

Other Energy Sources and Technology

PROSPECTS FOR WIND AND SOLAR ENERGY

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Abstract

The search for a renewable and sustainable energy source is now an active global research area. With more emerging companies dedicating their investments to renewable energy (RE) projects, there is no debate that it is about time the Philippines see renewable energy from its own eyes.

Globally, wind and solar energy are dominating other RE sources in terms of investments. With wind energy generating capacity increasing by 25% just in 2007, it leads other RE sources with a total of 47% share in total investments. The wind energy industry is backed up by 70 countries with China and India quickly following the trend. The wind power industry has already experienced supply chain difficulties due to booming demand, putting unprecedented pressure on turbine component manufacturers.

On the other hand, grid-connected solar photovoltaic (PV) capacity has grown by 52% globally in the past few years. Solar PV production worldwide increased from 1.8 GW in 2005 to 3.8 GW in 2007. The solar PV industry is rapidly catching up with the wind energy industry since it is now the fastest growing energy technology in the world.

Many countries (about 66 in 2007) have started to implement their own renewable energy (RE) policies. RE policies include tax incentives, value added tax exemptions and public competitive biddings for participating investors.

Going to the Philippine context, it is nothing but alarming to find out that the Philippines is highly dependent on imported oil and very minimally on renewable (solar, wind and hydro). Natural gas and coal are dominant fuel sources for power generation at 60% while renewables contribute 31% to the country's total Power Generation Mix in 2007. Just the past year, we have noticed a rapid fluctuation in oil and electricity prices. This is because of the strong global demand for coal and oil with the supply rapidly declining. Oil prices are expected to rise all throughout 2009 and this could have a severe impact on the economy.

Leaning onto renewables might just be the solution to the energy

cost fluctuation the Philippines is currently experiencing. Moreover, RE development will not just save pesos for the Philippines but also accelerate electrification in off-grid areas, promote sustainable growth and improve the country's energy security.

Moving on to the RE prospects in the Philippines; the country has a 700 MW wind energy potential. The country possesses high potential wind regions which include the Batanes and Babuyan Islands, northwest tip of Luzon (Ilocos Norte), higher interior terrains (in Luzon, Mindoro, Samar, Leyte, Panay, Negros, Cebu and Palawan), a well-exposed east facing coastal locations from Northern Luzon southward to Samar, the corridor between Luzon and Mindoro and between Mindoro and Panay. The first wind farm in Southeast Asia is in Bangui, Ilocos Norte and is currently producing 25 MW. The same wind farm was planning to expand its capacity to 33 MW by late 2008.

Solar energy is another leading prospect in the Philippines. Solar radiation nationwide has an annual potential average of 5.0 to 5.1 kWh per sq. meter per day. According to RE-VIEWS, Vol. 1 No. 1, the largest grid-connected PV plant in any developing country is the one in Cagayan de Oro. The said plant is the CEPALCO 950 kW Centralized PV Plant. Also, the Philippines is host to the first solar cell fabrication plant in Southeast Asia, Sunpower Philippines. Sunpower Philippines has two solar cell manufacturing plants – a 400 MW facility in Batangas and a 110 MW plant in Laguna. The solar cells produced are currently being exported. Another step in solar energy development by the Philippines is the building of the first Philippine solar-powered car, Sinag. Sinag was designed and built by students from DLSU with solar cells manufactured by Sunpower. The car is the country's very first entry to the 3000 km race, World Solar Challenge in Australia. The team finished 11th overall among 40 solar car entries from around the world.

Another growing RE prospect in the Philippines is the use of electrically-powered vehicles. The Philippines' E-Jeepney is the first locally manufactured electric jeepney. It is a project of GRIPP, Greenpeace and SOLARCO. The E-Jeepney is already plying commercial routes in Bacolod and Makati.

RE development in the Philippines is urgent because it has been projected that an additional 3,620 MW capacity is necessary by 2014. By 2014, Luzon would require an additional 1,950 MW, Visayas, an additional 820 MW and Mindanao, an additional 850 MW totaling to 3,620 MW all in all.

Potential wind and solar capacity additions include an 8.25 MW Wind Power Project, a 46 MW Wind Power Project in Burgos, a 7 MW Combined Solar-Hydro Facility and other Wind Power Projects. All in all, these additions will only produce a combined 146.25 MW of power which is too little compared to the projected 3,620 MW required by 2014.

Several market opportunities for wind and solar power are emerging in the country. Currently, there are 119 electric cooperatives nationwide.

Northwind has entered into an Electricity Sales Agreement with Ilocos Norte Electric Cooperative. WESM is already successfully operating since 2006 for electricity trading. NPC SPUG Areas are now opened for private sector participation. Additional markets for solar and wind energy include solar water heating for hotels and hospitals, solar dryer for fruit drying, solar for transport, wind power for domestic power, wind power for irrigation and hybrid wind and solar systems for telecommunications.

The Philippines has already brought RE development to the next stage by implementing its very own RE policies. These will serve as mechanisms to promote the growth of wind and solar energy. These are the E.O 232 / 462 or the Ocean, Solar and Wind (OSW) Law, the R.A. 9337 or the Reformed VAT Law which imposes zero VAT on sale of power and fuel generated from RE sources and the E.O 226 which gives income tax holiday and zero duty on capital equipment.

In addition, the RE Bill, which is supposed to further RE development by making the use of RE mandatory in the Philippines, has already been endorsed for approval in the Senate. Other proposed RE policies include feed-in tariffs, inclusion in the national building code of solar PV in new buildings and tax credits and capital subsidies for non-power applications of wind and solar energy.

There is no way the Philippines will not be able to follow the rapidly growing trend in RE development. The country is abundant in all types of resources, human and material, needed. Despite the huge power requirement projected by 2014, the Philippines should not be discouraged. What is important is that there are steps being undertaken and that the country is on the right track.