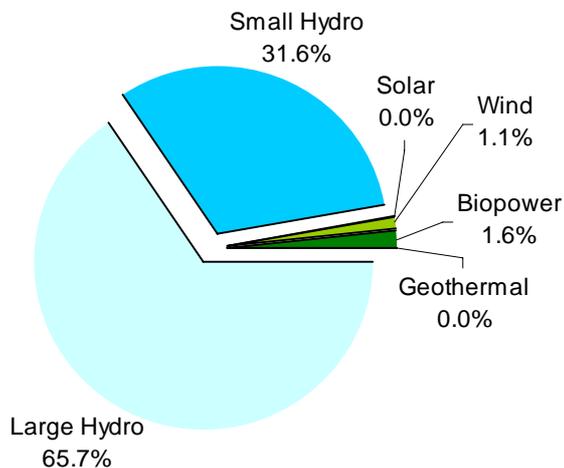


## Green Energy in Asia

Renewable investment, capacity growth and future outlook

New Energy Report - Published July 2007

Share of renewables by generation capacity in China, 2005



Source: Green Energy in Asia

"To reduce the country's current reliance on coal-fired generation, the Chinese government is stepping up efforts to accelerate the development of renewable energy. The Renewable Energy Law, which came into effect on January 1, 2006, is a decisive move by the Chinese government to increase the use of renewable energy in China. This law is likely to be the major driver in promoting renewable energy in China. Apart from this, a number of incentive policies, ranging from tax incentives to subsidies, have also been introduced to stimulate investments..."

**Assess the renewable energy landscape across Asia and future growth prospects with this new management report's analysis and forecasts...**

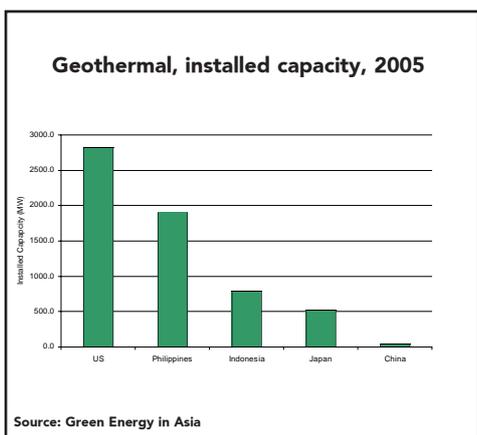
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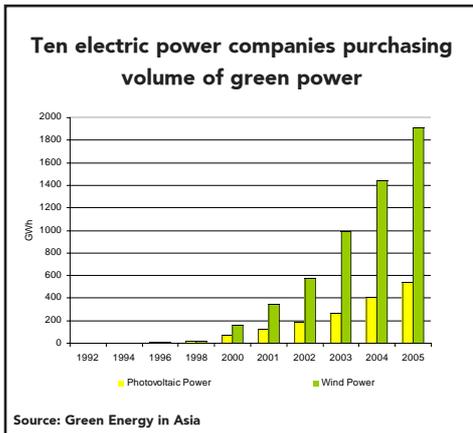


"The geothermal market in Asia is dominated by Philippines, with total installed capacity of 1,900 MW at the end of 2005. It is the world's largest geothermal power producer after the US. In Philippines geothermal is the third largest source of electricity generation after coal-fired and gas-burning stations. Indonesia's geothermal market ranks second in Asia, in terms of installed capacity. Geothermal installed capacity in Indonesia is 800 MW at the end of 2005..."

- **Electricity generation in Asia remains dominated by coal.** Both China and Australia derive over 75.0% of their electricity from coal whilst over 50.0% of electricity is generated from coal in India.
- **Electricity generation in non-OECD Asian countries will nearly triple in volume by 2030**, rising to 10,185bn kWh from 3,517bn kWh in 2004 according to the EIA. Most of this additional power generation is expected to be coal-fired.
- **Renewable energy source usage is significantly higher in Asia than in the US** where renewables comprise just 11.5%. Renewables account for 32.0% of India's total electricity generation capacity. In China and Japan they represent 21.0% and 20.0% respectively.
- **Asia holds the lead the world in hydroelectric power.** Installed capacity of SHP in Asia account for more than 70.0% of the world SHP installed capacity..

## Green Energy in Asia

### Renewable investment, capacity growth and future outlook



"Japan is already the world's leading producer and user of solar photovoltaic energy. However, Japan lags global leaders in other important renewable sources of power generation such as wind and biomass. The major driver for the development of renewable energy in Japan is the Renewable Portfolio Standard (RPS) which requires all electric power utilities to supply 1.35% of total electricity from renewable sources by 2010..."

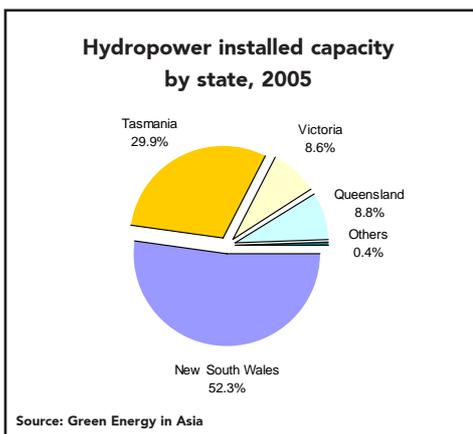
The EIA forecasts that robust economic growth and improved standards of living will underpin a massive surge in power consumption in Asia. China and India account for the world's largest projected increases in national electric power demand over 2004-2030. Most of this is likely to be fossil fuel based resulting in a surge in GHG emissions. In parallel, growing global concern about climate change will lead to international pressure on high polluting countries like India and China to curb their emissions. Cap and trade systems, once adopted by the US and Australia, will make the case of renewables more attractive in Asia.

### Green Energy in Asia: Renewable investment, capacity growth and future outlook

is a new management report published by Business Insights that analyses the current trends driving the use of renewable energy in Asia. This report compares the progress of each renewable energy technology in Asia with the rest of the world, identifies the key players and analyzes the potential and outlook for each technology.

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"Australia has experienced a severe drought as a result of which the hydroelectric production in Australia declined by around 6.0% between 2001 and 2005, most notably in NSW, Victoria and Tasmania.

The installed capacity of hydropower in Australia has been almost flat over the last decade. Over 50.0% of the Australian hydroelectric installed capacity is located in NSW. Tasmania is the second largest state in terms of total installed capacity with a share of approximately 30.0%..."

- **Benchmark the growth potential for each of the leading renewable energy technologies in Asia** using this report's independent comparative assessment of the five leading technologies.
- **Understand the drivers and resistors of the key renewable technologies in Asia** with the help of this report's overview of the factors affecting technologies' growth including key market trends and the initiatives taken by Asian countries to promote renewable energy.
- **Assess the landscape for renewable energy in Asia** with this report's detailed analysis of the market structure including capacity and generation, global comparison, economic conditions and key players.
- **Identify the resources, strategies and competitive threat posed by leading players in Asian renewable energy** using the key competitor analysis contained in this report

## Sample Information: 'Green Energy in Asia'

### Chapter 4: India

#### Overview of Power Generation in India

As of March 2007, India had a total installed capacity of 132,329 MW which was dominated by coal (71,121 MW) and large-hydro (34,654 MW). Given that India has large reserves of coal and abundant potential for hydro-electric power, the bias towards these sources is understandable. India is the third-largest producer of hard coal after China and the United States. A majority of India's coal-fired plants use low-heat-content and high-ash unwashed coal.

This leads to high airborne pollutants per unit of power produced. Unlike many developed countries, India's nuclear power generation is relatively insignificant and the total power generated from nuclear plants is less than power generated from renewable sources. The total installed capacity of nuclear power plants at the end of 2006 was 3,900 MW compared to 42,414 MW for renewable sources (including hydro). Power generated from natural gas too is relatively lower than in developed countries. This is primarily due to the lack of large gas finds in and around India until very recently.

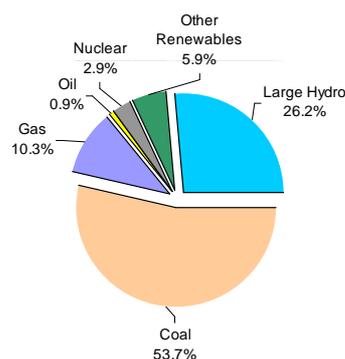
The share of large-hydro in total capacity and generation has been decreasing over the years. In 1971, large-hydro projects accounted for nearly 46.0% of India's power generation while coal accounted for around 47.0%. In the years since then, the capacity has been largely skewed in favor of coal which now accounts for 54.0% while large-hydro's share has declined to 26.0%.

#### Demand and Supply Situation and Outlook

Historically, demand has outstripped supply as is demonstrated in the following chart. Peak power shortage for the period of April 2006 to January 2007 was approximately 13.9%. The supply shortage has been exacerbated because the efficiency and the availability of the coal power plants are low by international standards. Moreover, past investments have skewed generation toward coal-fired power base-load plants at the expense of creating additional peak-load capacity. The combination of fast-growing demand, large T&D losses and poor pooling of loads at the national level have sharpened the pain arising from inadequate investment in generation capacity.

Investment in generation capacity has suffered because the distribution companies, called State Electricity Boards (SEB), have very high losses due to theft and because they have to provide free or highly subsidized power to farmers. Consequently, most of them are on the verge of bankruptcy and have not made the requisite investments to keep pace with demand. In parallel, the government's policies and practices to encourage IPPs have failed to stimulate large scale private investment in the sector.

Figure 4.28: Net electricity generation capacity by source in India, March 2007



Source: Green Energy in Asia

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