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percent of total generation comes from nuclear plants. India is increasing its efforts to tap its vast potential for nonconventional energy generation (20 gigawatts from wind, 10 gigawatts from small and mini-hydro, 17 gigawatts from biomass, 80 gigawatts from oceans, and unlimited megawatts from solar). It now has 556 megawatts of wind energy on stream. Co-generation, principally in the sugar industry, also holds very good potential.

In addition to increasing its installed capacity, India needs to improve the efficiency of its energy generation, transmission and consumption. The national average plant load factor is 57 percent, which prime facie provides evidence of under utilization. The vast majority of the thermal capacity is over 12 years old, with a significant portion over 20 years old. The GOI has identified over 40 power plants for modernization and upgrading. India's power transmission system is subject to losses of 25-40 percent, of which about 15 percent is from illegal diversions. While the GOI has a massive program for High Voltage Direct Current (HVDC) transmission, the overall system is plagued by inadequate links. On the consumption side, lighting, motor drives, pumps, fans and compressors have been identified as the key areas in which India could improve its end-use energy efficiency.

India's power sector promises to be one of the fastest growing in the world and international equipment manufacturers have shown their keen interest in gaining a foothold. The Indian market for major electrical equipment such as large generators, turbines, switch gears, transformers, control gears, and transmission hardware is estimated at over US\$3 billion, and is expected to grow at over 20 percent annually for the next three to four years.

### *Domestic Competition*

The Indian heavy electrical industry is quite large with several major Indian companies (led by the electrical giant Bharat Heavy Electrical Limited) and foreign companies manufacturing a wide range of products required for the domestic market. Indian industry has developed adequate infrastructure for thermal, nuclear and hydro-electric plants and their associated systems. Generators, turbines, switch yards, coal and ash handling equipment, and electro-static precipitators are all made in India.

Indian manufacturers of transmission line towers and related hardware have developed adequate capabilities to execute turnkey contracts for the design and erection of entire transmission systems. Indian companies manufacture a wide range of transmission hardware, accessories, string insulators, AAAC/AAC/ACSR conductors, and lightning arrestors. India has acquired HVDC technology, and certain projects using this technology have already been completed.

Various types of transformers suitable for units up to 500 megawatts are made in India. The entire range of circuit breakers, LT switch gear and control gear, MCBs,