector broadly must become more climate-resilient and high-yielding. In the energy sector, hydropower, which has had far-reaching effects on the environment and Lao people, should be complemented with renewable energy streams. Additionally, the Covid-19 pandemic and ensuing lockdowns have left many SMEs struggling to stay afloat, many of whom remain unaware or wary of government assistance programs. SMEs need considerable financial and technical support to recover from the Covid-19 pandemic. Given these trends, USAID has an opportunity to work with other donors to assist the Lao government in encouraging more inclusive growth and shared prosperity.
DIVERSIFYING LAOS’S ENERGY MIX

For the past decade, Laos has committed to building a network of hydroelectricity dams along the Mekong River and its tributaries. As it continues to grow its energy capacity, the Lao government should consider diversifying into renewable energy for several reasons. The cost of solar and other renewable energies has decreased significantly in the past decade, making it competitive to hydropower pricing. Donors can support the uptake of renewable energy by subsidizing investments in renewable energy, so Laos has competitive choices. While there are talks about more power purchasing agreements, demand for energy has fallen slightly in Thailand, Vietnam, and Cambodia for hydropower (due to environmental concerns). Finally, Laos still has to import electricity to meet all domestic demands, due to inefficient national transmission and distribution networks. Small-scale solar grids and other renewables have the potential to bridge the electricity gap in rural communities.

HYDROPOWER

In the energy sector, the Lao government has largely focused on developing hydroelectricity, supported by foreign investments. In 2019, 80 percent of all electricity generation came from hydropower. This has contributed to the significant electrification of Laos, from 15 percent in 1995 to 95 percent in 2020. The remaining 5 percent of Lao who do not have access to electricity are in remote parts of the country, where it is difficult to extend current grid access. Notably, Laos’s hydropower sector has been in large part propped up by investments from neighboring countries. While Thailand has invested heavily in dams through private financial vehicles, China is a significant investor through sovereign lending agencies as a part of its Belt and Road Initiative; 81 percent of overseas Chinese dams along the Mekong are in Laos. Having built 11 dams itself in the upper Mekong region, China has also invested over $11 billion into Lao hydropower plants. This has resulted in high debt risk for Laos, whose outstanding debt is equivalent to two-thirds of annual economic output. In September 2021, Laos handed control of its national power grid to a state-owned Chinese company to alleviate its debt burden. Later in December, the finance minister told the Lao parliament that $1.8 billion was urgently needed to repay loans and prevent defaults in debt. The construction of these dams along the Mekong River has also taken a toll on water and sediment flows critical to rice cultivation. Depleted water levels have affected the number of fish caught, decreased crop yields, and exacerbated droughts.

RENEWABLE ENERGY

Meanwhile, the country is starting to diversify its energy industry beyond hydropower. In 2011, Laos adopted the Renewable Energy Development Strategy, aiming to generate 30 percent of all energy consumption from renewable energy. A 2018 study from the National Renewable Energy Laboratory and USAID found that Laos has significant potential for solar photovoltaic, wind, and biomass energy due to its geography. Like Cambodia, Laos can develop clean energy sources (see Box 1).

In recent years, Laos’s renewable energy ambitions have stalled due to a lack of competition and private investment. Corruption and lack of transparency have also hindered the development of the sector. In 2017, USAID Clean Power Asia started working with the government of Laos to implement clean power, leading the government of Laos to edge toward better energy practices. In 2021, USAID Clean Power Asia planned Laos’s first solar auction, scouting sites in Khammouane and Savannakhet Provinces to build five solar plants that would yield 45 megawatts (MW). Moving forward, USAID can help the Ministry of Energy and Mines increase competitive bidding and encourage a more transparent energy market. At the same time, USAID is awaiting permission from the government to implement its Laos Energy Security project, which will support efforts to achieve a resilient and more sustainable power sector.

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Floating photovoltaic (FPV) solar panels are also an option that the Lao government should consider. FPV solar can exist on top of dams and work with existing technology in Laos while helping with evaporation loss and preventing algae bloom. In November 2021, French energy company EDF announced a project to build a 240 MW floating solar power plant at the Nam Theun 2 hydropower dam. The project would be the country’s largest solar plant and would work in conjunction with the dam. Should the project be successful, this could pave the way for a new energy source along the Mekong River without the disadvantages of building new dams. An analysis from the Viet Ecology Foundation found that an 11,400 MW FPV plant with storage would generate equivalent power at a lower cost compared to three planned hydropower plants on the Mekong River: Pak Lay, Pak Beng, and
Luang Prabang. Similar to floating solar, rooftop solar can sit in urban areas that have high electricity demand during the dry season. Such solar technologies can help mitigate the dry-season supply gap that often forces the Lao government to buy higher-priced energy from its neighbors, rather than selling its own electricity.

For villages in Laos that still cannot access electricity from hydropower plants, “mini grids” or “flex grids” renewable projects are sustainable solutions that provide reliable and cheap electricity to remote communities. **Mini grids** are “independent energy systems that operate outside of the national grid,” while **flex grids** consist of a central power hub with individual power storage units that can expand based on demand. Flex grids can grow simply by adding more storage units to the central system. The United Nations Development Program (UNDP) installed successful flex grids in the remote villages of Kobong and Thapaiban in Laos in 2021. Such models can contribute to the sustainable electrification of rural Laos. These solar plants—FPV, rooftop solar, and flex grids—could also start a new SME industry of assessments, installation, and maintenance. However, it would need to be paired with grid upgrades and capacity upgrades to deal with intermittent energy sources.

**BOX 1: CLEAN ENERGY IN CAMBODIA**

In 2017, almost all of Cambodia’s power originated from coal and hydroelectric sources and there was no solar power in the country. International funding and concessional loans and grants encouraged government commitment toward clean energy. Cambodia is enlisting its solar plants and parks in competitive auctions, enabling the participation of the private sector in the renewable energy industry. Cambodia’s new national power plan also calls for 1.8 GW in solar capacity by 2030, and the government is exploring energy storage technology. By 2021, seven solar plants had been connected to the grid. Initial investments and the surge in solar capacity have been driven by international and private sector players, such as the Asian Development Bank.

**WIND & BIOMASS**

Biomass and biofuels (fuels created from biomass) also have potential for development given the Laos agricultural sector. Byproducts from farming, including straw, can be **used as feedstock** for biofuel production for biodiesel and bio-ethanol. These fuels, in turn, can replace fossil fuels used in transportation and to supply energy to rural communities. Laos has to import all of its petroleum and gas resources, so producing its own biofuels could help reduce its import dependence. Biofuels are largely untapped in Laos, but this is a sector with tremendous opportunity should the government invest time and resources to build biofuel production plants. Those currently looking at biofuel potential include the government, nonprofit organizations and research institutes, private companies, and nongovernmental organizations.

There are also opportunities to develop energy from the wind. In September 2021, Thai-based energy company Impact Energy Asia and Mitsubishi Corporation announced a deal with the Lao government to build the “Monsoon Wind Farm” in southern Laos, making it the largest onshore wind farm in Southeast Asia. This wind power project could spur the development of further wind energy in Laos, which is still in the early stages of investment.

**STRENGTHENING AGRICULTURAL VALUE CHAINS**

Agriculture is central to Lao livelihoods, but the sector needs to be modernized. The sector has grown at a rate of just 3 percent a year, compared to Laos’s cumulative 7 percent economic growth rate. Just 10 percent of land is dedicated to agriculture, and arable land is scattered across the mountainous country. Laos’s most important **crops** include cassava, rubber, bananas, rice, maize, sugarcane, and cattle. These crops can be milled into flour or processed into other products, but there is limited processing in the sector. This lack of local processing restricts the growth in value chains with linkages among farmers, processors, and consumers. USAID has the opportunity to foster growth by identifying processing opportunities and to help buy down risk of investors.

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Laos’s agricultural sector has long been hindered by a web of obstacles. According to the **Asian Development Bank (ADB)**, the sector faces a series of physical, socioeconomic, and capacity constraints. Farmers lack the literacy and numeracy skills to commercialize and scale up operations. Most are not trained to improve farming practices and increase productivity, though the Ministry of Education and Sports has worked with the National
University of Laos to offer higher education in agriculture studies. Rural farmers also have difficulty accessing credit from registered microfinance institutions, which gave less than 10 percent of all loans to the agriculture industry (and that 10 percent was almost exclusively given to large-scale agricultural enterprises) in 2014. Instead, rural localities usually use village funds, “community-based operations that accept deposits from, and issue loans to, their members,” to gain credit.

Complicating matters is that the rural areas are heavily contaminated by unexploded ordnances (UXO) left from the Vietnam War. Laos is the most bombed nation in the world, and as a result approximately one-third of Laos’s land territory is plagued by UXO. These remain a serious safety hazard to local communities and a significant impediment to economic development. Although most of the land cleared can be used for agriculture, UXO clearance is a painstaking process, which means that UXO are likely to present significant challenges for many years to come.

At the same time, the lack of efficient transportation and storage prevents many farming communities from exporting their produce. Laos’s mountainous terrain is prone to steep gradients and flooding, making roads difficult to use. High rainfall limits access to rural villages, preventing them from transporting agricultural commodities. The government needs to build better connectivity, especially roads with cross-drainage structures and water runoff designs, but this is extremely expensive. Without adequate storage of crops, farmers are often forced to sell their crops immediately or risk exposing their crops to pests and fungi and losing much-needed profit. Convoluted government regulations have also made it difficult to import and access new farming equipment and technologies that would improve practices.

Finally, climate change undoubtedly is one of the greatest threats to the agricultural sector. Droughts have worsened, making the dry season much worse for farmers in recent years, which highlights the importance of functional irrigation systems across the country. Aside from building irrigation systems, operation and maintenance are difficult to carry out due to high costs and the need to upgrade systems every 10 to 15 years. Ensuring better irrigation practices, drought management, and crop storage can make farms more adaptable to the impacts of climate change. Any innovations, policies, and improvements to farming practices will have to incorporate climate resilience.

**STRENGTHENING THE SME SECTOR**

With 60 percent of Laos’s population under the age of 25, SMEs can serve as a major driver for job growth to absorb the growing labor force. Yet the Covid-19 pandemic has had a significant impact on SMEs, which continue to struggle from the effects of the lockdowns. Firms reported that sales fell 40 percent in 2020 compared to 2019. Moreover, one-third of family-run businesses had to close temporarily, while a majority of family businesses reported a loss in revenue in 2021. Few small businesses have received support from the government, as mostly bigger firms have taken advantage of fiscal exemptions and tax reductions or deferrals. Around half of all SMEs are not even aware of government support programs that could help them during the pandemic.

Before the Covid-19 pandemic, businesses listed access to finance, practices of competitors in the informal sector, and electricity as the greatest challenges to their growth, according to a 2018 World Bank Enterprise survey. These are areas of focus to help SMEs bounce back and are being incorporated into the government’s Covid-19 economic recovery plans.

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In addition to finance, SMEs could benefit from expertise on how to deliver quality products and services, allowing the country to add value to its supply chains. In November 2021, USAID, through the Laos Business Environment project, launched the Laos Business Ecosystem Partnership Fund with the Ministry of Industry and Commerce’s Department of Small and Medium Enterprise Promotion. The fund will support competition in the SME market and expand businesses domestically and internationally—and it is an important project to aid in the recovery of small businesses.
THE ROLE OF USAID AND DEVELOPMENT PARTNERS

As Laos embarks on its Covid-19 recovery, USAID and other development partners can support the government’s efforts through specific strategic actions that will help address some of the current shortcomings in these critical sectors. These strategic sectors will require significant investments and time to mature. The Lao government will need to create the right incentives and the enabling environment for private actors to invest in these sectors. USAID and donors can accompany these efforts so local business owners can recover and expand from the Covid-19 pandemic. Actions that USAID and donors can take include the following:

- **Diversify beyond hydropower energy.** Renewable energy technologies like FPV, flex grids, rooftop solar, and wind farms can integrate well with Laos’s existing energy infrastructure and geography while providing more sustainable growth for rural communities that have been detrimentally affected by hydropower dams. UNDP and donors have already started installing new renewable energy projects across Laos and should continue to find more ways to integrate renewable energy technology into rural communities and in place of new hydropower projects. At the same time, because there is an excess of hydroelectricity around the country, the Lao government and USAID should find new markets for excess power. Thailand and Vietnam have expressed interest in non-hydropower renewable energy, and Lao planners could pursue conversations to meet this demand.

- **Strengthen agriculture value chains.** There are a number of agriculture projects that the Lao government, USAID, the U.S. Department of Agriculture, and development partners are currently undertaking to improve the agriculture sector. Laos’s 2021–2025 Agriculture and Development Strategy aims to improve agricultural efficiency and innovation while incorporating more collaboration with actors across the agricultural supply chain—from farmers to consumers. In 2018, the World Bank approved a $25 million grant to increase the competitiveness of Laos’s agricultural value chains; improve crop yields, quality, and productivity; and increase profitability for farmers. The USAID Laos Microenterprise, launched by USAID in 2019, will also work to strengthen Laos’s agricultural development. The project will help agricultural microenterprises, including small-scale Laos farmers, to “respond to market needs, increase market linkages, and improve access to finance.” There is an opportunity for USAID to grow supply chains by driving market demand. USAID can identify potential processing opportunities for Laos’s major crops (e.g., processed garlic, chili pastes) and help buy down the risk of investors through low-interest loans, capital injections, business mentorship and networking, and farmer training. Additionally, because many farmers plant at subsistence levels, food is imported from external growers to meet the demand from urban centers. There are certain crops grown in Laos, such as garlic and onions, that can be grown and consumed domestically rather than imported from abroad. To scale production of such crops, programs should have matching funds from foreigners to SMEs to get access to capital, technology, or training. Doing so will strengthen domestic markets.

- **Devise innovative finance programs.** At the same time, businesses that are linked to farming also need financial and technical support. Currently, Lao banks use collateral and unsuitable loan repayment periods that do not work well with seasonal agricultural goods. Without a change to the bank borrowing system, many companies are constrained by a lack of working capital. Small financial institutions do not have the capacity to go to rural areas and monitor who can and cannot receive loans. Using its expertise in supply chains and assisting SMEs, USAID should work with the banking sector to help enterprises in the agriculture value chain access capital and loans that will allow them to operate consistently. Initiatives like the Laos Business Ecosystem Partnership Fund should include businesses in the agriculture ecosystem to enhance their capacity and services. This can be integrated with a program to expand basic literacy and numeracy skills for Lao farmers, so they have better acuity to manage and scale their businesses.

- **Improve business skills and expand networks.** Geographically, Laos is a central waypoint to supply goods to markets in China, Vietnam, Thailand, and Myanmar. But local Lao business needs to be linked to foreign firms and world-class business practices. Many Lao business owners also have limited business skills, not just in accounting or management, but also in basic digital and soft skills such as responding to emails, delivering on time, and ensuring quality control. The lack of such a skillset limits the ability of an enterprise to perform outside of Laos. The new China-Laos high-speed railway may be an avenue for some businesses.
to export their products, but this will require the right networks, proper packaging for products, and processing points. Without business skills and networks, there is a risk that Chinese investors could come and set up small businesses in Lao export industries, pushing out local business owners and leaving many Lao to participate mainly as laborers.

USAID and development partners should work on strengthening chambers of commerce, so these chambers can expose business owners and workers to trainings that can improve skills. In particular, digital tools can increase knowledge sharing and business literacy for small entrepreneurs.

• **Develop the ecotourism segment.** Tourism has become a significant economic sector over the past several years, and Laos can be more competitive in the ecotourism segment given its expansive natural landscapes. In the Southeast Asia region, with many polluted and crowded cities, Lao can market its image as a clean and tranquil destination for many Southeast Asian tourists—who make up a significant share of all tourists coming to Laos. However, the government needs to plan better and ensure that projects are integrated with its development strategy. A salient example is the Luang Prabang Dam project, which threatens Luang Prabang, a United Nations Educational, Scientific and Cultural Organization (UNESCO) world heritage site and destination for nearly 1 million international and domestic tourists. Using Luang Prabang for ecotourism can yield significantly more inclusive and sustainable growth for Laos.

Once the country can fully reopen its borders, campaigns like “Visit Laos Year 2018” can be beneficial to the tourism industry. That particular campaign featured events and festivals around the country and saw tourism revenue rise to $934 million that year. In the meantime, the government will need to increase investments into tourism management, infrastructure, and services to galvanize SMEs in the tourism industry. USAID could support a private sector–led tourism development strategy, in collaboration with key investors in tourism, aimed at developing these markets.

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