

Success Stories in Renewable Energy

Growing populations, urbanization and industrialization are expected to lead to a near doubling of energy demand in the Asia-Pacific region by 2030, according to the Asian Development Bank. In particular, increasing energy production will be critical in meeting the needs of the approximately 700 million people in the region who currently lack access to electricity. In 2009, power generation in non-OECD Asia produced 4,781 Mt of CO₂ emissions. Under a business-as-usual scenario, these emissions are expected to increase by over 140 percent to 11,600 Mt of CO₂ by 2035

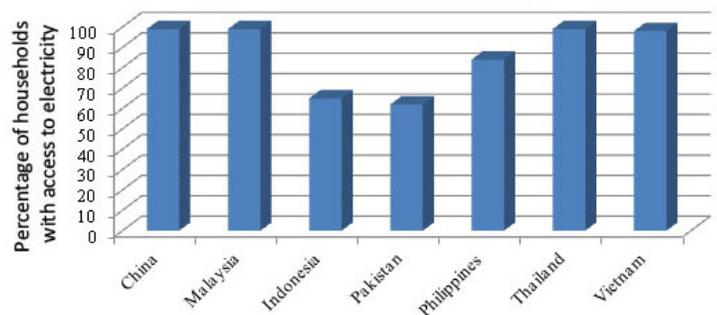
Asia has enormous potential for renewable energy deployment. For example, Indonesia and the Philippines have some of the world's greatest geothermal resources, and China and Pakistan have significant potential in wind and solar PV, and Vietnam has strong prospects for hydropower deployment. Yet despite this potential, only a fraction of Asia's renewable resources have been developed. By harnessing this power through policies that target renewable energy, Asia can begin to bridge the gap and continue developing its economies. Renewable sources not only provide clean, sustainably developed energy, but also increased access to electricity, which ultimately allows for economic growth and contributes to quality of life.

Spain: Solar Thermal Ordinance

With an average of 2,800 hours of sunshine every year, Barcelona has an ideal climate for harnessing solar energy for the buildings sector. In 1999, Barcelona's City Council took a major step in this direction by passing the Solar Thermal Ordinance (STO). The STO made it compulsory for all new buildings, renovated buildings, and new-use (both private and public) to supply at least 60 percent of running hot water with solar energy. To smooth the transition, the ordinance was implemented in two stages. Between 2000 and 2006, the regulations only applied to buildings using more than 0.8 MW per day for hot water production and after 2006, this exemption was eliminated and the regulations were applied universally.

Following the implementation of the STO, solar thermal became the most widely used source of renewable energy in Barcelona, accounting for 52 percent of total renewable production in 2008. As of January 2011, 87,600 m² of solar thermal panels had been installed in Barcelona (59 m² per 1000 inhabitants), nearly achieving

Electrification Ratio (2011)



Policy tools to spur renewable energy development:

Mandatory Renewable Energy Targets: A Renewable Energy Portfolio Standard (RPS) is a legal mandate that requires increased production of RE as a proportion of total energy.

Revenue Guarantees: A standardized power purchase agreement ensures long-term revenue by defining the commercial terms, including payment and schedule of delivery, under which power is sold to a buyer. Feed-in-tariffs are long-term contracts that guarantee the price at which producers can sell electricity.

Financial Incentives: Tax incentives and sales tax exemptions create a more favorable investment climate for developers. Additional subsidies for developers, such as low-interest loans and public direct investment, reduce the capital costs of renewable power production.

Favorable Grid Access Policies: Fair terms to buy, sell and transmit power, or guarantees of access to transmission resources, ensures power producers can sell their product.

the goal set forth by the city to install 88,015 m² by 2010. The Barcelona STO achieved significant energy savings and CO₂ emission reductions, and successfully popularized the use of solar thermal energy, both within Barcelona and nationally. In fact, the “Barcelona Model” has been followed by over 70 municipalities in Spain, and in 2006 the principles of the Barcelona STO were adopted in legislation at the national level.

India: Renewable Purchase Obligations and Renewable Energy Certificate Program

India has aggressively pursued renewable energy development in recent years, setting an ambitious goal to generate at least 15 percent of its total energy supply with renewables by 2020. The integration of renewable energy into India’s power sector began in 2003 with the establishment of preferential tariffs and grid access for renewables. In 2006, India’s state electricity regulatory commissions (SERCs) began to require a minimum percentage of electricity to be purchased from renewable sources through Renewable Purchase Obligations (RPOs). Thus far, 21 states have established RPOs or have regulations under consideration, with RPO requirements ranging from 1 to 15 percent of total electricity generation, implemented over 2004 to 2016.



To address the issues of limited local resource availability and an inability to purchase excess renewable generation from other states, the Indian government established a national tradable Renewable Energy Certificate (REC) program. Under this program, generators can either choose to sell electricity at a nationally fixed preferential tariff, or sell electricity and environmental benefits separately. If sold separately, the environmental attributes can be exchanged in the form of REC credits. Energy distribution companies then have the option of purchasing available REC credits through the nationally regulated trading scheme to meet their RPOs. This program has succeeded in creating a liquid market to support compliance with existing renewable energy obligations. Additionally, it is hoped that the REC program will enable states to establish ambitious RPOs and expedite the deployment of renewable energy.

Thailand: Renewable Energy Program for Small & Very Small Power Producers



Support for renewable power generation by Small Power Producers (SPP) and Very Small Power Producers (VSPP) is a key component of Thailand’s energy strategy. Under the SPP Program, Thailand’s state-owned transmission company, the Electricity Generating Authority of Thailand (EGAT), must purchase all renewable energy from producers between 10 and 90 MW, using long-term power purchase agreements. The VSPP Program supports power producers under 10 MW with simplified regulations and permission to sell power directly to distributing utilities and customers instead of EGAT. In both cases, buyers are required to pay a feed-in-premium for 7 to 10 years, at a rate depending on factors such as generation type, capacity,

geographic location and whether the project offsets diesel. Current rates range from US \$0.01/kwh for biomass and biogas over 1 MW in the northern part of the country to US \$0.25/kwh for solar energy in three southern provinces.

SPPs and VSPPs also benefit from other forms of support such as soft loans and investment subsidies, technical assistance, and eligibility for the Clean Development Mechanism (CDM). As of December 2011, there were nearly 2,000 renewable energy SPP and VSPP projects under some form of proposal, development or implementation, which could sell more than 8,500 MW of power to the grid.

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