

IMPACT

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BRINGING POWER TO LAO PDR'S RURAL POOR

Lao People's Democratic Republic (Lao PDR) is one of the fastest growing economies in East Asia and the Pacific. It has improved access to electricity and has become an important energy exporter. Lao PDR presents a remarkable success story in rapid national electrification integrated within a broader strategy of national and rural development. The Energy Sector Management Assistance Program (ESMAP) provided vital support throughout the country's comprehensive electrification efforts that increased access and helped communities achieve social and economic growth.

Ms. Pan weaves mats and fishing nets in one of the rural villages of Lao PDR. Weaving, a tedious task that cannot be performed in the dark, is one of the main economic activities in the village and the primary source of Ms. Pan's income.

As a widow, having to raise her children alone, she struggled to make ends meet. Ms. Pan's life changed after she gained access to electricity.

"My life is normal now, not like in the past when we couldn't see well," says Pan. "Since we've had electricity, we can save 40,000 to 50,000 Kip (US\$5-6) a month because we can make more mats and fishing nets. Before, we couldn't make any more money, but now we can do whatever we want, whenever we want to do it."

Like Ms. Pan, many people in Lao rural communities benefitted from the government's efforts over the past 20 years to make sufficient, reliable, and affordable electricity widely available, and to create opportunities for growth. Today, 90 percent of the population is connected to the power grid, an increase from 16 percent in 1995.

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KEY ACHIEVEMENTS

- With direct support from the World Bank and ESMAP, Lao PDR has increased electricity access from 16% in 1995 to 90% of the population in 2017
- ESMAP support has helped to bring power to 14,000 households in 230 villages through individual solar home systems and to 52,000 households in 570 villages through grid extension
- Unique initiatives like Power to the Poor and Productive Uses of Electricity have helped to increase connectivity rates from 60% to 90% and to grow small and medium enterprises



The World Bank and ESMAP have been key partners in this journey. During two decades of World Bank support, nearly US\$84 million has been allocated to help expand the country's main grid, scale up off-grid renewable energy technologies, and strengthen the capacity of the Department of Electricity and the national power utility. Much of this investment was spurred by ESMAP's US\$500,000 contribution, which provided the analytical underpinnings needed to push this agenda forward.

LAYING THE GROUNDWORK FOR GRID EXPANSION

Taking advantage of the favorable economic environment in the country in the early 2000s, the government set clear targets for electricity access—70 percent by 2010 and 90 percent by 2020—to be achieved through aggressive grid extension complemented by off-grid electrification, where cost effective.

ESMAP, through its Asia Sustainable and Alternative Energy (ASTAE) program, helped lay the groundwork for the first phase of the World Bank's [Lao PDR Rural Electrification Program](#), designed to strengthen the capacity of the Department of Electricity and the

country's power utility and expand electricity to the rural poor in the seven southern provinces.

[ESMAP supported analysis](#) that examined off-grid development and explored financing options for electricity grids. The study defined the linkage between electrification and economic development and poverty alleviation. This enabled the government to outline the program's economic benefits and impact on poverty and helped leverage a US\$10 million World Bank loan approved in 2006 for the Rural Electrification Phase I Project (2006-10), one in a series of electrification projects financed by the World Bank since 1988.

OFF-GRID ELECTRIFICATION: REACHING THOSE BEYOND THE GRID

For villages beyond the reach of the power grid, the government had explored individual solar home systems and other off-grid technologies. However, funding for this type of electrification was insufficient.

ESMAP support came at a crucial moment.

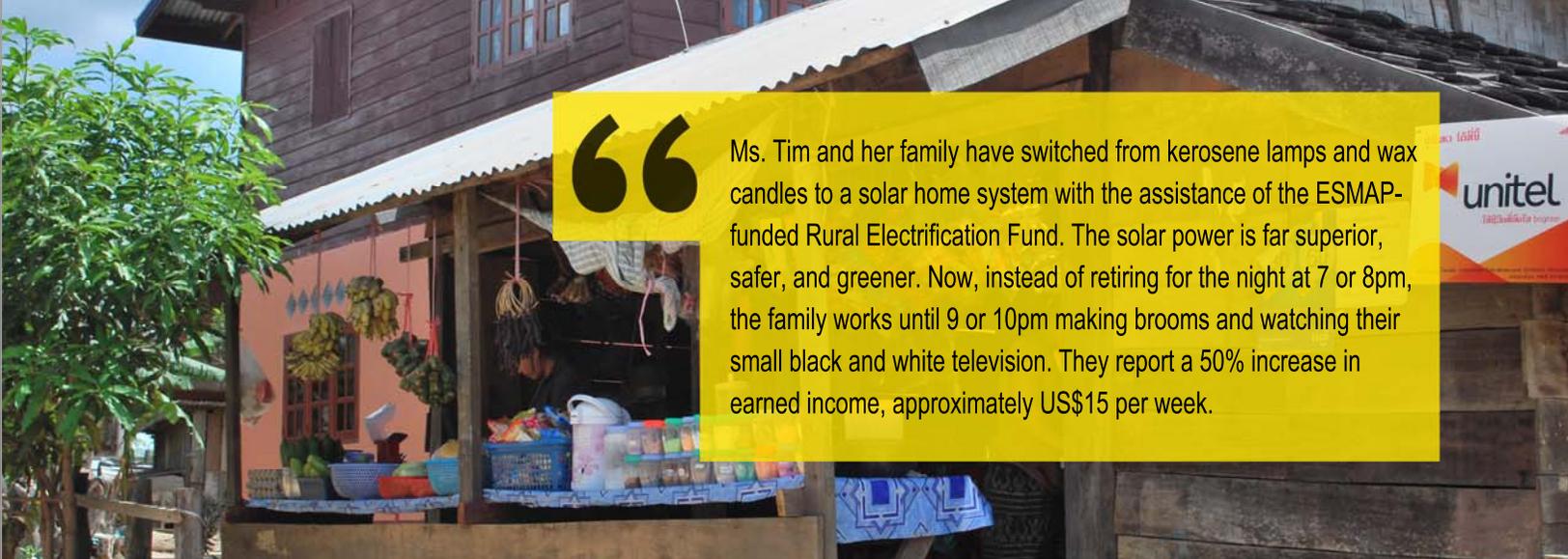
Through advice and financing, ESMAP helped create alternative financing mechanisms, including the Rural Electrification Fund (REF). The self-sustaining REF collects repayment from beneficiary households for solar home systems installed under the program and provides subsidies to encourage further scale-up and build local capacity. The REF also mobilized additional financing from other players such as the government, donors, the private sector, other financial institutions, and customers themselves.

This type of dedicated support helped to bring power to over 14,000 households in 230 villages through solar home systems and to 52,000 households in 570 villages through grid extension. Overall access rates exceeded the project's original targets and, at project closing in 2012, stood at 80 percent.

Solar home systems and other off-grid technologies have changed people's lives. Almost overnight, these households switched from traditional and unsafe fuels to clean and safe solar power. Now, businesses and markets can operate in the evening and families can power modern appliances such as fans, televisions, and even refrigerators—previously only available only to those connected to the main electricity grid.

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Ms. Tim and her family have switched from kerosene lamps and wax candles to a solar home system with the assistance of the ESMAP-funded Rural Electrification Fund. The solar power is far superior, safer, and greener. Now, instead of retiring for the night at 7 or 8pm, the family works until 9 or 10pm making brooms and watching their small black and white television. They report a 50% increase in earned income, approximately US\$15 per week.

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TARGETING THE POOREST HOUSEHOLDS AND WOMEN

The Lao PDR electrification program proved to be a success. However, after electricity reached the villages, authorities realized that about one-third of the households (30 percent) were still not connected, even though they were located near to the grid. A careful look at the situation found that the poorest rural households could not afford the upfront cost of grid connection and internal wiring, roughly US\$60-80. Through the [second phase of the Lao PDR's Rural Electrification Program](#), ESMAP was able to help address the issue of better targeting. It supported two main initiatives implemented by Lao PDR's national electricity utility, Electricité du Laos (EDL)—Power to the Poor and the Productive Use of Electricity.

Power to the Poor made [interest-free credits](#) available to poor families to enable them to afford a grid connection. The monthly payment—including both electricity consumption and repayment for the credit—was designed to be equal to the cost of lighting generated by candles, diesel lamps, or car batteries. ESMAP's East Asia and Pacific Gender and Energy Facility ensured that this scheme particularly benefitted female-headed households, like Ms. Pan's.

Since the program's implementation, connection rates in previously electrified villages jumped to above 90 percent—83,000 households, of which almost 8 percent were female-headed—and repayments rates are 100 percent.

The program demonstrated that targeting the poorest households and providing low-cost financing can be a simple and effective means of reaching the poorest, especially women and children, ensuring that they, too, benefit from access to power.

The Productive Use of Electricity initiative supported local communities and rural households to use electricity for income generation. The ESMAP-funded study [Powering Up Productivity in Rural Lao PDR: Stimulating Small and Medium Enterprises to Use Electricity for Income Generation](#) examined electricity use among businesses, services, and agricultural income-generators. It found that while the majority of business owners recognized the benefit of electricity access for expanding their enterprises, they faced critical challenges, such as upfront investment cost or insufficient information.

The study proposed specific measures such as consumer education and financing to promote productive uses of electricity among communities and to help them maximize electricity benefits.

Results from the initiative indicate that in newly electrified villages, an average of 30 new businesses were established, which allowed women to work well into the evening hours, creating and selling handicrafts to increase their income.

Existing enterprises, such as saw and rice mills, decreased their operating costs by switching to less expensive and more reliable grid power. In addition, farmers made use of grid-powered irrigation pumps for greater agricultural output. Households reported incomes three times higher on average, less share of their income spent on energy, and an increase in owned assets.

LEAVING BEHIND THE TITLE OF “LEAST DEVELOPED”

Lao PDR is on the threshold of graduating from Least-Developed Country status and the power sector has been a crucial element in the country’s development. With the World Bank and ESMAP’s continuous and dedicated support, the government of Lao PDR has made significant strides in the sector by already reaching over 90 percent of the population with reliable electricity.



Image Source: ©Meriem Gray | World Bank

ESMAP MISSION

The Energy Sector Management Assistance Program (ESMAP) is a global knowledge and technical assistance program administered by The World Bank. It provides analytical and advisory services to low- and middle-income countries to increase their know-how and institutional capacity to achieve environmentally sustainable energy solutions for poverty reduction and economic growth. ESMAP is funded by Australia, Austria, Denmark, the European Commission, Finland, France, Germany, Iceland, Italy, Japan, Lithuania, Luxemburg, the Netherlands, Norway, the Rockefeller Foundation, Sweden, Switzerland, and the United Kingdom, as well as The World Bank.