

# Diesel faces the squeeze in Southeast Asia

**Diesel offsetting** | At a conference in Thailand at the end of 2014, delegates heard of the region's attempts to break free of costly diesel power. Lucy Woods reports on the progress solar energy is making in displacing the diesel generators



Credit: Sommedix

The sub-continental region of Southeast Asia is one of the last places on the map to be electrified – but the region could also be one of the first to displace the majority of its fossil fuel generation with solar. At the end of 2014, Solar Energy Southeast Asia, hosted in Bangkok, Thailand, by *PV Tech Power's* publisher, Solar Media, heard multiple speakers hailing solar's growing competitiveness with the current dominant fuel source: diesel.

Crude oil-based diesel generators

fuel the vast majority of Southeast Asia, where sprawling island geographies make centralised grids something of a rarity. In a region prone to typhoons and the worst effects of climate change, the case for solar in Southeast Asia is particularly symbolic, and all these factors are making the region a fertile testing ground for solar energy innovation, including storage, hybrid and mini-grid technologies.

Using "hybrid mini-grid" technology is the only way for Southeast Asia to go, said Andy Schroeter, CEO of off-grid specialist,

**Southeast Asia's reliance on costly diesel generation is providing impetus for the deployment of solar in the region.**

Sunlabob. Mini-grids, decentralised new technologies are proving the cheapest and quickest way to provide power to the 134 million people, or 22% of the population of Southeast Asia, who do not have access to electricity, Schroeter said.

There are very low electrification rates in Cambodia, Myanmar, Indonesia and the Philippines, along with high grid rates, said Schroeter, adding the best commercial possibilities for solar is away from highly hydro-based countries such as Laos and Thailand.

According to Sunlabob the most commercially viable solar opportunities for solar hybrid projects in Southeast Asia are in areas where there are high loads relying mainly on diesel fuel. From private mini grid operators using generators, on- and off-grid factories, fish processing centres, agricultural processing buildings, telecommunications towers, to hotels and hospitals: there are many possibilities for solar to replace and offset diesel generators.

Solar is easier and cheaper to maintain, cleaner and safer and saves money over time, said Schroeter – but education is required on the longevity and reliability of solar energy, he added.

### Solar-diesel parity

“Solar is at parity” with diesel in the Philippines, said Tetchie Capellan, founder of the Philippine Solar Power Alliance (PSPA) and managing director of local installer, Solarus Partners. Capellan is certain that solar-hybrid development is the solution for bringing clean energy to the 7,100 islands in the Philippines. Due to the Philippines’ archipelago geography, formed of thousands of islands, there is no centralised grid but diesel generators instead, which Capellan said are “perfect for transitioning to solar off-grid hybrid solutions, due to the rich solar resource”.

According to PSPA, in the Philippines, solar costs US\$0.21 per kWh, while diesel costs US\$0.28 – and provides zero investment opportunities to get generation costs back.

“There is no return on diesel”, whereas solar has a return on investment (RoI) in “four to five years”, agreed Wuthipong Suponthana, founding member of the Thai Solar Club and managing director of hybrid system specialist, Leonics.

“Solar today is competitive with diesel”, added Deepak Verma, managing director of nv vogt – which is developing a PV project in the Philippines to offset diesel generation. However, Verma explained that solar cannot yet completely replace diesel; because solar energy cannot meet evening peak energy use, it could only offset diesel use.

Nevertheless Verma said that with 40% of peak energy generated by diesel today, just in the Philippines, displacement of solely peak energy use creates an 800MW opportunity for solar energy. Capellan said that most islands that have electricity in the Philippines only have electricity for a few hours; solar-diesel hybrids could provide electricity 24 hours a day

## Solar’s inroads in Southeast Asia

### Singapore

Singapore is developing plans to aggregate its solar energy generation, to defeat solar’s perennial problem with intermittency due to cloud cover. Power would still be variable, but more stable, and would require vast amounts of weather data, which the government is currently attempting to gather. So far the data indicates Singapore is too large to be covered in cloud simultaneously, therefore continuous solar energy should be possible with adequate, smart distribution and storage systems. The government is also in the process of creating an online PV potential map for all of Singapore using GPS mapping. Members of the public will be able to go online and find out the PV potential of their rooftops.

### Thailand

Thailand is the leading solar deployment in Southeast Asia, with 1.087GW total installed capacity in 2014, an increase from 785MW in 2013 and 220MW in 2012. Solar is also cheaper than liquid natural gas (LNG) on a levelised cost of energy (LCOE) basis in many cases in Thailand, depending on the reduction of fuel costs and caps to the cost of new national infrastructure fund programmes. Currently under discussion by the Thai government are regulations on government power purchasing from solar PV generation, the creation of an agricultural cooperation programme and the negotiations of a new solar PV ground-mount committee, with possible changes to the feed-in tariff (FiT) on the table.

### Philippines

Made up of over 7,000 islands, the Philippines has vast potential for mini-grids and distributed solar, and small solar panels with batteries have been used in rural parts of the Philippines for more than a decade. But now the country looks to be on the cusp of becoming a serious solar market. The Philippines recently introduced a feed-in-tariff for 50MW of solar, at US\$0.22 per kWh; the cap was increased last year to a further 150MW total. It is predicted the Philippines will reach a 1GW market in the next few years at least, hot on the heels of the region’s leading solar deployment champion, Thailand.

### Indonesia

At the Brisbane G20 summit last November, Indonesia’s newly elected president, Joko Widodo, announced a 35GW power plan for the island nation, including 20% renewables – of which 20% will be solar. Streamlined solar licensing and PPA application procedures have been promised by the new government, as well as the introduction of special economic zones to attract investors and private business, and the creation of a solar fund. Local authorities will provide local land, and national government will provide 25-year standard power purchase agreements to independent power producers. In May last year, the two Australian firms SGI International and Mitabu Australia, merged to form SGI-Mitabu and develop a 50MW solar power plant in South Sumatra, Indonesia.

### Diesel subsidies

One of the major barriers to developing solar, despite its many merits, is governments subsidising diesel fuel heavily. This is particularly the case in Vietnam, where solar project developers should be flocking to the large land and natural solar resources, but government diesel prices are barring the way, said Paul Puthenpurekal, president and CEO of renewable energy developer, Solutions Using Renewable Energy (SURE).

At current tariff prices in Vietnam, solar development “is not possible” said Puthenpurekal; diesel-generated power is now US\$0.06 per kWh in Vietnam – “too low” for solar to compete. Puthenpurekal said revenues of between US\$0.10 and US\$0.12 per kWh were needed to make solar projects profitable, as currently the price of electricity in Vietnam is far beyond US\$0.10-0.12, “but the government is suppressing the prices based on subsidies [for diesel]”, he said. Puthenpurekal said without subsidies, diesel fuel

costs close to US\$0.30 per kWh – three times the break-even cost of solar energy.

In Indonesia, solar is being provided with political green lights as a newly elected president begins changes to national energy policy to help replace at least 20% of current diesel power use. “The focus is to replace existing diesel power stations on provinces relying heavily on diesel,” said M Rusydi, director of solar developer, the Solar Guys International (SGI) Mitabu Australia.

Although some governments are understandably slow to transition while resources are prioritised for rebuilding natural disaster-stricken cities, solar is finding opportunities, breaking technology barriers and innovating its way into this tricky emerging market. ■

*Solar Media will host Solar Energy Southeast Asia again in Bangkok later this year, on the 24 & 25 November. Further details are available from <http://seasia.solarenergyevents.com/>*