

government investment has been devoted to the sector, principally for power generation, under the country's eight consecutive Five-Year Plans. Generating capacity has grown by 9 per cent a year since 1950, and has more than doubled in the past ten years. Yet the system is seriously out of balance, and plagued by inefficiencies which result from a combination of physical, economic and political factors.

On the *generating* side, thermal efficiency, availability and plant load factors are low by Western standards. The average PLF for SEB stations is only 57 per cent (up from 50 per cent ten years ago), compared with an OECD average of 85 per cent. Generating efficiency for base-load coal-fired stations is only 30 per cent (28 per cent for the SEBs, and 35 per cent for the NTPC), compared with the OECD average of 37 per cent.

One major cause of poor performance is the unreliability of the coal supply. Another is that much of the generating plant is more than 20 years old; its technology is out of date, and breakdowns are frequent, leading to a constant threat of brownouts or black-outs. Yet the bulk of investment has habitually been channelled into adding new capacity, rather than upgrading or renewing outdated plant.

In *transmission and distribution*, the situation is even more difficult. Power losses average 23 per cent (4 per cent in transmission, the rest in distribution), and are up to 40 per cent in some areas. (The OECD average for T&D loss is 6 per cent.) The transmission and distribution systems are under-built in comparison to generating

capacity, and hence over-loaded. Transmission technology is outdated. Supply frequency and voltage are subject to wide variations. The systems are prone to leakage. Pilferage is endemic — illegal diversion is thought to account for over half the losses in distribution.

Five regional transmission grids have been established, but competition among the interconnected states drawing power from the grids disrupts their operation, and on occasion this year they were close to collapse. There is as yet no operational national grid.

The SEBs are responsible for all aspects of distribution, including tariff setting. At the behest of the State governments, all of them engage, to varying extents, in politically-motivated cross-subsidization of power, from industrial consumers to domestic and, particularly, agricultural consumers (who take over 25 per cent of output). Tariff rates in most states are now well below the average (let alone the long-run marginal) cost of supply; farmers in many areas receive their power virtually free. The weakness of the billing and collection system cuts revenues further. As a result, the average net return of the SEBs was -14 per cent in 1991. The cost of making up their direct and indirect losses is estimated at 1.5 per cent of the country's GDP — a cost that is shared between the Centre, which often goes unpaid for the power and coal it supplies, and the state governments, which must cover the SEB operating deficits. These losses have been absorbing a significant portion (perhaps 20 per cent) of funds allotted to the power sector for development purposes.