Despite the generation addition the rise in demand continues to outpace the supply by about 10-12 percent as is apparent from the power shortages and cuts encountered all over the country. The gap appears to be ever widening. This is attributed to low capacity utilisation, transmission losses, and delays in approving and commissioning new projects. The pricing structure which results in inadequate returns and the inefficient collection process must also be cited as underlying reasons for the funding constraints and the power gap.

Non-availability of power has a serious impact on the Indian economy. It renders production capacities idle, forces industrial units to close down, and results in wastages of capital invested and severe losses in employment and national income. It has been conservatively estimated that the Indian economy sustained a production loss of over $20 billion annually during the past decade primarily due to inadequate supply of electric power to meet the needs of the industrial and agricultural sectors. (Industry sources estimate a production loss of Rs.4,600 crores for a one percent shortage of power.)

d) Hydroelectric Power

India has one of the largest untapped hydroelectric generating resource in the world. Hydro generating potential at 60 percent Plant Load Factor (PLF) is estimated at 84,000 MW of which only about 18,500 MW capacity has been tapped, i.e. about 22% on a national basis. As a 60% PLF Factor for hydro projects in India is not realistic, tapped capacity is actually considerably less than 22%.

Realizing additions to hydro generating capacity is challenging, to say the least. Some 70 percent of the country's hydro resources are located in remote parts of the north and north-east of India and involve serious environmental and terrain hazards. There is thus a considerable access and engineering problem which raise the start-up costs for a form of power generation which even in more favourable circumstances involves above-average investment outlays. This may be especially true for the +6,000 MW of the hydro resource which is said to be of the mini/micro site variety. Considering that the average size of the current mini-hydro stations in India is less than 2 MW, commercializing the entire 6,000 MW may require several thousand individual project decisions — a major task in even a developed country and one requiring significant and sustained inter-organizational coordination.

In the case of larger hydro locations, the financial and technical burden associated with harnessing these resources frequently exceeds the potential of States, such as Himachal Pradesh and Uttar Pradesh, under whose jurisdiction fall water use rights. A further complicating factor is the long period of design and construction involved in hydro. This has acquired increasing significance with chronic power shortages which can be more quickly addressed by adding to thermal generating capacity. Finally, hydro projects require extensive environmental impact analysis.

Despite the challenges the GOI recognizes the importance of sustained development of its hydroelectric power potential. Its objective is to raise the share of hydel generation to total generation from 31 percent to 40 percent by the turn of the century. This would require the creation of 49,000 MW of hydel generation capacity.

e) Thermal Power (Coal-based)

India's coal resource is — like its hydro potential — one of the largest in the world. Estimates indicate that there may be 100 billion T of steaming coal in the country with 25 billion T of that deemed "proven". As noted earlier thermal power represents over 60 percent of India's current power generating capacity and all indications are that it will continue to dominate the Indian electricity picture. A stronger institutional setting and the shorter construction periods for thermal plants versus hydel plants lie behind the increasing amounts of money that have been spent on this form of energy.