



IFC and the Clean Technology Fund Light Up Thailand

BLENDED FINANCE CATALYZES MAJOR GROWTH FOR THAI SOLAR PV

Solar Opportunities Arise in Thailand

In 2008, solar energy accounted for less than 2 MW of installed capacity in Thailand. But as technology costs continued to fall and the government began providing incentives for solar developers, Dr. Wandee Khunchornyakong, a retired solar panel manufacturing executive, dreamed that Thailand could be home to an unprecedented solar boom.

In 2009, Dr. Khunchornyakong's conviction in the potential of utility-scale solar brought her to a local office of Thailand's Provincial Energy Authority (PEA) to inquire about securing solar farm permits. With no one else in line for permits, the clerk requested that she "please take more, since no one wants them." Sensing a tremendous market opportunity, Dr. Khunchornyakong soon obtained 34 solar farm permits that would provide the foundation for her company, Solar Power Company Group (SPCG). She was officially out of retirement and on a mission to bring solar energy to Thailand in a big way.

Blended Finance for Climate at IFC

www.ifc.org/climatebusiness

Financing for an Unproven Market

With permits in hand, Dr. Khunchornyakong envisioned a massive, 34-site solar photovoltaic (PV) development in the sunny, rural areas of northeast Thailand. Totalling about 204 MW, these projects would help Thailand move toward a low-carbon growth path and reduce the country's reliance on imported energy, while driving economic growth in some of the most impoverished regions of the country.

There was only one missing piece to the plan: financing. Dr. Khunchornyakong needed to convince investors to place big bets on her large-scale solar plans. Unfortunately, even though the projects were supported by the Thai government's ESCO fund, investors were hesitant to provide capital to a largely unproven market. In 2010, the International Finance Corporation (IFC) stepped in to provide support for Dr. Khunchornyakong's pilot projects. The projects, accounting for almost 20 MW of installed solar capacity, began going online in April 2010 and laid the ground work for SPCG to start scaling their solar farms.

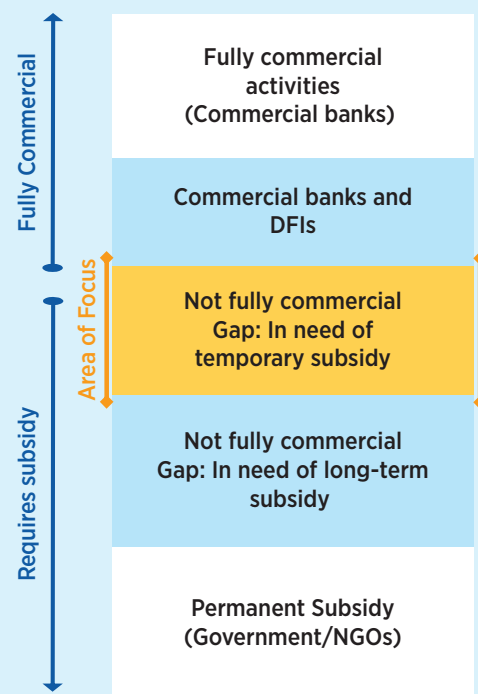
Thailand's Economic Growth Presents Energy Challenges

Thailand is one of Asia's foremost development success stories, and the country has recorded decades of sustained growth and poverty reduction. Thailand's economic growth, however, has also resulted in significant increases in energy consumption and associated greenhouse gas (GHG) emissions. Energy intensive sectors such as industry and motorized transport have largely driven Thailand's energy demand growth, with fossil fuels accounting for over 80% of the country's total energy consumption. Over 60% of the country's primary energy supply is imported, and in 2012 Thailand's oil imports alone reached a record \$38 billion, or 9.3% of GDP. To keep pace with energy demand while ensuring economic and environmental sustainability, major new investments in the power and transport sectors are needed.

Sources: EIA, Reuters, CIF

Why do MDB's Blend Concessional Finance?

- By deploying concessional funds, such as those provided by CTF, MDBs can help mitigate risk, reduce market barriers, and improve the economics of climate-smart projects
- These projects could not otherwise be developed on a purely commercial basis
- 'Blended' financing instruments are structured to help demonstrate a project's financial viability and help address the specific challenges of a high-potential yet challenging market
- Blended finance thus paves the way for future projects in the sector to be financed on fully commercial terms



Challenges, then Solutions, in Scaling up Solar

Support from the Thai government's ESCO fund and IFC helped provide the solar market with an initial boost and demonstrated that large scale solar PV was possible in Thailand. But to reach a sustainable market growth trajectory, solar developers required strategic financing to move from government-subsidized pilot projects to purely commercial solar farms. Indeed, even with three successful solar farms online, SPCG was unable to attract necessary long-term financing for its follow-up projects from local banks, which were concerned about solar viability in Thailand.

To help sustain the solar sector's momentum in Thailand, IFC stepped in to support SPCG's follow-up solar farms with an innovative financing mechanism known as 'blended finance.' By providing SPCG with a financing package with \$8 million of IFC's commercial funds combined—'blended'—with \$4 million in concessional finance from the Clean Technology Fund (CTF), SPCG secured previously unavailable long-term financing for its 6.12 MW Korat 2 and 6.12 MW Loei 1 solar farms. IFC's CTF-supported financing also helped reduce long-term project finance risks for lenders and sent positive signals to the local financial markets for utility-scale solar. Indeed, once IFC committed its support via blended finance, local lenders Kasikorn Bank, Bank of Ayudhya, and Thanachart Bank agreed to provide

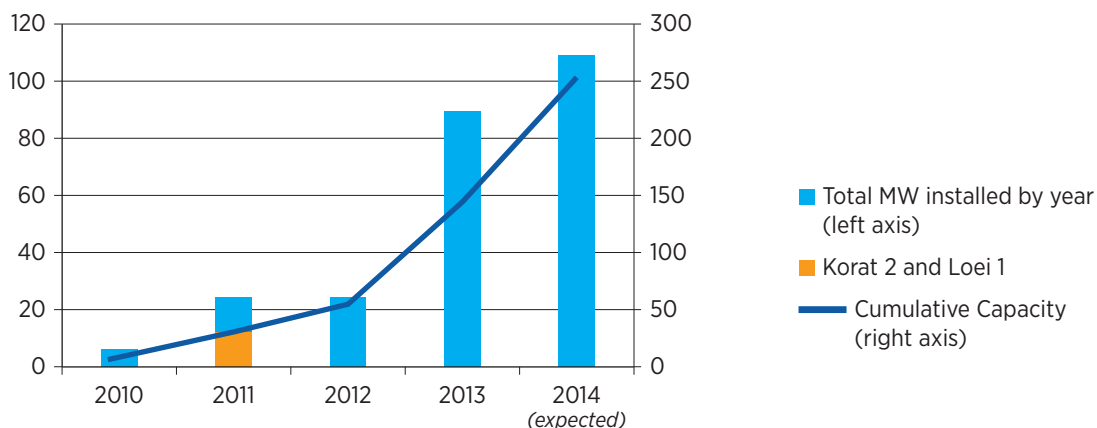
The Clean Technology Fund in Thailand

The CTF represents one of the four funding windows that make up the multi-donor Climate Investment Funds. The CTF offers developing countries incentives to scale up technologies that will reduce greenhouse gas emissions. Each CTF investment plan is tailored to align with country development objectives and environmental policy goals.

The government of Thailand has received \$170 million in CTF financing to support a portfolio of investments geared toward achieving significant GHG reductions and accelerating private sector investment in utility-scale clean energy projects.

Korat 2 and Loei 1 with crucial financing to move the projects towards financial closure. By late 2011, the solar farms had begun supplying clean, renewable power to Thais, paving the way for SPCG to transition from a small-scale solar developer to the largest solar farm developer in Thailand.

FIGURE 1: SPCG's Solar Farm Capacity (MW)



Source: SPCG

Blended Resources Drive Clean Energy Growth

IFC's and CTF's investments helped provide Dr. Khunchornyakong with the support necessary to bring her transformative solar farms over the finish line. "IFC is a trusted partner at every development stage of our renewable energy investment plan" Dr. Khunchornyakong said in an interview. "Financing by IFC, the Clean Technology Fund and other partner banks is critical to the realization of our target to have 204 MW of solar generating capacity operational by 2013," she said.

In fact, the early support from IFC, along with the critical financing boost from CTF, have enabled Dr. Khunchornyakong to go beyond her original plan and expand the 204 MW development to over 250 MW. SPCG's solar farms are expected to attract upwards of \$800 million of clean energy investments while avoiding over 200,000 tons of CO₂ emissions annually, the equivalent of taking more than 40,000 passenger vehicles off the road or eliminating the use of almost 500,000 barrels of oil each year.

The financial success of these early solar farms has helped drive private investment in Thailand's clean energy sector, prompting industry analysts to identify Thailand's solar market one of the most attractive among the world's emerging economies. Thailand is now well on its way to meet its aggressive goal of 3,000 MW of solar PV by 2021, which will be instrumental to improving Thailand's energy security and economic sustainability moving forward.

As Thailand's pioneer in solar farm and solar rooftop development, Dr. Khunchornyakong considers her solar farms a model for other countries that are looking to scale up their renewable energy. "Solar



Source: IFC

energy is the 'endless power'—it's clean and available at no cost," she said. "Other countries can replicate our experience in Thailand and undergo similar transformations that benefit their citizens."

SOURCES

1. Clean Technology Fund. (2012). *Thailand*. Retrieved from https://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/CTF_Thailand.pdf
2. Jittapong, Khettiya. (2013). *Chasing Profits, Power Producers Fuel Thailand's Solar Rush*. Reuters. Bangkok, Thailand. Retrieved from <http://www.reuters.com/article/2013/11/08/thailand-solar-idUSL3N0IQOT120131108>.
3. Suwannakij, Supunnabul. (2013). *Thailand Boosts Solar Target by 50% to 3,000 Megawatts*. Bloomberg. Retrieved from <http://www.bloomberg.com/news/2013-07-23/thailand-boosts-solar-target-by-50-to-3-000-megawatts.html>
4. US Environmental Protection Agency (EPA). (2014). *Greenhouse Gas Equivalencies Calculator*. Retrieved from <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>
5. PV Magazine. (2013). *Thailand to Top Emerging Market Table*. Retrieved from http://www.pv-magazine.com/news/details/beitrag/thailand-to-top-emerging-market-table_100012966/#axzz30JOoitcD
6. US Energy Information Administration. (2013). *Thailand*. Retrieved from <http://www.eia.gov/countries/analysisbriefs/Thailand/thailand.pdf>