

Shining energy resuscitates India

India has the second-fastest growing economy in the world, but at the same time accounts for a third of the world's population without access to electricity.

Though rich in coal and abundantly endowed with renewable energy, more than a third of India's energy is imported, mainly from the Middle East. To meet its growth aspirations, India urgently needs to accelerate its energy sector development, and investments in renewable energy will have a crucial role to play. Today, wind energy is the country's leading renewable energy source, but solar energy is gaining ground. Recent government announcements to boost solar power generation by way of feed-in-tariffs (FiTs) are generating more interest in the solar sector.

Rural electrification programmes

Solar energy's primary importance lies with rural electrification. The lack of infrastructure has hampered the development of power stations and grid lines in India's vast rural areas. In 2005, the Ministry of Power introduced a scheme to provide access to electricity to all rural households by 2012. The renewable technologies available for rural electrification include small hydropower plants, biomass gasification systems, decentralized solar photovoltaic (PV) power plants and solar PV home lighting systems.

The supply of solar home lighting systems has perhaps been the most successful rural electrification program. Bangalore-based SELCO Solar Light and Singapore-based Orb Energy have built up a network of rural franchises and microfinance self-help groups and worked closely with regular finance institutions too. SELCO started awareness programmes in villages that lacked electricity supply. The company informed people of how off-grid solar panels could improve their quality of life by providing light in the evening for children to do their homework and for women to do the evening cooking.

The average cost of a PV system ranges from between US\$50 for one light to US\$300 for a four-light system. Because this is more than most rural families can afford, financing was the key. India's southern states have a strong system of rural banks. Two banks started financing PV systems, sometimes against mortgage of farmland. Solar entrepreneurs agreed to service the systems until the banks had fully recovered their debts. The scheme – which focused on the needs of individual clients and not on standardized products – has worked wonders. India now has one of the

highest numbers of installed solar home-lighting systems, numbering close to half a million.

Stepping up solar

India is probably the only country in the world with an independent Ministry of New and Renewable Energy (MNRE). The country runs some of the world's largest R&D programmes and has been receiving huge funding from multilateral and bilateral agencies. Still, the share of renewable energy in India's total energy mix is less than 8%.

In June 2008, the prime minister announced the National Action Plan for Climate Change (NAPCC), in which the focus is on solar energy. The government also announced a 10-year FiT for solar power projects. However, the low FiT offered (around €0.25 per kWh will result in rather poor returns on investment. Moreover, the FiT only applies to large power plants; unlike in European countries, individual households cannot participate as investors.

Currently, off-grid systems – mostly for lighting and agricultural pumping purposes – account for more than 90% of India's solar market. The new FiT schemes are supposed to cause substantial future growth in large-scale on-grid projects. According to Harish Hande, founder of SELCO, this is no done deal. So far, he observes, the Indian FiT has been mostly a paper exercise.

A growing industry

At the current pace of 20% annual growth, India may well emerge as one of the largest producers of solar energy in the coming years. Its potential domestic market – with over 50,000 villages without electricity – is enormous. Other promising sectors are rooftop systems for industrial and commercial buildings, and backup power systems for telecom. India's tele-industry is registering 50% annual growth.

At present, no Indian solar company is a global lead player, but India could soon become an export hub for the global PV market, considering its abundance of brain power and relatively cheap labour. The global PV industry can take advantage of the fiscal incentive for manufacturing offered under the Special Economic Zone policy. With 100% foreign direct investment (FDI) allowed, the time is ripe for international companies to establish a base in India.

Power for all

The energy sector clearly holds the key to accelerating India's economic growth. The country's energy needs are expected to increase fourfold over the next 25 years. The government's mission is 'Power for All by 2012'. The abundant sources of renewable energy available in India are likely to contribute nearly 20% of the energy requirements by 2020. ■

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