CHAPTER-IV

PRIVATE SECTOR RESPONSE TO CURRENT POWER POLICY
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4.1. Introduction

The response of Indian and Pakistani private sector to the power policy has been a combination of successes and failures. This is essentially to say that the initial response of the power policy was overwhelming. But as the time passed, private investors who had expressed their desire to invest either they have withdrawn or are riddled with various problems. The policy, which was announced in early 1990s encouraged generation and distribution. There has been more progress in the area of generation so far as the private sector is concerned. The response of the private sector in both the countries to the current power policy and the constraints they face while responding to it are discussed in this chapter.

4.2. Indian Private Sector Response to Power Policy

True to the initial power policy encouragement, lots of private power producers (around 200) expressed their interest to set up power plants and some of them were able to take benefit of the incentives given in the power policy. As a matter of fact, some of those units have been commissioned and some others are in the advanced stage of construction. The response of the Indian private sector to the power policy is discussed in this section.
4.2.1. Growth in Electricity Installed Capacity

Since the entry of private sector in the power generation, Central Electricity Authority (CEA) has accorded techno-economic clearance to 57 private sector power projects amounting to around 29,375 MW. Out of these, 15 projects having a total capacity of 4427.36 MW have been fully commissioned till today. About some 14 projects with total capacity of 903.65 MW, which do not require techno-economic clearance of the CEA have also been fully commissioned. These projects are set up by the private sector with the approval of the State Governments only. Another 5 projects totaling 1465 MW set up by the licensee companies have also started operating since the adoption of private power policy. So, in total 34 private power projects with 6796.01 MW have come up since the announcement of private power policy. This is given in Appendix III.

The first private power project to come on stream was the 216 MW Jegurupadu developed by GVK Industries in Andhra Pradesh. In fact, Andhra Pradesh is one of the progressive states in India, which has gone for private power generation. Of the eight fast-track projects, three are located in Andhra Pradesh and two of them viz. GVK and Spectrum (206.2 MW at Godavari) have already started generating. Apart from these two fast-track private power projects, some other IPPs have come up in Andhra Pradesh. These are Kondapally Power (350 MW by Kondapally Power Corp Ltd.), Peddapuram Samalkot (220 MW by BSES Andhra Power Ltd), LVS Power (36.8 MW by LVS Power Ltd) and Guntur Branch Canal-1 HEP (3.75 MW). Many others are in advanced stages of development.
Till date five IPPs have been commissioned so far in Karnataka. These are Torangallu (260 MW by Jindal Tractebel), Tannir Bavi (220 MW by Tanir Bavi Power Corp.), Belgaum (81.3 MW by Tata Power Co. Ltd), Bellary Power Project (27.8 MW by Rayalseema Alkalies & Allied Chemicals Ltd) and Shivpur (18 MW by Bhoruka Power Company).

In Tamil Nadu also four IPPs have started producing power. These are GMR Vasavi plant (200 MW) at Basin Bridge, PPN Power plant (330.5 MW) at Pillaiperumalnallur, Samalpatti Power (105.66 MW) at Samalpatti and Balaji Power (106 MW) at Samayanallur. The third fast-track project that is operational is the Dabhol (Phase-I) of 740 MW in Maharashtra. Other projects that came on stream in Maharashtra are Dahanu (500 MW), Trombay (180 MW) and Bhira (150 MW). The first two were developed by the Bombay Suburban Electric Supply (BSES) and the last one by Tata Electric.

Substantial additions to power generation have been made in Gujarat in comparison to other states. In fact, four independent power producers (IPPs) comparatively bigger in size have been commissioned. These are Paguthan (655 MW) by Gujarat PowerGen Energy, Hazira (515 MW) by Essar Power, Baroda (167 MW) and Surat (250 MW) both by the M/s GIPL. Also, in West Bengal two IPPs, namely Budge-Budge (500 MW) and New Southern Generation Station (135 MW) both by CESC have been commissioned. Jamshedpur Power Co. Ltd also commissioned a power plant (240 MW) at Jojobera in Jharkhand. Besides, there are another eight IPPs small in sizes that have been commissioned in some other states (for detail refer Appendix III). All these are thermal power plants (either CCGT based on gas/naphtha or TPS based on naphtha or
diesel) except five moderately small hydel projects. These five projects are Malana (86 MW) in Himachal Pradesh, Maniyar (12 MW) in Kerala, Shivpur (18 MW) in Karnataka, Guntur Branch Canal-I (3.75 MW) in Andhra Pradesh and Tawa (13.5 MW) developed by the Hindustan Electro Graphite.

Among these five hydel power projects, Malana power is noteworthy for certain reasons. The commissioning of the 86 MW Malana hydel project in Himachal Pradesh by the LNJ Bhilwara Group is the first private hydel project to become operational having been commissioned in just 30 months at the cost of Rs.37.5 million per MW. In fact, the commissioning of this plant has disproved theories stating that hydel projects are highly capital intensive and have long gestation periods extending up to 6-7 years. Even though the LNJ Bhilwara Group was allotted the project in 1993, the initial phase was not very encouraging. The company had signed a memorandum of understanding (MoU) with the Himachal Pradesh government, but the later was not too keen on it being a power-surplus state. On the other hand, the company's flagship Rajasthan Spinning & Weaving Mills (RSWM) was buying costly power in Rajasthan and was keen to generate captive power. To resolve the issue, the company devised a unique mechanism of interstate transmission of power. According to the off take arrangement, power from the Malana hydel project will be evacuated to the Nallagarh substation through the HPSEB network and then to the interstate grid. This will further be fed into the Rajasthan grid. At Jaipur, Rajasthan Vidyut Prasaran Nigam Limited (RVPNBL) supplies equivalent power to RSWM's manufacturing unit.

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2 Ibid.
There are also around nine IPP projects under construction in India, of which seven IPPs have techno-economic clearance of CEA and other two projects not requiring techno-economic clearance of CEA. They are expected to come on stream shortly. These nine projects will add 3468 MW of installed capacity. This is given in table 4.1.

<table>
<thead>
<tr>
<th>Sl.</th>
<th>Name of the Project</th>
<th>State</th>
<th>Capacity (MW)</th>
<th>Promoter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dabhol CCGT-Phase II</td>
<td>Maharashtra</td>
<td>1444</td>
<td>ENRON</td>
</tr>
<tr>
<td>2</td>
<td>Maheshwar HEP</td>
<td>Madhya Pradesh</td>
<td>400</td>
<td>Maheshwar Hydel Power</td>
</tr>
<tr>
<td>3</td>
<td>Baspa-II HEP</td>
<td>Himachal Pradesh</td>
<td>300</td>
<td>M/s JHPL</td>
</tr>
<tr>
<td>4</td>
<td>Ramagundam (Karimnagar)</td>
<td>Andhra Pradesh</td>
<td>520</td>
<td>BPL Power Projects Ltd.</td>
</tr>
<tr>
<td>5</td>
<td>Neyveli TPP</td>
<td>Tamil Nadu</td>
<td>250</td>
<td>ST-CMS</td>
</tr>
<tr>
<td>6</td>
<td>Ratlam DGPP</td>
<td>Madhya Pradesh</td>
<td>118</td>
<td>GVK Industries Ltd.</td>
</tr>
<tr>
<td>7</td>
<td>Vishnu Prayag HEP</td>
<td>Uttar Pradesh</td>
<td>400</td>
<td>Jaiprakash Industries Ltd.</td>
</tr>
<tr>
<td></td>
<td>Total A =</td>
<td></td>
<td>3432</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Bhoothathank-ettu HEP</td>
<td>Kerala</td>
<td>16</td>
<td>Silcal Metallurgic Ltd.</td>
</tr>
<tr>
<td>9</td>
<td>Bambooflat DGPP</td>
<td>A&amp;N Islands</td>
<td>20</td>
<td>M/s Surya-Chakra Power Cor. Ltd.</td>
</tr>
<tr>
<td></td>
<td>Total B =</td>
<td></td>
<td>36</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grand Total A+B =</td>
<td></td>
<td>3468</td>
<td></td>
</tr>
</tbody>
</table>

Source: Government of India, Ministry of Power.

The current reform programme India initiated is almost a decade old covering two five year plans, namely the Eighth Plan (1992-97), and the Ninth Five Year Plan (1997-2002). It is therefore, important to see what has been the achievement against its targets in power sector. The Eighth Plan, which had envisaged a capacity addition of 30,538 MW, could add only 16,422.6 MW during the entire Plan period. This addition was about
46 per cent less than the target. The private sector could achieve only 1,430.4 MW during the Eighth Plan against its target of 2,810 MW\(^3\). The Ninth Plan envisaged a capacity addition of 40,245 MW comprising 11,909 MW in the Central Sector, 10,748 MW in the State Sector and the balance 17,588 MW in the Private Sector. The addition during the Ninth Plan was only 19,015 MW reflecting a shortfall of 53 per cent. The private sector could achieve only 5,061 MW during the Ninth Plan against its target of 17,588 MW reflecting a shortfall of 71.2 per cent\(^4\). The important reasons for the shortfall in capacity addition are inability to get private sector projects off the ground in the absence of adequate arrangements for ensuring payment security, delay in land acquisition and environmental clearances, unresolved issues relating to fuel linkages, contractual problems, resettlement and rehabilitation problems and law and order problems\(^5\).

However, with this addition during two Five Year Plans, it is important to look at the annual trend in the growth of installed capacity since the current reform. The annual trend in the growth of electricity-installed capacity is given below in table 4.2.

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\(^5\) Ibid.
Table 4.2: Growth of Installed Capacity in India (Utilities) (MW)

<table>
<thead>
<tr>
<th>Year</th>
<th>Thermal</th>
<th>Hydro</th>
<th>Nuclear</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 1991</td>
<td>45768 (69.25)</td>
<td>18753 (28.38)</td>
<td>1565 (2.37)</td>
<td>66086 (100)</td>
</tr>
<tr>
<td>March 1992</td>
<td>48100 (69.61)</td>
<td>19200 (27.79)</td>
<td>1800 (2.60)</td>
<td>69100 (100)</td>
</tr>
<tr>
<td>March 1993</td>
<td>50749 (70.14)</td>
<td>19576 (27.07)</td>
<td>2005 (2.77)</td>
<td>72330 (100)</td>
</tr>
<tr>
<td>March 1994</td>
<td>54369 (70.84)</td>
<td>20379 (26.55)</td>
<td>2005 (2.61)</td>
<td>76753 (100)</td>
</tr>
<tr>
<td>March 1995</td>
<td>58113 (71.59)</td>
<td>20833 (25.67)</td>
<td>2225 (2.74)</td>
<td>81171 (100)</td>
</tr>
<tr>
<td>March 1996</td>
<td>60067 (72.12)</td>
<td>20976 (25.18)</td>
<td>2225 (2.67)</td>
<td>83288 (100)</td>
</tr>
<tr>
<td>March 1997</td>
<td>61157 (71.16)</td>
<td>21658 (25.20)</td>
<td>2225 (2.59)</td>
<td>85940 (100)</td>
</tr>
<tr>
<td>March 1998</td>
<td>65000 (72.95)</td>
<td>21900 (24.58)</td>
<td>2200 (2.47)</td>
<td>89100 (100)</td>
</tr>
<tr>
<td>March 1999</td>
<td>68700 (73.64)</td>
<td>22400 (24.00)</td>
<td>2200 (2.36)</td>
<td>93300 (100)</td>
</tr>
<tr>
<td>March 2000</td>
<td>71300 (72.90)</td>
<td>23800 (24.34)</td>
<td>2700 (2.76)</td>
<td>97845 (100)</td>
</tr>
<tr>
<td>March 2001</td>
<td>73628 (72.45)</td>
<td>25142 (24.74)</td>
<td>2860 (2.81)</td>
<td>101630 (100)</td>
</tr>
<tr>
<td>March 2002*</td>
<td>75900 (72.36)</td>
<td>26300 (25.07)</td>
<td>2700 (2.57)</td>
<td>104900 (100)</td>
</tr>
</tbody>
</table>

Note: 1. Figures in the brackets are the percentage of total.
   * - Provisional


The growth in installed capacity during the reform period is impressive one. The installed capacity, which was 66,086 MW in 1991, reached 1,01,630 MW in 2001 representing compound growth rate of 3.99 per cent. The data given in the above table can be presented in the form of diagram for illustrative purposes. This is given in fig-4.1.
It is evident from the table 4.2 that the growth of installed capacity of thermal capacity during the reform period had been higher than the hydro capacity. This is primarily because thermal power requires less gestation period in comparison to hydro power stations. Thermal power plant does not have problems such as rehabilitation & resettlement like the hydro plants. As a result, apart from coming up few thermal units in the public sector during the reform period, private sector contributed 6,662.76 MW of thermal installed capacity out of their total contribution of 6,796.01 MW. The growth in the thermal generation capacity had been also due to the renovation and modernisation of old thermal plants.

In fact, private power policy besides encouraging generation and distribution by private sector also aimed at inviting the private sector in the renovation and modernisation of the old plants. Though private sector has not shown much interest in this area, Central and State sectors have taken positive step in this direction. The
Renovation & Modernisation (R&M) Programme (Phase I) undertaken in respect of some of the older generation units in different parts of the country contributed significantly to the overall improvement in generation during end of this Eighth Plan period. The R&M programme (Phase-II) which was taken up during the year 1990-91 for 44 thermal power stations comprising 198 units with a total capacity of 20,870 MW was able to complete 50 per cent of work by end of the Ninth Plan i.e. March 1997. As a result, against its target of generating 7,864 MU per annum, an addition of 5,000 MU per annum was achieved.

Also, life extension works on 4 units (300 MW) of Neyveli TPS were completed during the Eighth Plan. The balance activities of Phase-II R&M Programme were included in the Ninth Plan along with the subsequently identified additional activities. The works on 36 power stations (150 units) taken up for R&M during the Ninth Plan are at various stages of completion. Of the 28 units taken for Life Extension during the Ninth Plan, the Life Extension works on 18 units (1,245 MW) have been completed and works on 10 units (665 MW) are under progress. Also, out of the 55 hydro power stations (9,653 MW) selected for renovation, modernisation and uprating during the Ninth Plan, work on 27 stations having an aggregate capacity of 6,511 MW with an expected benefit of 1,498 MW/3,586 MU have been completed till 31.3.2001.

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4.2.2. Growth in Electricity Generation

The growth in installed capacity during the reform period contributed towards the generation of electricity. The trend in the growth of electricity during the reform period are as given in table 4.3.

Table 4.3: Growth of Electricity Generation in India (Utilities) (Billion kWh)

<table>
<thead>
<tr>
<th>Year</th>
<th>Thermal</th>
<th>Hydro</th>
<th>Nuclear</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-91</td>
<td>186.55 (70.6)</td>
<td>71.64 (27.1)</td>
<td>6.14 (2.3)</td>
<td>264.33 (100)</td>
</tr>
<tr>
<td>1991-92</td>
<td>208.74 (72.7)</td>
<td>72.76 (25.4)</td>
<td>5.53 (1.9)</td>
<td>287.10 (100)</td>
</tr>
<tr>
<td>1992-93</td>
<td>224.70 (74.6)</td>
<td>69.90 (23.2)</td>
<td>6.70 (2.2)</td>
<td>301.30 (100)</td>
</tr>
<tr>
<td>1993-94</td>
<td>248.20 (76.6)</td>
<td>70.40 (21.7)</td>
<td>5.40 (1.7)</td>
<td>324.00 (100)</td>
</tr>
<tr>
<td>1994-95</td>
<td>262.10 (74.8)</td>
<td>82.70 (23.6)</td>
<td>5.60 (1.6)</td>
<td>350.40 (100)</td>
</tr>
<tr>
<td>1995-96</td>
<td>299.30 (78.8)</td>
<td>72.60 (19.1)</td>
<td>8.00 (2.1)</td>
<td>379.90 (100)</td>
</tr>
<tr>
<td>1996-97</td>
<td>317.90 (80.3)</td>
<td>68.90 (17.4)</td>
<td>9.10 (2.3)</td>
<td>395.90 (100)</td>
</tr>
<tr>
<td>1997-98</td>
<td>337.00 (79.9)</td>
<td>74.60 (17.7)</td>
<td>10.10 (2.4)</td>
<td>421.70 (100)</td>
</tr>
<tr>
<td>1998-99</td>
<td>353.70 (78.9)</td>
<td>82.90 (18.5)</td>
<td>11.90 (2.6)</td>
<td>448.50 (100)</td>
</tr>
<tr>
<td>1999-2000</td>
<td>386.80 (80.5)</td>
<td>80.60 (16.8)</td>
<td>13.30 (2.7)</td>
<td>480.70 (100)</td>
</tr>
<tr>
<td>2000-01</td>
<td>408.20 (81.8)</td>
<td>73.30 (14.8)</td>
<td>16.80 (3.4)</td>
<td>499.40 (100)</td>
</tr>
<tr>
<td>2001-02*</td>
<td>422.00 (81.9)</td>
<td>73.90 (14.4)</td>
<td>19.30 (3.7)</td>
<td>515.20 (100)</td>
</tr>
</tbody>
</table>

Note: 1. Figures in the brackets are the percentage of total.
   * - Provisional


The growth in electricity generation during reform period is impressive one. The growth in electricity generation from 264.33 billion kWh in 1990-91 to 499.4 billion kWh in 2000-01 represent compound growth rate of 5.95 per cent. The data in the above table can be presented in the form of diagram as given below in figure 4.2 for illustrative purposes.
Similar to the growth in installed capacity where growth of thermal capacity had been higher than hydro capacity, growth in electricity generation too had been higher in thermal generation than the hydro generation. Moreover, out of 34 commissioned IPP projects, 29 of them are thermal and only 5 are moderately small hydel projects, the growth in thermal generation had been higher than the hydel generation. However, contribution in electricity generation by thermal plants had been much higher than hydro plants compared to their respective installed capacity. This is so because electricity generation from hydro plants had been erratic due to low river flow. Moreover, thermal plants supply uninterrupted electricity, which is assured by providing its inputs like fuel/coal/gas etc. Also, as a result of renovation and modernisation programme, plant load factor of thermal utilities increased over this period, which also contributed this growth in generation.
4.2.3. Plant Load Factor

Generally plant load factor (PLF) is an important indicator of the operational efficiency of the power plants during period of excess demand. Every one per cent improvement in PLF makes available an additional power to the extent of 500 MW. Therefore, given the improvement in PLF, it could bridge the gap between electric power requirements and its supply. The plant load factor of the thermal plants as such has been increasing over the reform period as depicted below in the table 4.4.

Table 4.4: Thermal Plant Load Factor in India

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I. SEBs</td>
<td>50.6</td>
<td>54.1</td>
<td>56.0</td>
<td>55.0</td>
<td>58.0</td>
<td>60.3</td>
<td>60.9</td>
<td>60.7</td>
<td>64.3</td>
<td>64.3</td>
</tr>
<tr>
<td>II. Central Sector</td>
<td>64.5</td>
<td>62.7</td>
<td>69.8</td>
<td>69.2</td>
<td>70.9</td>
<td>71.0</td>
<td>70.4</td>
<td>71.1</td>
<td>72.5</td>
<td>72.2</td>
</tr>
<tr>
<td>III. Private Sector</td>
<td>55.3</td>
<td>58.8</td>
<td>57.0</td>
<td>65.8</td>
<td>72.3</td>
<td>71.2</td>
<td>71.2</td>
<td>68.3</td>
<td>68.9</td>
<td>76.4</td>
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<tr>
<td>IV. Region</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern</td>
<td>58.8</td>
<td>62.0</td>
<td>64.0</td>
<td>59.1</td>
<td>62.0</td>
<td>64.7</td>
<td>66.7</td>
<td>67.2</td>
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<td>Western</td>
<td>59.6</td>
<td>59.7</td>
<td>62.4</td>
<td>63.8</td>
<td>68.1</td>
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<td>74.7</td>
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<td>75.8</td>
<td>77.1</td>
<td>75.4</td>
<td>79.6</td>
</tr>
<tr>
<td>Eastern</td>
<td>37.3</td>
<td>39.8</td>
<td>44.8</td>
<td>43.7</td>
<td>42.7</td>
<td>42.2</td>
<td>43.0</td>
<td>44.3</td>
<td>46.1</td>
<td>47.0</td>
</tr>
<tr>
<td>North Eastern</td>
<td>24.6</td>
<td>24.3</td>
<td>19.9</td>
<td>26.7</td>
<td>28.6</td>
<td>27.1</td>
<td>21.3</td>
<td>18.7</td>
<td>18.3</td>
<td>18.2</td>
</tr>
<tr>
<td>All India</td>
<td>55.3</td>
<td>57.1</td>
<td>61.0</td>
<td>60.0</td>
<td>63.0</td>
<td>64.4</td>
<td>64.7</td>
<td>64.6</td>
<td>67.3</td>
<td>67.7</td>
</tr>
</tbody>
</table>

* - Provisional


Improvement in plant load factor of the thermal power plants contributed to increase in the electricity generation. The all-India average PLF of the thermal power plants, which was 55.3 per cent when India undertook reform increased to 69 per cent after almost 10 years. The increase in the PLF is attributable to the concerted efforts put

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in by the Ministry of Power, the Central Electricity Authority, the State Governments and the Utilities. The R&M programme specifically aimed at increasing the PLF by about 4 to 5 percentage points. The progressive addition of large sized units in the power system had also contributed to the overall improvement in the performance of the thermal power stations in the country. While this had been the position at the national level, it varies from sector to sector (State/ Central and Private sector) and among the states and regions. As such the thermal plants in certain regions and States continued to function below satisfactory levels. In fact, the best performance during the reform period was observed in the Southern region, followed closely by the Western and Northern regions. The PLF in the Eastern and Northeastern regions continued to remain below satisfactory level\(^9\). However, this is quite low in India and it needs further improvement.

4.2.4. Privatisation of Transmission and Distribution

There has been some sign of progress in the area of privatization of transmission. The policy had allowed two routes viz. Independent Power Transmission Company (IPTC) and Joint Venture (JV) for the same. In the former case the private investor shall own 100 per cent project equity while in the later case it allowed 26 per cent equity sharing by POWERGRID. As such one Pilot Project each on JV and IPTC routes has been taken up to attract private sector participation. The project taken up through JV route is the transmission system associated with Tala Hydro Electric Power Project at an estimated cost of Rs.1200 crores. This would be the first project under JV for the transmission sector in the country. The project taken up through IPTC route is the 400 kV D/C line from Bina to Dehgam, via Nagda estimated to cost Rs. 450 crores. A basket of

projects to be built on through IPTC route for the private sector participation in transmission has been identified\(^{10}\).

There has been a substantial improvement in the village electrification as well. Out of the 5.79 lakhs villages as per the 1981 Census, 4.81 lakhs were electrified by March 1991 with coverage of 83 per cent. As per the 1991 Census total number of villages in India went up to 5.87 lakhs. By December 2001, the village electrification reached 5.08 lakhs representing 86.5 percent coverage. Also, by March 2001, there were 1,29,74,769 electric irrigation pumpsets had been energised which is also another indicator of rural electrification\(^{11}\).

Besides privatisation of transmission, there has been some progress in the privatisation of distribution in India. Six states namely Orissa, UP, Haryana, Andhra Pradesh, Rajasthan and Delhi have unbundled their SEBs. Two states- Orissa and Delhi have privatized their distribution companies. Haryana and Rajasthan have formed distribution companies, though have not privatized yet. Karnataka is also on the verge of restructuring its SEB and forming distribution companies.

### 4.2.5. Role Played by the Regulatory Commissions

Regulation has made good progress. The Central Electricity Regulatory Commission (CERC) has passed important orders on power tariff and grid code. It has passed a draft licence for the transmission sector. Nineteen states- Orissa, Haryana, Andhra Pradesh, Karnataka, West Bengal, Tamil Nadu, Punjab, Delhi, Gujarat, Madhya Pradesh, Arunachal Pradesh, Maharashtra, Rajasthan, Himachal Pradesh, Maharashtra,

\(^{10}\) Government of India, *op. cit.*, n. 7, p. 18.

Rajasthan, Himachal Pradesh, Assam, Chattisgarh, Kerala and Uttaranchal- have either constituted or notified the constitution of SERCs. Eleven of these, namely Orissa, Andhra Pradesh, Uttar Pradesh, Maharashtra, Gujarat, Karnataka, Rajasthan, Delhi, Madhya Pradesh, Himachal Pradesh and West Bengal have issued tariff order. With the passage of tariff orders by SERCs, tariff rationalization moves have begun. Maharashtra and Gujarat, Andhra Pradesh, Karnataka and Delhi have taken initiatives on this front. In Maharashtra and Gujarat, the SERCs have also touched on the much-politicized agricultural tariffs. Madhya Pradesh has also decided to stop supplying free power to its farmers.

Regulatory Commissions, true to their assigned role, have been very independent and passed many of the impartial orders taking into consideration the interest of all the stakeholders especially the consumers. They have passed some of the strong orders without any favouritism for the financially bankrupt SEBs. They have gone against the decision of their respective SEBs to increase the tariff justifying the reason not to increase the tariff.

One such Regulatory Commission is the Maharashtra Electricity Regulatory Commission (MERC). The Maharashtra SEB had decided in 2000 to increase the tariff by 18.9 per cent. MERC in a major judgment went against it and allowed a hike of only about 6 per cent. However, the hike was not allowed for the industrial consumers who contribute 60 per cent of the revenue earnings of the SEB. In fact, MERC directed MSEB

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12 Government of India, op. cit., n. 4, p. 899.
to reduce industrial tariff by 5 per cent. It had also set a five-year time frame for the MSEB to completely eliminate the existing cross-subsidisation.

The Commission decided to keep the issue of the merit order despatch and purchase power from different sources. Merit order despatch implies that MSEB will first buy power at the cheapest rates available and then go in for the more expensive power. MERC felt that power from both NTPC and Dabhol is on the expensive side. However, MSEB officials feel that since the Board is bound by contractual obligations, the MERC order might create problems. The MERC had approved a lower amount of purchase by MSEB. It allowed the SEB to purchase only 15,657 million units as against the 16,435 million units proposed by MSEB. On the other hand, it directed MSEB to increase power generation to 43,583 million units instead of the proposed 42,705 million units. MERC for the first time introduced time-of-day (TOD) tariff for high-tension industrial consumers. Under this system, industrial consumers will get an incentive of 50 paise per unit for every unit consumed during off-peak night hours. Similarly, during peak hours there would be a disincentive in the form of a tariff hike of 60 paise per unit. In its order, the Commission has made it clear that the TOD tariff would be used as a critical tool for demand-side management.

Another Electricity Regulatory Commission (ERC) is the Delhi Electricity Regulatory Commission (DERC), which had also been vehement to the erstwhile DVB. In June 2001, DVB came out with a tariff hike across all segments. The average tariff hike was the order of 15.7 per cent. The hike marks the first tariff order of the DERC.

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15 Ibid., p. 2/2.
since it was formed in 1997. The Regulatory Commission did not blindly accepted DVB's proposal and has made some attempt to rationalize tariffs. Unlike the earlier tariff revisions, the current one does not place the burden of the hike on the high revenue earning industrial sector. Instead, the DERC has made attempt to reduce the level of cross-subsidisation and effect a sharp increase in domestic segment's rates. The industrial tariff has gone up by between 7 per cent and 12 per cent, as against a 20 per cent and 50 per cent hike for domestic consumers. Though the previous tariff hike was in 1997, the June 2001 hike was due to leaky distribution system, power blackouts due to inadequate supply and other operational inefficiencies. Subsequently, the distribution has been privatised in Delhi. Now, it is private sector like BSES and Tata Power to reduce the transmission losses.

To speed up the privatisation of power sector by establishing the regulatory commissions, which entrusted to rationalise tariff and its related anomalies, the Government of India reduced the number of clearances required for setting up of private power projects. As a matter of fact, instead of earlier requirement of getting 13 statutory and four non-statutory clearances for any project, now thermal projects require five clearances, hydroelectric projects require four clearances and transmission and distribution projects need just two clearances. This provision facilitated a lot to the private power projects to speed up their work.

16 SEBs, DVB Tariff Hike: Although Consumers are Upset, At least Some Rationalisation Attempt has been Made, June 2001, (http://www.indiapoweronline.com), p. 1/2.
4.2.6. Acquisitions in IPP

As a result of this private power policy, there have been acquisitions in the IPP segment, which began in 1998. Some of them are enumerated below.

1. Essar had signed a MoU with Marathon Power of the US to sell its Hazira plant for US$170 million plus debt. Essar Steel, which gets about 215 MW from the plant will continue to get electricity under a 20-year PPA. Essar has taken the move because the group was facing severe financial crunch owing to problems at Essar Steel.

2. The Paguthan project developed by Gujarat Torrent Energy Corporation has undergone equity restructuring. In early 1999, PowerGen bought the Ahmedabad-based Torrent group's entire stake of 46.1 per cent for Rs.11 billion which made PowerGen's stake in the company increased to 74.1 per cent from its initial 28 per cent.

3. The 330 MW PPN Power Generating Company project in Tamil Nadu has achieved financial closure and has begun construction. As a part of equity restructuring in early 1999, El Paso Energy of US bought Energy Equity Corporation's entire 26 per cent equity stake in the PPN project. Reddy Group, PSEG and Marubeni hold the rest.

4. In January 1999, Energy Equity Corporation of Australia acquired 25 per cent equity stake in the 200 MW Basin Bridge project for US$23 billion from GMR Vasavi, one of the original joint promoters of the project. The other original promoters, CMS Energy is retaining its 49 per cent stake.

5. Tractebel of Belgium has also acquired a 74 per cent stake in Sujana Power, the developer of two 103 MW power projects in Tamil Nadu. It has bought out stakes held by Tenaga of Malaysia and Deutsche Babcock in addition to half of Sujana Steel's stake.
6. For the 525 MW Spic Electric Power Corporation at Tuticorin, Tamil Nadu being
developed by the Spic Group, ABB has been selected as the EPC contractor and
PowerGen as the O&M contractor. PowerGen had agreed to pick up a 25 per cent
equity stake and was reportedly negotiating to increase it to 74 per cent.

7. The 1000 MW project developed by the Nagarjuna Power Corporation at
Nandikur, Karnataka was talking to few foreign companies to sell equity. It is
reported that the National Power is interested in buying stake in it.

8. The 703 MW project developed by the RPG Dholpur Power Company at
Dholpur, Rajasthan is the only project in Rajasthan, which has made any progress.
Some foreign companies have evinced interest in picking up equity in the project.
Consolidated Electric Power Asia (CEPA) is one such company apparently
examining a stake in RPG's Dholpur project.

9. Enron's decision to purchase a 74 per cent stake in the Kannur Power projects in
Kannur, Kerala.17

Of late, for the first time ICICI has picked up equity in a power project. It
acquired a 28 per cent stake in Jaiprakash Industries' 300 MW Baspa hydroelectric Phase
II. The project is being developed on a BOO basis. Construction is well under way.
Though most of the civil works are complete, flash floods in the Sutlej river in the year
2000 have delayed the commissioning of the project. The project was expected to be
commissioned in 2003 as against the target of July 2002. Of the Rs 11.35 billion project
debt domestic currency loans totaling Rs 4.4 billion have been provided by a consortium
of banks and Financial Institutions (FIs) led by IFCI. The consortium includes IDBI, SBI

17IPPs, The Shake-out Begins: A Spate of Acquisitions, February 1999,
and UTI. The acquisition of equity in a power project by ICICI is a positive trend. With their detailed evaluation and financial resources, FIs can help many projects get off the ground. Indeed, FIs have been specifically asked by the government to encourage hydel projects, since only a fraction of country's vast hydroelectric potential has so far been exploited\textsuperscript{18}.

4.2.7. Employment

There was a perception among the employees of the electricity industry that privatization will lead to their unemployment. That is why most of the employee unions of the electricity industry protested the privatization policy. However, this is not the case. Even in the case of Bharat Heavy Electrical Limited (BHEL) where Government of India disinvested 38 per cent of the shares, management control remains with the organization. No employees, so far, have been retrenched on the grounds of privatization. In the distribution segment, while Orissa and Delhi have privatised the distribution network with 51 per cent equity owned by the private entities, employees of the erstwhile OSEB and DVB were retained. The private entities have signed agreement with the Government to retain the employees of the erstwhile public sector utilities. Moreover with the commissioning of 34 units in the private sector, they have increased employment in this sector. No doubt, this is formal employment, which may be small in number. But this also at the same time creates informal employment in large numbers, which benefits the poor most.

4.2.8. Constraints in the Indian Power Sector

However, despite the above positive developments in the power sector, there remained some constraints over the reform period. Constraints are transmission and distribution losses, financial performance of SEBs, poor IPP development, and financial bottlenecks of IPP projects, etc. Though the private power policy addressed to these issues, it did not contain within its limit. However, these issues will be highlighted in the following section.

4.2.8.1. Transmission & Distribution Losses

Transmission projects continued to be accorded a high priority for evacuating power from the generating stations to the load centres. This apart from transmitting power intends to improve the system losses. Despite the endeavour by the Government of India during the reform period, the T&D losses did not improve; rather it increased over the period. The degree of T&D losses over the reform period is given below in the table 4.5.

Table 4.5: Transmission & Distribution Losses in India

<table>
<thead>
<tr>
<th>Year</th>
<th>T&amp;D Losses (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991-92</td>
<td>22.83</td>
</tr>
<tr>
<td>1992-93</td>
<td>21.80</td>
</tr>
<tr>
<td>1993-94</td>
<td>21.41</td>
</tr>
<tr>
<td>1994-95</td>
<td>21.13</td>
</tr>
<tr>
<td>1995-96</td>
<td>22.27</td>
</tr>
<tr>
<td>1996-97</td>
<td>24.53</td>
</tr>
<tr>
<td>1997-98</td>
<td>24.79</td>
</tr>
<tr>
<td>1998-99</td>
<td>26.45</td>
</tr>
</tbody>
</table>

It is evident from the table 4.5 that the transmission and distribution losses in the country had come down from 22.83 per cent in 1991-92 to 21.13 per cent in 1994-95. However, there had been an increase in losses thereafter. The losses in 1998-99 were 26.45 per cent. T&D losses are caused by a variety of problems, including energy sold at low voltage, sparsely distributed loads over large rural areas, inadequate investments in the distribution system, improper billing and theft. Indiscriminate grid extension despite low load densities (as measured by demand in MW divided by the length of the T&D system) has resulted in inefficiencies. These factors also had contributed to the poor quality of electricity supplies in many areas.

This situation made imperative for the Governments to privatizing distribution in order to reduce the high level of theft and pilferage. In fact, since Government had no money to invest for the T&D network facilities, power distribution was opened to the private sector with the aim that they would invest in the distribution network including 100 per cent metering and thereby reduce the T&D losses. Though some of the state governments have made efforts in this regard by privatising the distribution, their respective T&D losses have not been reduced. Orissa, the pioneer of the distribution reform reported T&D losses of around 50 per cent in 1997-98 after it initiated power sector reform. Andhra Pradesh, which is another reforming state, the T&D losses that were 19 per cent in 1995-96, went up to 33 per cent in 1996-97 and dipped to 32 per cent in 1997-98. What needs more to be done is the 100 per cent metering and checking the theft at different levels. No doubt privatisation of distribution is the right option to do so,

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but with the passage of time when the private electricity providers would be able to implement 100 per cent metering along with bill realisation, it is expected that T&D losses will be reduced substantially. Moreover, the privatisation of distribution is very latest development in the India power sector and most of the states are in the process of privatising distribution except Orissa and Delhi. However, it is premature to assess the privatisation distribution experience of Orissa and Delhi since they have completed privatisation of distribution recently.

4.2.8.2. Financial Performance of the SEBs

The financial performance of State Electricity Boards (SEBs) has also deteriorated over the reform period. The main cause for the loss of SEBs has been the electricity tariff, which is charged on an average, remains below the average cost of supply. The gap between the average charged tariff and actual cost of supply was 37 paise in 1996-97. Agriculture and domestic sectors continued to be subsidized heavily. The average tariff charged from these categories was 21 paise and 92 paise respectively in 1996-97 compared to an average supply cost of 186 paise. Table 4.6 below depicts the financial performance of the state power sector.
Table 4.6: Financial Performance of the State Power Sector in India

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Gross Subsidy involved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) on account of sale of electricity to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Agriculture</td>
<td>5938</td>
<td>7205</td>
<td>15628</td>
<td>22536.9</td>
<td>24013</td>
</tr>
<tr>
<td>b) Domestic</td>
<td>1310</td>
<td>1919</td>
<td>4234</td>
<td>7270.1</td>
<td>10347</td>
</tr>
<tr>
<td>c) Inter-state sales</td>
<td>201</td>
<td>226</td>
<td>285</td>
<td>538.4</td>
<td>227</td>
</tr>
<tr>
<td>Total</td>
<td>7449</td>
<td>9350</td>
<td>20147</td>
<td>30345.4</td>
<td>34587</td>
</tr>
<tr>
<td>(ii) Subventions received from State Govts.</td>
<td>2045</td>
<td>1911</td>
<td>6284</td>
<td>7851.9</td>
<td>8680</td>
</tr>
<tr>
<td>(iii) Net subsidy</td>
<td>5404</td>
<td>7439</td>
<td>13863</td>
<td>22493.6</td>
<td>25907</td>
</tr>
<tr>
<td>(iv) Surplus generated by sale to other sectors</td>
<td>2173</td>
<td>3312</td>
<td>7849</td>
<td>6876.8</td>
<td>3698</td>
</tr>
<tr>
<td>(v) Unrecovered subsidy</td>
<td>3231</td>
<td>4127</td>
<td>6014</td>
<td>15616.7</td>
<td>22209</td>
</tr>
<tr>
<td>B. Commercial Losses</td>
<td>4177</td>
<td>4358</td>
<td>9453</td>
<td>18081.3</td>
<td>24063</td>
</tr>
<tr>
<td>C. Revenue mobilisation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Rate of return (%)</td>
<td>-12.7</td>
<td>-11.8</td>
<td>-17.2</td>
<td>-27.5</td>
<td>-32.8</td>
</tr>
<tr>
<td>(ii) Additional revenue mobilization from achieving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) 3% RoR</td>
<td>4959</td>
<td>5462</td>
<td>11106</td>
<td>19987.1</td>
<td>26699</td>
</tr>
<tr>
<td>(b) From introducing 50 paise/ unit from agriculture/ irrigation</td>
<td>2176</td>
<td>2159</td>
<td>2417</td>
<td>2734.1</td>
<td>1078</td>
</tr>
</tbody>
</table>

1 - Commercial losses are estimated from unrecovered subsidy because they include financial results of other activities undertaken by the SEBs.

** - Provisional


SEBs incurred heavy losses in the sale of power to the agricultural and domestic users. This has been brought out in the table 4.6. Parts of the losses were covered by cross subsidising from the industrial, commercial and other sectors. State government also shared a part of the subsidy by providing a subvention, mainly for rural electrification. The SEBs were left with an unrecovered subsidy of Rs. 3,231 crore in 1991-92. This has increased to Rs. 15,616 crore in 1998-99 and the available provisional figure for 2001-02 stated that it could be Rs. 22,209 crores.

Under Section 59 of the Electricity Supply Act, 1948 SEBs are required to achieve a rate of return (RoR) of not less than 3 per cent on their fixed assets in service,
at the beginning of year after providing for interest and depreciation charges less consumer contribution. This provision has become operative from the accounting year 1985. Despite this, in the subsequent years there had been a continuing deterioration in the financial performance of SEBs. In fact, during 1993-94 the revised estimates on rate of return (RoR) reveals that even with subsidy seven (7) SEBs had negative RoR

- In 1996-97, 13 SEBs out of 16 SEBs (excluding Orissa SEB) had a positive RoR (including subsidy). Further only 4 SEBs (MSEB, HPSEB, PSEB and TNEB) had a RoR of more than 3 per cent in 1996-97 (with subsidy)

- In 1997-98, 13 SEBs out of 16 SEBs (excluding Orissa SEB) had a positive RoR (including subsidy). Further only 3 SEBs (MSEB, HPSEB, and BSEB) had a RoR of more than 3 per cent in 1997-98 (with subsidy)

- In 1998-99, 10 SEBs out of 16 SEBs (excluding Orissa SEB) had a positive RoR (including subsidy). Further only 3 SEBs (MSEB, TNEB and UPSEB) had a RoR of more than 3 per cent in 1998-99 (with subsidy)

- In 1999-2000 only 7 SEBs had a positive RoR (without subsidy). The number of SEBs with positive RoR of more than 3 per cent (without subsidy) has also fallen. In 1999-2000 only 2 SEB (MSEB and TNEB) had a positive RoR of more than 3 per cent (without subsidy)

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Managerial and financial inefficiencies in the state sector utilities had adversely affected capacity addition and system improvement. While SEBs do not have enough resources to finance future programs, they are also unable to raise investible funds from alternative sources due to their poor financial and commercial performance. Further, the inability of SEBs to pay their dues in full to Central Power Utilities adversely affects the finances and investment plans of these Central Power Sector Utilities (CPSUs).

4.2.8.3. Poor IPP Development

The total IPP installed capacity of 6796.01 MW for the entire reform period is much lower than the expected. However, progress in IPP sector has been discouraging. IPP investors such as National Power, Electricite de France, Cogentrix and Daewoo packed up and left. The first three exits are from the fast-track project. Several others, such as PowerGen reduced their exposure in the country significantly. In the year 2000, approximately 6,000 MW of projects were officially scrapped\(^\text{27}\). Total numbers of officially live projects have come down from over 175 in 1999 to 167 projects amounting to 56,000 MW by April 2001. It has also been estimated that of this, 24,000 MW is not likely to show any activity in the next one to two years\(^\text{28}\). However, these 167 live projects amounting 56,000 MW capacity as on April 2001 are given state-wise in the Appendix IV.

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\(^{26}\) Government of India, *op. cit.*, n. 24, pp. 174-175.


\(^{28}\) Ibid.
There are several reasons for the slackening interest in the sector. The biggest, of course, is that IPPs have faced endless difficulties in tying up their finances. With poor financial health of the SEBs, lenders are looking for guarantees to reduce the risk of exposure in power projects. Of late, escrows supported by state government guarantees have become a preferred security mechanism. The states, having overstated their escrow capacity signed Power Purchase Agreements (PPAs) and impetuously promised escrow all around. However, on closer scrutiny it was found that they did not have much to offer as escrow with the exception of Tamil Nadu. Without escrow and in the absence of an alternative payment security mechanism, the lenders have been wary of providing funds for the sector\textsuperscript{29}.

Besides, some investors have been frustrated by the lengthy procedural delays. There have been delays in signing crucial agreements due to PPAs being reworked or costs being reviewed. Third, the reason for the string of withdrawals is the opening up of better opportunities elsewhere in the world including the US, South America and Eastern Europe. Fourth, perhaps, what has really dampened the morale of IPP investors is the fate of high-profile Dabhol project. Since January 2000, it has been struggling to get its dues from MSEB. The situation deteriorated so greatly that the company was forced to invoke the government of Maharashtra guarantee and the central government counter guarantee month after month. This episode has reduced the confidence of investors in Maharashtra, which, till not so long ago, was viewed as a preferred investment destination\textsuperscript{30}.

\textsuperscript{29} Ibid. 
\textsuperscript{30} Ibid.
The division of some states has also added to the uncertainty and confusion. With the creation of Chhattisgarh, some IPP projects—Daewoo, Mukand, Jindal, for instance, of the undivided Madhya Pradesh are now parts of the new state. Similarly, certain hydro projects earlier in Uttar Pradesh are now in Uttaranchal. The fate of these projects very much depends on the policies of the new state governments.\(^{31}\)

Apart from the pricing problem faced by the Enron project in Maharashtra, some of the well-known power projects could not start construction because they are facing problems either due to escrow or environmental issues. One such project is the Videocon Power Projects (1,050 MW coal-fired). It is the only big IPP project in Tamil Nadu that has been granted escrow by Tamil Nadu Electricity Board (TNEB) and was to attain financial closure in the year 2000. The funds for the projects had been tied up and the detailed package had been submitted to the CEA and TNEB for approval. However, the project is facing all sorts of difficulties from all sides. Though the escrow agreement was signed with the SEB, there have been reports of certain issues that are yet to be resolved. TNEB had proposed that it will operationalise the escrow account two months prior to the commissioning date. The promoters and the lending institutions are, however, not comfortable with this proposal and have insisted on operationalisation of the escrow account immediately.\(^{32}\)

\(^{31}\)Ibid.

The promoters and financial institutions will always prefer a continuous flow of revenue into the escrow account. TNEB has argued that the commissioning of the project and the start of its commercial operations are way into the future and hence there is no need to block the revenues of the SEB now. The issue regarding the operationalisation of escrow is likely to be settled only after financial closure is attained. The promoters had also faced some problems with TNEB regarding the sharing of costs of the common facilities to be set up at the project site at Ennore. The SEB has a power project at the same location. It had asked the Videocon to share the expenses for setting up ash disposal, conveyor and cooling water systems at the site. The two parties later came to an agreement. The project has been facing internal problems as well. The biggest problem arose when ABB Energy Ventures (ABBEV) decided against equity investment. The pullout of ABBEV, which held 26 per cent equity in the project was seen as an outcome of ABB’s merger with Alstom. But the other two promoters, Videocon and National Power decided to hike their equity holdings in the project. As a result, Videocon is holding 51 per cent equity and the remaining 49 per cent by National Power.

Another power project is Hinduja-National Power Project in Andhra Pradesh, the story of which is not different. Even more than two years after the project signed the counterguarantee agreement, it has not been able to achieve financial closure. The project is awaiting for escrow from the Andhra Pradesh government. At the same time the cost of the project was to be approved by the state government and recommended to the CEA. The delays led to the National Power closing down its liaison office in New Delhi.

The Mangalore Power project- 1000 MW counterguaranteed project in Karnataka received a major setback when its main promoter-Cogentrix walked out due to the inordinate delays. However, the damage was controlled by China Light and Power stepping up its equity stake to 70 per cent and the Tata Electric Company (TEC) picking up the remaining 30 per cent. Of late, state government has indicated to the project authorities that there is no escrow to be allotted to the project. Given this situation, the project authorities have begun talks with the lenders. However, the state government also needs to fulfill certain conditions prior to making counterguarantee effective. In fact with cost overrun, its $900 million Engineering Procurement Construction (EPC) contract may require to go in for re-bidding.

The 400 MW hydel Maheshwar Project in Madhya Pradesh was confronted with the environmental issues. The project reported brisk progress initially and in early 1998 was about to announce financial closure when a section of the affected population, backed by voluntary organizations such as the Narmada Bachao Andolan (NBA) raised objections to the company’s resettlement policy. Work at the site had to be halted, but was resumed after a short while. In 1999, on account of the controversies and delays surrounding the project, two German utilities, Bayernwerk and VEW Energie that were supposed to hold 49 per cent of the equity withdrew from the project. It was in the year 2000 that this 49 per cent equity was picked up by the US-based Ogden Energy. And later, three financial institutions namely IDBI, LIC and GIC agreed to jointly pick up 15 per cent equity. The rest is provided by the promoter- S. Kumars and Associates. A consortium led by IFCI, PFC, SBI, PNB, Dena Bank, Bank of India, LIC, GIC and IDBI is providing the debt. Having tied up these ends, the promoters were once again
attempting financial closure. The project hoped to finish the resettlement and rehabilitation by 2001. Whatever may be, the project has been delayed. The delay in the project has resulted in the project cost to go up. Therefore, the promoters have concentrated to achieve the financial closure and completing the construction by 2003-04.

4.2.8.3.1. Mega Power Projects: Shows Little Progress

Because of several unresolved issues, developers have shown little interest in taking up mega projects. The main constraint is the absence of structured payment guarantees for the power produced by these projects. As per the policy, the power would be sold to the Power Trading Corporation (PTC), which will in turn, sign PPAs with the state electricity boards. The payment guarantee was to be secured through mandatory letters of credit and the right on the central devolution of funds of the beneficiary states if their SEBs failed to pay up. In fact, this was a very strong payment guarantee mechanism, but most of the states are unwilling to allow any rights on their annual central devolution. In view of this financial institutions are unwilling to lend to the projects.

However, about 14 thermal projects and four hydel projects have been chosen as mega power projects. These projects are given in this Appendix V. There is growing skepticism in the private sector about the success of the mega power projects in the country. Of the 18 projects, only handfuls have shown some movement. Among the thermal projects, Pipavav project (2000 MW) in Gujarat has shown considerable progress in the year 2000 in the sense that it has moved to the second stage of bidding. Of the 13

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pre-qualified bidders, PowerGen, Siemens, Enron, National Power and PSEG have pulled out of the project\textsuperscript{26}. The main reason cited by them was the lack of financial guarantees. There is no reason to panic due to the departure of bidders as long as there are some good bidders.

There have been significant developments in the 3,960 MW coal pithead-based Hirma power project in Orissa. Southern Energy Asia-Pacific was initially promoting the project. But later, Reliance planning to pick up 50 per cent equity, the project is expected to move faster. The promoters were negotiating the PPA with PTC. The power produced from the project is likely to be sold to five states, namely, Gujarat (700 MW), Madhya Pradesh (600 MW), Punjab (960 MW), Rajasthan (1200 MW) and Haryana (500 MW). The tariff has been fixed at Rs.1.65 per unit and was awaiting final approval of the CERC\textsuperscript{37}.

Another mega project that showed movement in the year 2000 is the 1000 MW Maithon Right Bank project in Bihar, being promoted through a joint venture between the Damodar Valley Corporation (DVC) and the Bombay Suburban Electric Supply. Some of the financial institutions like, SBI Caps, IDFC, UTI and LIC have shown interest in picking up some stake in the project. DVC and BSES are likely to hold 45 per cent of the equity each while the remaining will be held by the financial institutions. The project was awaiting cabinet clearance. In the meantime, the promoters have initiated talks with the financial institutions to tie up the project's debt requirement\textsuperscript{38}.

\textsuperscript{26} Ibid., p. 2/3.
\textsuperscript{37} Ibid.
\textsuperscript{38} Ibid.
Cuddalore project in Tamil Nadu was running into problems. The state government has had refused to sign the PPA with the PTC. It is pertinent, however, for the state government to sign the agreement, as it will be one of the main beneficiaries. The project is one of the few under the mega project scheme that had initially shown some movement and for which pre-qualification bids had been invited.

These apart, other mega projects have made little or no progress. Of late, the government explored the other options such as providing sovereign guarantees for some projects, including the Pipavav and Hirna projects, in order to provide some impetus to the sector. This guarantee scheme is similar to the counterguarantee provided to some projects whereby the foreign debt component of the project will be secured through sovereign guarantees in case of termination of the project. Despite that large number of projects notified in the mega policy have not been able to take off. Certain other projects like Ennore and Dabhol have lobbied to be given the status of mega projects. The government has not agreed to these proposals. There is recommendation of the Planning Commission that the projects such as Nathpa Jhakri, Sardar Sarovar and Tehri hydel should be brought under the mega projects scheme. Before doing so, it is important to resurrect the projects already languishing under this scheme.

4.2.8.3.2. Liquid Fuel Projects: Shows Little Progress

In the wake of power shortage, several state governments had opted for setting up small and medium-sized power projects based on liquid fuel to quickly bridge the widening demand-supply gap. These projects were supposed to take care of the demand
till the bigger projects came on stream. However, most of these projects have not come through mainly because of non-availability of fuel. With spiraling naphtha prices and the decision taken by the states not to move with these projects due to their cost of power, the once-fancied projects have lost all support.

Tamil Nadu is one such state that had initially decided to set up a number of short-gestation liquid fuel projects. The Tamil Nadu Industrial Development Corporation bid most of these projects during 1997. A total of 18 projects were offered out of which 11 of them have not been able to receive fuel linkages so far. These 11 projects totaling 1,885 MW had been awarded in 1997 and power ministry had given them time till December 31, 1999 to tie up their fuel linkages. None of them had been able to achieve this. Of late, the feeling grew that with the bigger projects with lower tariffs coming up in the state, TNEB can do without these projects. Therefore, the TNEB planned to cancel these 11 projects and had referred them to the state government for approval41.

The very purpose behind putting up the projects has been defeated. The long delays have made them redundant. Moreover, the price of the power generated is also likely to go up, as liquid fuel is always a costlier option. With the prices of liquid fuels like naphtha going up steeply, buying this power will prove to be expensive for the TNEB. The other seven multi-fuel-based projects with an aggregate capacity of 670 MW are alive and have tied up their fuel linkages. Among these are the two 103 MW projects coming up at Tuticorin, being promoted by Sujana Steel and Tractebel. These projects are in quite advanced stage and are awaiting escrow from the state government to go in for financial closure. The other two projects of 103 MW each in Tiruchi, being promoted by

Tenaga of Malaysia, were also heading for financial closure. The other projects being set up are the 103.5 MW Aban Lloyd project at Ennore, the 103 MW DCM promoted project at Sirumugai, and the 52.8 MW DLF promoted project at Hosur.

In the mean time, liquid fuel projects in other states have not shown much movement either. Most of the projects are either languishing or have been abandoned. Some of the bigger projects are planning to shift to LNG or cheaper alternative fuels, which of course requires time.

4.2.8.4. Financial Bottlenecks of IPP Projects

Exim Banks of different foreign countries have played a major role in financing the private projects in India. In fact, the ECA lending takes place through export-import (Exims) bank. However, their participation has been restricted and delayed by certain factors. The absence of a satisfactory security package stands in the way. The non-availability of counter guarantees from the central government also poses a hurdle.

Apart from Exim Banks, the other external financing agencies are the international financiers. The international financiers are in the business to make commercial profits and therefore, look very closely at project risks. International financiers being offshore lenders, they do in fact take the greatest risks. Of late, international lenders have been more wary about the controversy like Enron and are no longer willing to participate without Indian Financial Institution (IFI) guarantees and take pure project risks. In fact, only in fast-track projects where guarantees are there, these lenders have been willing to take pure project risks. In non-fast-track projects where there

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42 Ibid.
43 Ibid.
is no counterguarantee and as a result the risks are far greater, the major funding support has been from the IFI and domestic banks. Guarantees are one way of mitigating project finance risk. Without these, foreign lenders' exposures in projects are likely to be limited.

On the part of the promoters, financial institutions have been a difficult task to convince. They are becoming tougher day by day. Of late, financial institutions announced that power project promoters would have to bring in their entire equity of 30 per cent upfront if they intend to get any loan sanctioned by them. This is because the power promoters who had already been sanctioned loans in the past have had difficulties in tying up their equity, leading to escalations in project costs and time overruns. In some cases promoters due to lack of required equity have abandoned the power project

In fact, a large number of private power projects had been approaching the international financial markets to tie up funding and thus achieve financial closure. But the global financial markets have been generally down. Due to South East Asian crisis, particularly banks in Korea and Japan are hesitant to take any significant exposure. The economic sanction in the aftermath of Pokhran nuclear test and the resultant rating downgrades has only made matters worse for Indian power sector

Government of India made it mandatory for the Indian Financial Institutions to take exposures in the IPP projects. As such three major financial institutions- IFCI, IDBI and ICICI are close to reach their 15 per cent exposure limit in the power sector. Once they reach this ceiling, an internal norm may disallow them from sanctioning any fresh loans to power projects. These financial institutions have been disillusioned with the

projects to which they have sanctioned the loan. This is because they did not show any progress in the sense that either unable to find other sources of funding or in finalizing the EPC contract or taking counterguarantee clearance or even arranging equity.

As a result, the FIIs cancelled some of the projects that did not show any improvement in the above areas, of course after discussing with the promoters. By the end of 1999, it cancelled loans to two projects—CESC's 500 MW Balagarh project in West Bengal and AES Transpower's 2x250 MW Ib Valley project in Orissa on grounds of "non-progress". The AES project received IFCI's sanction in February 1995 and the CESC project received it in July the same year.47

What is bothering is the fact that FIIs have begun reaching exposure limits even before a significant number of private projects have achieved financial closure. This is because a lot of projects that were sanctioned funds in the past have had difficulties in tying up their finances. No wonder there is a wide gap between FI sanctions and disbursements in the power sector. IDBI's sanctions to the power sector have reached 13.5 per cent but disbursements are only 6-7 per cent of the total assets. Similarly, ICICI's commitments to the sector are already close to 15 per cent while its disbursements are only 9 per cent. And, IFCI's sanctions to the power sector are 12 per cent while disbursements are 8 per cent. Now, FIIs to avoid this problem are going slow on granting fresh sanctions while eyeing a few select good projects.48

4.3. Pakistan Private Sector Response to Power Policy

Like the Indian scenario, the response of Pakistan's private sector to the power policy also has been a combination of successes and failures. The failure is that the IPPs

48 Ibid
in Pakistan have faced some difficulties and some of them have been terminated mostly due to pricing issue. The successes are that many of them have started commercial operation. Their contributions in total growth of power sector will be highlighted in this section.

4.3.1. Growth in Electricity Installed Capacity

Till date incentivised by the private power policy since early 1990s some 17 IPPs with a total capacity of 5955 MW have commissioned their plants in Pakistan. This has been given below in table 4.7.

<table>
<thead>
<tr>
<th>Private (IPPs) supplied to WAPPDA</th>
<th>Capacity (MW)</th>
<th>% Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 KAPCO</td>
<td>1621</td>
<td>28.4</td>
</tr>
<tr>
<td>2 Hub Power Project</td>
<td>1292</td>
<td>22.7</td>
</tr>
<tr>
<td>3 Kohinoor Energy Ltd.</td>
<td>131</td>
<td>2.3</td>
</tr>
<tr>
<td>4 AES Lalpir Ltd.</td>
<td>362</td>
<td>6.3</td>
</tr>
<tr>
<td>5 AES Pak Gen Ltd.</td>
<td>365</td>
<td>6.4</td>
</tr>
<tr>
<td>6 Southern Electric Power Co. Ltd.</td>
<td>117</td>
<td>2.0</td>
</tr>
<tr>
<td>7 Habibullah Energy Ltd.</td>
<td>140</td>
<td>2.4</td>
</tr>
<tr>
<td>8 Rouch (Pak) Power Ltd.</td>
<td>412</td>
<td>7.2</td>
</tr>
<tr>
<td>9 Saba Power Company</td>
<td>144</td>
<td>2.5</td>
</tr>
<tr>
<td>10 Fauji Kabirwala</td>
<td>157</td>
<td>2.7</td>
</tr>
<tr>
<td>11 Japan Power Generation</td>
<td>120</td>
<td>2.1</td>
</tr>
<tr>
<td>12 Uch Power Project</td>
<td>586</td>
<td>10.2</td>
</tr>
<tr>
<td>13 Liberty Power</td>
<td>235</td>
<td>4.1</td>
</tr>
<tr>
<td>14 Alterm Energy Limited</td>
<td>11</td>
<td>0.2</td>
</tr>
<tr>
<td>15 Jagran</td>
<td>30</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Sub Total (Private)</strong></td>
<td><strong>5693</strong></td>
<td><strong>100.0</strong></td>
</tr>
<tr>
<td>Private (IPPs) supplied to KESC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 &amp; 17 Tapal Energy and Gul Ahmad</td>
<td>262</td>
<td></td>
</tr>
<tr>
<td><strong>Total (WAPDA + KESC)</strong></td>
<td><strong>5955</strong></td>
<td></td>
</tr>
</tbody>
</table>

The Hub Power Project is the first private power project in Pakistan to come on stream in June 1996. Hub Power Project which is developed by Hub Power Company (HUBCO) is owned by a consortium of National Power, United Kingdom, Xenal Saudi Arabia, and Mitsui Corporation of Japan, and has a 1292 MW capacity. Kot Addu (KAPCO) with a 1621 MW capacity was privatized in May 1996 from WAPDA, and owned by National Power. In Kot Addu plant, 36 per cent of the equity and management control has been given to the successful bidder- National Power. Followed by this few more IPP projects came up subsequently. These include Kohinoor Energy Ltd. (131 MW), AES Lalpir Ltd. (362 MW), AES Pak Gen Ltd. (365 MW), Southern Electric Power (117 MW), Habibullah Energy Ltd. (140 MW), Rouch (Pak) Power Ltd. (412 MW), Saba Power Company (144 MW), Fauji Kabirwala (157 MW), Japan Power Generation Co. Ltd. (120 MW) and Unch Power (586 MW). WAPDA being the power purchaser under the PPA, all these units were added to the WAPDA system for transmission and distribution. The last IPP unit added to the system was the Liberty Power (235 MW), which was commissioned in September 2001. This was connected to the WAPDA grid. Besides, there were two IPP projects that were added to the KESC system. Since they are under the jurisdiction of KESC operating area they had signed PPA with them. These include Tapal Energy and Gul Ahmad (262 MW). Out of these 17 IPP projects only one is hydel generation plant while all are thermal plants. It is Jagran with 30 MW installed capacity commissioned in October 2000 in Azad Jammu and Kashmir connecting to WAPDA grid.

Apart from the 17 private power projects that came up in Pakistan, there are another three IPP projects with total installed capacity of 132 MW at different stages of construction, which are expected to be commissioned shortly. These are the followings:

Table 4.8: Private Power Projects Under Construction in Pakistan

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Company</th>
<th>Installed Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Davis Energen (Pvt) Ltd.</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>Power Generation Systems</td>
<td>116</td>
</tr>
<tr>
<td>3.</td>
<td>Northern Electric Co.</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>132</td>
</tr>
</tbody>
</table>


These three projects with combined installed capacity of 132 MW will be connected to the WAPDA system after their completion. There was one IPP project named as Sabah Shipyard Limited with net capacity of 273 MW under completion to be connected to KESC grid. This project was expected to become operational by the end of 1998\(^5\). However, the project did not start commercial operation yet. There was another project under construction to be completed by 1999 is the 20 MW Eeshatech Ltd. (coal fired power plant based on indigenous coal), to be established in District Chakwal, Punjab province\(^5\). This project is to be connected to WAPDA system has been delayed. However, later on Government of Pakistan terminated PPA with the Eeshatech Ltd\(^5\).
Apart from these three private projects with 132 MW coming up soon connecting to WAPDA grid, there is one project in the hands of the public sector that is under implementation. In the public sector it is only the Ghazi Barotha Hydel Station of 1,450 MW installed capacity (5×290) that is under progress. Of the five units of this project, two were expected to come by end of 2002 and other three in the first half of 2003. As such a total installed capacity of 1,582 MW consisting of both public sector and private sector was expected to come up soon.

Further, Government of Pakistan has taken a major step for establishment of a 450 MW coal-fired power plant based on Lakhra Coal, in accordance with the 1998 Power Policy. The sponsors have agreed to conduct a feasibility study for the project at their own risk and cost without any obligations on the part of the Government. This is really a major practical initiative for exploiting the local indigenous coal\textsuperscript{53}.

The demand supply projection prepared by the National Transmission and Despatch Company (NTDC) of WAPDA in June 1999 portray a supply deficit of the order of 400 MW starting from the year 2005-2006 increasing to around 7,200 MW by the year 2009-10. This is likely to further increase up to 17,300 MW by the year 2015-16. In order to propose suitable strategy for meeting further power demands shortages WAPDA has prepared a "Hydropower Development Plan" (Vision 2025), which has got the approval of the Government\textsuperscript{54}.

The projects, which will be constructed under the Vision-2025 programme, are Golden Gol 106 MW, Khan Khwar 72 MW, Allai Khwar 121 MW, Duber Khwar 130

\textsuperscript{54} Ibid.
MW and Jinnah 96 MW. These projects are planned to be completed by 2006\textsuperscript{55}. However, there are some 22 hydropower projects for which the feasibility studies have been completed and one more (Kohala 740 MW) is underway. This is given in Appendix VI. Also, feasibility study of Basha (3,360 MW) upstream of the Indus was carried out by M/s Montreal Engineering Company of Canada in 1984 and will be updated in future. Dasu (2,270 MW), Thakot (2,400 MW) and Bunji (1,290 MW) have also been identified as prospective sites for future large-scale hydropower development for which feasibility study will be carried out. Also feasibility study for hydro project at Doyian 425 MW will be undertaken\textsuperscript{56}.

Besides, feasibility studies have also been carried out for gas-fired combined cycle power plants to provide low cost thermal power. The Sindh Coal Development Authority has initiated a feasibility study for a 1000 MW mine-mouth coal fired power plant based on Thar coal with technical and financial assistance of China\textsuperscript{57}.

This growth in private power generation has changed the total installed capacity in Pakistan. As such, the installed electricity-generating capacity in Pakistan during 1990s increased dramatically. In fact, the installed capacity, which was 8,776 MW in 1990-91, increased to 17,457 MW in 2000-01 representing a compound growth rate of 6.45 per cent. Year wise trend in electricity installed generating capacity with type of generation is during 1990s is given below in table 4.9.

\textsuperscript{55} \textit{Ibid.}, p. 14/17.
\textsuperscript{57} Government of Pakistan, \textit{op. cit.}, n. 53 , p. 14/17.
Table 4.9: Growth of Installed Capacity in Pakistan

<table>
<thead>
<tr>
<th>Year</th>
<th>Hydel (MW)</th>
<th>Thermal (MW)</th>
<th>Nuclear (MW)</th>
<th>Total (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-91</td>
<td>2898 (33.02)</td>
<td>5741 (65.42)</td>
<td>137 (1.56)</td>
<td>8776 (100)</td>
</tr>
<tr>
<td>1991-92</td>
<td>3330 (35.55)</td>
<td>5902 (62.99)</td>
<td>137 (1.46)</td>
<td>9369 (100)</td>
</tr>
<tr>
<td>1992-93</td>
<td>4626 (43.70)</td>
<td>5823 (55.00)</td>
<td>137 (1.29)</td>
<td>10586 (100)</td>
</tr>
<tr>
<td>1993-94</td>
<td>4726 (41.75)</td>
<td>6456 (57.04)</td>
<td>137 (1.21)</td>
<td>11319 (100)</td>
</tr>
<tr>
<td>1994-95</td>
<td>4826 (39.88)</td>
<td>7137 (58.98)</td>
<td>137 (1.13)</td>
<td>12100 (100)</td>
</tr>
<tr>
<td>1995-96</td>
<td>4826 (37.21)</td>
<td>8006 (61.73)</td>
<td>137 (1.06)</td>
<td>12969 (100)</td>
</tr>
<tr>
<td>1996-97</td>
<td>4826 (32.57)</td>
<td>9855 (66.50)</td>
<td>137 (0.93)</td>
<td>14818 (100)</td>
</tr>
<tr>
<td>1997-98</td>
<td>4826 (30.90)</td>
<td>10655 (68.22)</td>
<td>137 (0.88)</td>
<td>15618 (100)</td>
</tr>
<tr>
<td>1998-99</td>
<td>4826 (30.82)</td>
<td>10699 (68.31)</td>
<td>137 (0.87)</td>
<td>15662 (100)</td>
</tr>
<tr>
<td>1999-00</td>
<td>4825 (27.73)</td>
<td>12436 (71.48)</td>
<td>137 (0.79)</td>
<td>17398 (100)</td>
</tr>
<tr>
<td>2000-01</td>
<td>4826 (27.65)</td>
<td>12169 (69.71)</td>
<td>462 (2.64)</td>
<td>17457 (100)</td>
</tr>
<tr>
<td>2001-02</td>
<td>5009 (28.38)</td>
<td>12180 (69.00)</td>
<td>462 (2.62)</td>
<td>17651 (100)</td>
</tr>
</tbody>
</table>

E - Estimated
Note: 1. Figures in the brackets are the percentage of total


The data in the table 4.9 has been presented in the form of bar chart for illustrative purpose in fig 4.3 below.
After mid-1990s, the growth in the installed capacity is due to the commissioning of thermal power stations by the power sector. Besides, there has been some growth in the public sector installation. In early 1990s it is because of the few units that were added to the existing stations in the WAPDA hydel system, which increased the installed capacity to 4,826 MW in 1994-95. The four units that were added to the existing Tarbela Hydel Power Station increased this hydel installation. However, this hydel installation represents only 24 per cent of the hydroelectric potential. The under construction hydel projects are Ghazi Barotha 1,450 MW (6,586 million kWh) and Chashma low head 184 MW (1,081 million kWh) were earlier expected to be completed by the year 2002. Recently it was felt that only Chashma low head 184 MW would be completed during the
year 2001-02 thereby bringing hydel generation to 5,009 MW. In fact, when these two projects come up, they would save a lot of foreign exchange, as otherwise would be spent on import of residual furnace oil to produce equivalent thermal electricity. Moreover for the project life of 30 years, they would save a lot to the national exchequer. Apart from the contribution by the public sector hydel units, there have been some additions of thermal stations by the public sector thermal units, which caused this growth of electricity installation. Nuclear installed capacity in 2000-01 increased due the installation of second nuclear unit in Pakistan at Chashma in October 2000.

It is important to state that planning of hydro electric stations require very detailed techno-geological, hydrological, economic and financial feasibility studies involving a long time and also money coupled with expertise, not so easily available in Pakistan. In regard to time, for example, the pre-feasibility study of Tarbela was started in 1954 and the first stage 700 MW was completed in 1977. The first stage took 23 years. It took another 16 years to complete the last 11-14 units by end of 1993. Another is the hydro project in waiting is the Kalabagh (2,400 MW). Its feasibility study was completed in 1972, and reviewed by independent consultants in February 1975 declaring the project techno-economic viable and the detail engineering study was also completed in June 1998. But the project execution continues to be at the altar. This project if commissioned would save lot of foreign exchange, as Pakistan will not much depend for the generation of thermal power, which requires import of oil-residual-furnace oil.

In addition to independent power projects, there has been some development of several captive power plants as well. Nishat Tek, Kohinoor Power, Tri-star, Sitara
Energy, Ibrahim Energy to name a few are the captive power plants supplying electricity only to associated concerns.

### 4.3.2. Growth in Electricity Generation

During 1990s electricity generation has undergone significant improvement in Pakistan. The total electricity generation over 10 years period especially from 1990-91 to 2000-01 have increased from 41.0 billion kilowatt hours to 68.1 billion kilowatt hours representing compound growth rate of 4.7 per cent. Year to year electricity generation of such period is given below in table 4.10.

#### Table 4.10: Electricity Generation in Pakistan

<table>
<thead>
<tr>
<th>Year</th>
<th>Hydel</th>
<th>Thermal</th>
<th>Nuclear</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-91</td>
<td>18.3 (44.65)</td>
<td>22.4 (54.41)</td>
<td>0.3 (0.94)</td>
<td>41.0 (100)</td>
</tr>
<tr>
<td>1991-92</td>
<td>18.2 (40.51)</td>
<td>26.4 (58.56)</td>
<td>0.4 (0.93)</td>
<td>45.0 (100)</td>
</tr>
<tr>
<td>1992-93</td>
<td>21.1 (43.31)</td>
<td>27.0 (55.50)</td>
<td>0.6 (1.19)</td>
<td>48.7 (100)</td>
</tr>
<tr>
<td>1993-94</td>
<td>19.4 (38.38)</td>
<td>30.7 (60.64)</td>
<td>0.5 (0.98)</td>
<td>50.6 (100)</td>
</tr>
<tr>
<td>1994-95</td>
<td>22.8 (42.68)</td>
<td>30.2 (56.36)</td>
<td>0.5 (0.96)</td>
<td>53.5 (100)</td>
</tr>
<tr>
<td>1995-96</td>
<td>23.2 (40.75)</td>
<td>33.2 (58.40)</td>
<td>0.5 (0.85)</td>
<td>56.9 (100)</td>
</tr>
<tr>
<td>1996-97</td>
<td>20.9 (35.28)</td>
<td>37.9 (64.14)</td>
<td>0.3 (0.58)</td>
<td>59.1 (100)</td>
</tr>
<tr>
<td>1997-98</td>
<td>22.0 (35.52)</td>
<td>39.7 (63.88)</td>
<td>0.4 (0.60)</td>
<td>62.1 (100)</td>
</tr>
<tr>
<td>1998-99</td>
<td>22.4 (34.32)</td>
<td>42.7 (65.24)</td>
<td>0.3 (0.44)</td>
<td>65.4 (100)</td>
</tr>
<tr>
<td>1999-2000</td>
<td>19.3 (29.34)</td>
<td>46.0 (70.05)</td>
<td>0.4 (0.61)</td>
<td>65.7 (100)</td>
</tr>
<tr>
<td>2000-01</td>
<td>17.2 (25.24)</td>
<td>48.9 (71.83)</td>
<td>1.9 (2.93)</td>
<td>68.1 (100)</td>
</tr>
<tr>
<td>2001-02 E</td>
<td>18.4 (33.97)</td>
<td>34.1 (62.87)</td>
<td>1.7 (3.16)</td>
<td>54.2 (100)</td>
</tr>
</tbody>
</table>

E - Estimated

Note: 1. Figures in the brackets are the percentage of total.


The data in the above table can be presented in the form of diagram as given in figure 4.4 for illustrative purposes.
It can be seen from the table 4.10 that the share of hydel is continuously declining while that of thermal is rising steadily. The share of hydel, which was a 44.65 per cent in 1990-91, declined to 25.24 per cent in fiscal year 2000-01 and was estimated to increase to 33.97 per cent for 2001-02. As against to that, the share of thermal increased from 54.41 per cent to 71.83 per cent during the same period but was estimated to decline to 62.87 per cent for 2001-02. The share of nuclear in year 2000-01 increased due to the commissioning of the second nuclear plat at Chashma in Pakistan. The increase in the share of thermal during first half of 1990s can be ascribed to the increase in efficiency of the system while during the second half of 1990s, the growth in electricity generation is not only due to increase in efficiency but also due to addition of few thermal units by the private sector. It is because of this addition of thermal stations by the IPPs and non-
addition of any capacity of hydel station that led to this lopsided trend\textsuperscript{58}. It is also heartening to see that not only the percentage share of hydel units declined, their absolute electricity generation also declined. The decrease in hydel generation is attributable to dry seasons during first half of the years.

The current level of electricity generation indicates that hydel power potential has not been fully exploited, being largely untapped in Northern Areas and NWFP. It is pertinent to mention here is that, since electricity generated through thermal is much more expensive than hydel, therefore, the massive shift in reliance to thermal has made electricity expensive. For reducing the cost of electricity, it is essential that Pakistan make effort to reverse the contribution of hydel and thermal in medium to long run.

4.3.3. Privatisation of Distribution

In Pakistan distribution of electricity had been the responsibility of two public sector utilities, namely WAPDA and KESC. Due to mounting T&D losses by both the public sector entities, Government of Pakistan perused the privatization of distribution activities of these utilities. As such, the vertically integrated activities of WAPDA have been unbundled into three separate activities as generation, transmission and distribution in Pakistan. WAPDA's generating system has been formed into three power generation companies (GENCOs): at (i) Jamshoro, (ii) Guddu, and (iii) Multan. WAPDA has also set up an independent management National Transmission and Despatch Company (NTDC) for the transmission work. Presently, these entities are corporatised under the

\textsuperscript{58} Only during early 1990s particularly from May 1992 to July 1994 few hydel units were installed in Pakistan. Four units at Tarbela (4x432 MW) and two units at Mangla (2x100 MW) during this period were added. Thereafter there has been no of hydel power installation till 30 MW installed by the IPP (Jagran) in October 2000 in the AJK incentivised by the private power policy.
management of Pakistan Electronic Power Company (PEPCO). Ultimately, the distribution companies (DISCOs) and GENCOs will be privatized. In regard to distribution, the 8 Areas Electricity Boards of WAPDA have been restructured into 8 independent power distribution companies. This has been done in order to bring improvement on long term and sustainable basis in the financial, operational and management tiers of the WAPDA. The details of the said 8 regional electricity companies are as under.

1. Peshawar Electric Power Company
2. Islamabad Electric Supply Company
3. Gujranwala Electric Power Company
4. Lahore Electric Supply Company
5. Faisalabad Electric Supply Company
6. Multan Electric Supply Company
7. Hyderabad Electric Supply Company
8. Quetta Electric Supply Company

The ultimate aim of these distribution companies is their privatisation. The Privatization Commission has also initiated the privatization process of Faisalabad Electric Supply Company. As per the Asian Development Bank Energy Sector Restructuring Program the privatisation of one distribution company is also mandatory for release of one of the tranches of the loan. As such, the privatisation of Faisalabad

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Electric Supply Company was expected to complete by December 2002\(^{61}\). This will be the first time the distribution of electricity will be privatized. The privatisation is to be implemented by the International Finance Corporation. This being one of the largest electricity companies in the country, it will have significant implications for the overall privatisation process in the country\(^{62}\).

Privatisation of KESC is long overdue. It was intended from the early days of the initiation of private power policy to privatise the existing public power projects like KESC. KESC privatization has two key goals; (i) to bring good management and new investments that are necessary to provide a reliable supply of electricity to Karachi for now and future and (ii) to stop the fiscal bleeding caused by mounting financial losses, stemming in part from very high line losses\(^{63}\).

KESC was intended to be privatising as a vertically integrated utility through sale of up to 51 per cent of its equity interest to a strategic buyer who will also be given control over its management. The rationale for selling KESC as single entity instead of breaking it into generation, transmission and distribution companies is that transmission is a small portion of KESC's business and distribution system is full of problems\(^{64}\). As


such, KESC has distribution losses up to 50 per cent, which is blocking its privatization plan\(^65\). However, currently technical, commercial and legal due diligence relating to KESC’s privatisation is at an advanced stage. To improve the financial health and therefore to make it salability, a financial restructuring package of Rs.34 billion was implemented\(^66\). Expressions of Interest were internationally solicited on the basis of which eight interested parties were short-listed. They were, Asea Boveri together with Army Welfare Trust and Deutsche Bank Group; CMS Energy; Korea’s Daewoo with Korea Electric Power Corp. and Italy’s Ansaldo; Marubeni of Japan; National Grid of the UK; Belgium’s Tractebel; UAE Offset Group; and Spain’s Union Fenosa Group. However, a total of 10 consortia had sought pre-qualification. The next step is the technical assessment of all the bids. The bid will be awarded to the subscriber who would invest Rs. 250 million to Rs. 300 million to refurbish KESC’s distribution system\(^67\).

There has been a steady growth in the transmission lines in Pakistan during reform period. The transmission lines, which was 30,657 kms. in 1991 (excluding 33 kv and 11 kv lines, but including 500 kv, 220 kv, 132 kv and 66 kv) reached 38,525 kms. in 1995 and thereafter increased at a higher rate reaching 43,729 kms. in 2002. Since new entities like IPPs started producing in the second half of the 1990s, it was necessary to lay down more transmission lines for the smooth transfer of power from the grid to their

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\(^{67}\) Arshad Awan, *op. cit.*, n 64.
systems. Also, since the transmission and distribution losses were too high in Pakistan, transmission lines were strengthened to contain these losses. With the laying of transmission lines, village electrification gained its momentum. As such, a total of 37,135 villages were electrified by 1991, which increased to 57,170 villages by 1995 and to 71,561 by 2002.

4.3.4. Role Played by the Regulatory Agency

Pakistan set up a National Electric Regulatory Authority (NEPRA) in 1997. This was set up under an Act of Parliament, called the Regulation of Generation, Transmission and Distribution of Electric Power Act, No. XL of 1997. The objective of passing the Act was to create an independent body to regulate electric power services in the country. The NEPRA shall be exclusively responsible for grant of licenses for generation, transmission and distribution of electric power and prescribe procedures and standards for investment programmes by generation, transmission and distribution companies. It will be also responsible for prescribe and enforce performance standards for generation, transmission and distribution companies. The NEPRA is responsible to prescribe fees for grant of licenses and renewal thereof and prescribe fines for contravention of the provisions of this Act. The NEPRA shall determine tariff, rates charges and other terms and conditions for the supply of electric power services by generation, transmission and distribution companies and recommend to the Federal Government for notification. NEPRA shall review organizational affairs of generation, transmission and distribution

companies to avoid any adverse effect on the operation of electric power services and for continuous and efficient supply of such services. NEPRA shall submit reports to the Federal Government in respect of activities of generation, transmission and distribution companies; and tender advice to public sector projects. The NEPRA shall, as far as practicable, protect the interests of consumers and companies providing electric power services in accordance with guidelines, not inconsistent with the provisions of the Act No. XL of 1997.\(^{70}\)

The Act No. XL of 1997 prescribed that as soon as may be but not later than six months from the commencement of the said Act, the NEPRA shall determine and prescribe procedures and standards for determination, modification or revision of rates, charges and terms and conditions for generation of electric power, transmission, interconnection, services and power sales to consumers by licensees. Until such procedures and standards are prescribed, the NEPRA shall determine, modify or revise such rates, charges and terms and conditions in accordance with the directions issued by the Federal Government. The NEPRA while determining the standards protect the consumers against monopolistic and oligopolistic prices.\(^{71}\)

Since its set up, NEPRA has been active in fulfilling its responsibility in Pakistan. As such WAPDA had applied for automatic fuel adjustment and demanded an increase in tariff due to escalation in the furnace oil prices in the international market. After conducting open public hearing, NEPRA rendered its determination in December 2000. The determination also contained an automatic tariff adjustment formula and its implementation mechanism. The WAPDA filed a petition with NEPRA for

\(^{70}\) Ibid, pp. 7-8.
\(^{71}\) Ibid, pp. 17-18.
Rationalisation of Electricity Consumer End Tariff and Introduction of two-part Tariff for Domestic and Commercial consumers in November 2000. After completion of admission formalities by WAPDA, the petition was admitted in March 2001. The NEPRA also gave interim permission to WAPDA to charge consumers an additional Paisa of 8/kWh on its average tariff pending determination of the petition. NEPRA also ordered that if this increase was not allowed in the final determination, WAPDA will refund any amount that is in excess of the amount payable by the consumer pursuant to final determination\textsuperscript{72}.

The petition of KESC for increase in tariff due to increase in fuel price and insertion of an automatic fuel adjustment clause was admitted in August 2000. Public hearing was held and determination made in March 2001. The determination also contained an automatic tariff adjustment formula and its implementation mechanism\textsuperscript{73}. Again, under automatic fuel adjustment formula, KESC was allowed by NEPRA to raise its average sales tariff by 13 Paisas/kWh to meet the increased burden in fuel cost due to higher fuel prices during the period from June 2001 to September 2001. During the second quarter (October-December) of the financial year 2001-02, the prices of fuel dropped significantly. Although no application was received from the KESC for decrease in fuel price, NEPRA took \textit{suo moto} action and applied the mechanism, which resulted in lowering of the KESC tariff by 13 Paisas/kWh\textsuperscript{74}.

During the period July 2001 and June 2002, after finalisation of draft distribution licence for distribution companies, licences were issued to all 8 - distribution companies.

\textsuperscript{72} Government of Pakistan, \textit{op. cit.}, n. 56, p. 24/25.
\textsuperscript{73} \textit{Ibid.}, p. 25/25.
\textsuperscript{74} Government of Pakistan, \textit{op. cit.}, n. 60, p. 15.
During this period also NEPRA granted generation licences to a total of eighteen companies, three of which are successor companies, namely Jamshoro Power Generation Company at Jamshoro, Central Power Generation Company at Guddu and Northern Power Generation Company at Multan and the rest 15 licenses were issued to small power producers (SPPs). During July 2001- June 2002, it made three determinations. First determination was made on October 19, 2001 with increase of 11 Paisas/ kWh. Second determination was made on December 29, 2001 with decrease of 9 Paisas/ kWh. The third determination was made in March 2002 with an increase of 4.5 Paisas/ kWh by the WAPDA.\(^75\)

The Asian Development Bank covenanted the privatization of one Generation Company corporatised on the unbundling of WAPDA. With the issuance of licence to Jamshoro Power Generation Company the stage will be set for its privatisation. NEPRA has discussed with the Price Waterhouse Coopers (PWC) a number of issues related to tariff, power acquisition and performance standards for generation companies. In the transition period, till the competitive electricity market is in place, the tariff of generation companies will also be set by NEPRA.\(^76\)

Also, NEPRA has been actively perusing the eventual goal of privatisation of KESC. Tariff and licensing details are being worked out. NEPRA is committed to provide a fair return to the investor while ensuring safe and reliable service at competitive rates to the consumers. The public hearing conducted by NEPRA are a significant attempt to introduce transparency and public participation in the decision making process- an

\(^{75}\) Ibid., pp. 11-14.
\(^{76}\) Ibid., p 19.
essential feature of effective governance. NEPRA's role is expected to assume further
prominence as the restructuring of the power sector proceeds.\textsuperscript{77}

NEPRA has received an application for transmission from National Transmission
and Despatch Company and one application from KESC for a Special Purpose
Transmission Licence under section 19 of the NEPRA Act. Although NEPRA has
developed rules for generation and distribution licences but no rules have been made so
far for transmission licences. This is mainly for the reason that the Act envisages a single
National Grid Company i.e. NTDC. At present, NEPRA is developing a comprehensive
and self-contained transmission licence with the assistance of British Power International
(BPI) consultants. Both the applications from NTDC and KESC are currently under
consideration.\textsuperscript{78}

NEPRA has been very active on giving its determination in case of individual
consumer's representation on tariff anomaly. In fact, during FY 2000-01, NEPRA
rendered its determination in respect of a petition filed by a 220 kV consumer, M/s ICI
Ltd. The Petitioner sought separate 220 kV tariff in KESC franchise area. Tariff Category
B5 for industrial supply at 220 kV and above was determined in January 2001 and
intimated to the Federal Government for notification. Determination of terms and
conditions of KESC tariff was also made by NEPRA in February 2001 in furtherance to
the tariff determination earlier made in August 1999.\textsuperscript{79}

\textsuperscript{78} Government of Pakistan, \textit{op. cit.}, n. 60, pp. 12-13.
\textsuperscript{79} Government of Pakistan, \textit{op. cit.}, n. 56, p. 25/25.
Another consumer, M/s NAGORI Cooperative Dairy Framing Society, Karachi filed a petition on October 24, 2001 to seek relief so that the electricity consumed by Dairy Farm for operating tube-wells may be charged agricultural tariff. On November 17, 2001 NEPRA published the salient features of the petition and notice to the public in Urdu and English newspapers. In response to the notice, five comments and one Intervention request were received. A conference was held at NEPRA Head office where stakeholders were provided an opportunity to be heard. Experts in the field of Food, Agriculture and Livestock were also invited to express their views. NEPRA gave its determination on March 2002 wherein it decided that the electricity consumed by the tube-wells installed in a Dairy farm for cultivating crops as fodder and for upkeep of cattle would be charged under agricultural tariff.\(^{89}\)

4.3.5. Private Power and Infrastructure Board

In line with the objective to relieve the public sector from heavy budgetary allocations, the independent power policies were devised to achieve the required capacity additions besides attracting foreign investment in the power generation sector. For this purpose and in order to implement the Government's private power policies, one-window facility with the name of Private Power and Infrastructure Board (PPIB) was established in March 1994 and mandated to provide an interface to investors to approach the public sector entities.\(^{81}\) In fact, PPIB was set up to encourage participation of the private sector in power generation through private investment in collaboration with the Ministry of

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\(^{89}\) Government of Pakistan, op. cit, n. 60, p. 17.

\(^{81}\) Government of Pakistan, op. cit., n. 56, p. 22/25.
Water & Power. The Board has been set up as an autonomous organization to provide one window interface to the investors. Its objectives are:

- To improve the performance of the public sector power utilities in order to eliminate waste and losses and thereby increase capital utilisation efficiency;

- To mobilise the resources in the private sector on a massive scale to support the generation expansion programme\(^\text{82}\).

Currently it is playing a lead role in facilitating implementation of four hydel projects of 884 MW to which Letter of Interest/ Letter of Support were issued by the provinces and Azad Jammu & Kashmir (AJK) under the Hydel Policy, 1995. Altern Energy Ltd and Liberty Power Ltd achieved commercial operations respectively on June 6, 2001 and September 10, 2001 and subsequently they have started commissioning. The PPIB facilitated these projects in resolving their outstanding issues with different organizations to enable them in achieving their operations\(^\text{83}\).

4.3.6. Employment

The state owned enterprises often have many more employees than needed for efficient operation of the company. Many of the employees perform little or no work and/or have low productivity. For example, the cost of overstaffing and mismanagement in electricity companies are passed on to the consumers through higher tariffs and unreliable services. In fact, the WAPDA power companies and KESC make huge losses, which result in the Government having to inject massive amounts of equity into these


\(^{83}\) Government of Pakistan, *op. cit.*, n. 53, p. 16/17.
companies or to provide loans and bonds to keep them afloat. Retaining unproductive employees in state owned enterprises (SOEs) is socially very costly. Government recognizes that overstaffing is sometimes so high, and the labour force so politicized that without upfront rightsizing measures privatization efforts are unlikely to generate much investor interest. To facilitate privatization as well as provide relief to employees who may otherwise be laid off, the Government has developed a policy of offering generous voluntary retirement schemes (VRS) like golden handshake scheme (GHS). Those who do not avail of the voluntary retirement scheme will continue to enjoy those terms and conditions of service as were enjoyed by them at the time of transfer of the enterprise to the buyer. The sale agreement also typically specifies that employees who do not avail the GHS or VRS may not be laid off for at least one year after the sale.\textsuperscript{84}

Any programme of divestiture is expected to lead to greater unemployment at least in the short-term. In Pakistan, while no specific data is available, this is likely to be mitigated by the contractual obligation of private owners to retain industrial labour for a 12-months period after transfer of management. However, this guarantee does not generally cover management and professional staff and consequently unemployment among these categories is believed to have increased. In the long run, the privatization measures are expected to stimulate employment through increased industrial activity. However, Government has launched a number of initiatives for promoting self-employment targeted at the educated unemployed. However, given the limited size of financial resources committed to these schemes, the number of beneficiaries is likely to be too small to make any overall impact on the rising trend in unemployment.

\textsuperscript{84} Government of Pakistan, \textit{op. cit.}, n. 63, pp. 15-16.
Conducive investment climate benefits both the formal and informal sectors, and it is the latter where the poor often have the best chance of finding employment. Whereas conducive investment climate helps the formal sector to grow and create jobs, it also generates new demand for an expansion of the informal sector, which benefits the poor. As such, given the no expansion of public sector power generating units on the eve of financial constraints, at least generation of electricity by IPPs by installing power stations increases formal employment in this sector. At the same time, it creates employment in the informal sector for the poor.

4.3.7. Constraints in the Pakistani Power Sector

However, despite the above positive developments in the power sector, there remained some constraints over the reform period. Constraints are IPPs faced number of hurdles, power losses (T&D losses) and corruption in the power sector. Besides, Pakistan faced some of the other constraints like subsidies in the domestic tariff, nuclear test, September 11, 2001 attack on US and drought, which have undermined the growth of the private sector. Though the private power policy addressed to some of these issues, it did not contain within its limit. However, these issues will be highlighted in the following section.

4.3.7.1. Hurdles before IPPs

The IPPs have run into problems during 1998-99 in their relations with the Pakistani Government. This along with the oversupply problem has dampened foreign investor interest in Pakistan power sector. IPPs have been involved in disputes and litigation with the government over the rates set in their power purchase agreements with
the national WAPDA grid\textsuperscript{85}. The then Government under Nawaz Sharief had accused several of the private power companies of overcharging the cash-trapped state utility company, WAPDA. The Nawaz Sharief government's main demand was for a reduction in rates to 4.5 cents per kWh from the 6.5 cents per kWh which most of the IPPs had in their original contracts (PPAs). Both of the largest IPPs, HUBCO and KAPCO had been targeted, as well as Malaysian owned DHAKRI power plant. In response to Pakistani Government demand for rate reduction, the IPPs have demanded that prices of fuels be lowered, oil in particular, which is supplied by the state controlled monopoly. The IMF has made resolution of the IPPs pricing issue a condition of continued lending. The new military government had continued negotiations with the IPPs; now the same dispute has been solved\textsuperscript{86}. A handful of smaller companies agreed to adjust their rates. The military Government announced an end to all disputes between WAPDA and International Power over the joint running of the Kot Addu Power Company (KAPCO). An end to KAPCO dispute could help speed up the resolution of WAPDA's tussle with the Hub Power Company. After all, International Power is the largest shareholder in Hub Power Company\textsuperscript{87}

4.3.7.2. Power Losses

In Pakistan both the WAPDA and KESC have been making considerable losses for long time. Despite Government endeavour to contain the T&D losses in both the system, they have not been very successful though they have reduced the losses a bit.


\textsuperscript{86} Ibid.

The power losses during 1990s had been substantial due to technical reasons/ natural system losses and theft.

In fact, WAPDA had invoked vigorous technical and administrative measures to improve operational and management efficiency to reduce power loss and theft. The programme of renovation, rehabilitation, installing capacitor and strengthening consumer-end distribution supply network had been undertaken to reduce power loss. These programmes undertaken aggressively in the second half of 1990s had been able to contain the losses to some extent. The power losses (both auxiliary consumption and T&D loss), which were 23.1 per cent in 1991-92, had increased to 27.5 per cent in 1998-99, but owing to this programme it reduced to 24.3 per cent in the first eight months of the 2001-02 fiscal year. Table 4.11 shows the trend of power losses since 1991-92.

Table 4.11: WAPDA Power Losses in Pakistan

<table>
<thead>
<tr>
<th>Year</th>
<th>Auxiliary Consumption</th>
<th>T&amp;D Losses</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991-92</td>
<td>2.4</td>
<td>20.7</td>
<td>23.1</td>
</tr>
<tr>
<td>1992-93</td>
<td>2.3</td>
<td>21.1</td>
<td>23.4</td>
</tr>
<tr>
<td>1993-94</td>
<td>2.6</td>
<td>21.6</td>
<td>24.2</td>
</tr>
<tr>
<td>1994-95</td>
<td>2.6</td>
<td>21.4</td>
<td>24.0</td>
</tr>
<tr>
<td>1995-96</td>
<td>2.9</td>
<td>21.5</td>
<td>24.4</td>
</tr>
<tr>
<td>1996-97</td>
<td>2.4</td>
<td>21.7</td>
<td>24.1</td>
</tr>
<tr>
<td>1997-98</td>
<td>2.0</td>
<td>23.9</td>
<td>25.9</td>
</tr>
<tr>
<td>1998-99</td>
<td>1.7</td>
<td>25.8</td>
<td>27.5</td>
</tr>
<tr>
<td>1999-2000</td>
<td>2.1</td>
<td>25.1</td>
<td>27.2</td>
</tr>
<tr>
<td>2000-01</td>
<td>2.0</td>
<td>23.8</td>
<td>25.8</td>
</tr>
<tr>
<td>2001-02 (July-Feb.)</td>
<td>2.1</td>
<td>22.2</td>
<td>24.3</td>
</tr>
</tbody>
</table>


In KESC system, power losses had been higher than the WAPDA system. In fact, power losses in KESC system remained around 29 per cent. Power theft is a serious issue in Pakistan. It constitutes a sizeable proportion of Pakistan's overall loss of 35 per cent. The situation was so worse by the end of 1999 that compelled Pakistani Government to assign army units to look for illegal connections to transmission lines and rigged meters. By March 2001, the army had lodged 5,687 complaints against big power thieves.\(^{89}\) The army is still continuing this responsibility till today, even with reduced its manpower deployment in this operation. Power theft is just one part of the financial problem for WAPDA. Also, WAPDA is at the center of a mounting public sector circular debt in which state firms and government ministries have failed to pay power bills. This resulted WAPDA in failing to meet the obligation to central ministries and to the private sector creditors. Of late, on April 30\(^{th}\) 2001 Government has allowed the WAPDA to recover the outstanding amount US$ 8,06,45,161 from the government and semi-government department, otherwise disconnect their electric supply connections without any further delay.\(^{90}\)

Theft or diversion of electricity in transmission, as well as a lack of energy efficiency standards have contributed to Pakistan's high energy and carbon intensities. To increase energy efficiency, Pakistan is stepping up its use of renewable energy sources to bring electricity to rural areas. As urbanization continues and the population grows at a rapid rate, in coming days Pakistan will need to confront its environment problems in order to safeguard the health of its citizen.\(^{91}\)

\(^{89}\)Asia Pacific Regional Electric Power Union Network Workshop, op. cit., n. 85.

\(^{90}\)Ibid.

\(^{91}\)Ibid, pp. 5-6/8.
Infrastructure development in the transmission network and the distribution facilities has not kept pace with the electrification requirements of the country particularly of the rural areas. Lack of investment has also resulted in the inability of the public utilities to control T&D losses that compare very poorly with the international standards. There is a strong case for increasing investment in infrastructure in the sector to make up not only for the backlog of investment in the past, but also to meet the ever-increasing requirements of future investment.

4.3.7.3. Corruption in the Power Sector

Nawaz Sharief during his second tenure (1997-2000) like his first tenure (1990-1993) was very proactive in reforming the economy in general and privatizing the power sector in particular. He was also very active in reducing corruption and booking the culprits involved in it. During his second tenure, Nawaz Sharief was looking for evidence against the People's Party of Pakistan (PPP) regime from HUBCO deal for fraud allegations and kickbacks in the power agreement. His Government even picked up HUBCO employees and confessional statements were obtained after torture and threats. The point to be stressed is that he was very much determined to nab the corruption in the power deal.

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92 Government of Pakistan, op. cit., n. 60, p. 6.
A great deal of losses in the transmission and distribution of electric power is due to corruption in the system. Given the acuteness of this problem in Pakistan, the Government mobilized army to supervise meter reading and billing in 1999. The affluent industries, shopping centres, and large residences accounted for a large share of the stolen electricity. Non-technical losses arising from electricity theft were reduced significantly when army took over electricity distribution in 1999. While there were many illegal connections by low-income households, the Pakistani Army found that high-income households, industry, and large commercial establishments such as shopping malls stole significant quantities of electricity\textsuperscript{94}.

The energy sector lends itself to corrupt practices. This is a result both of its traditional institutional arrangements dominated by state monopolies controlling oil, gas, or electricity and of the sheer amount of cash it can generate. Corruption in energy takes many forms, from petty corruption in meter reading and billing to grand corruption in the allocation of lucrative monopolies. These practices differ in scale but contribute to the same results—weak operational and financial performance and, for the poor in particular, declining service quality or reduced chances of ever-accessing network services. The answer to corruption is continuing reform, to reduce the incentive and potential to capture monopoly rents and to increase the transparency of public and private transactions, regulatory structures, and decision-making process\textsuperscript{95}. Petty corruption is the key for low payment collection rates. Meter readers frequently delegate the actual task of meter


\textsuperscript{95} Ibid, p. 68.
reading to informal operators and focus their own efforts on developing a business in illegal connections\(^6\). No doubt, this affects the electricity sector badly.

No doubt, the private power policy has succeeded in attracting private IPPs investment in thermal power plants. However, the economic slowdown has contributed to a temporary excess generating capacity. This, in turn, undermined the financial position of public utilities, which operate under fixed power purchasing contracts. The Government has reached an agreement with all IPPs, which received Notices of Intention to Terminate, and one IPP, which received a Notice to Terminate. A new IPP Committee, which includes representatives of the private sector, has been created to accelerate the resolution of outstanding issues.

The implementation of the restructuring and privatisation programs of the energy utilities has been slow. The Ordinance issued in October 1997 has not yet been enacted by Parliament as the Gas Regulatory Act. Meanwhile, the operational efficiency of the utilities has deteriorated. Pricing reforms for natural gas and electricity aimed at reducing cross-subsidies and adjusting average tariffs to fully reflect changes in the costs have been implemented at a slower pace than originally envisaged. Consequently, the financial situation of the energy utilities has rapidly deteriorated, and there has been a substantial buildup of cross-arrears between the Government, the utilities, and the fuel suppliers.

4.3.7.4. Other Constraints

Tariff charged to different users do not reflect the cost of the supplying electricity. Covering the costs is a *sine qua non* for efficient and sustainable operation of the industry in both the public and private sector. Although no hard cost of service is available, it is

\(^6\) *Ibid*, p. 69.
well established fact that the tariff charged to domestic consumers is subsidised and is partly financed from higher tariffs from other affluent consumers categories i.e. industrial and commercial sector. The share of electricity sold to WAPDA to the domestic consumers has risen form 31.57 per cent in 1988-89 to 42 per cent of total electricity consumption in 2000-01. The increasing share of domestic consumers that are charged a subsidised tariff has created an additional burden on the financial position of the WAPDA.

The generation so far achieved and going to be achieved by the private sector is not free from risk. The risk is that private sector prefers quick returns; thereby installing plants of short gestation period like gas turbine and combined cycle plants. These plants have higher capital cost per unit of output and since they use fossil fuel, their set up may lead to more dependence on imported fuels. Since the IPPs are using only gas turbines and combine cycle power plants, Pakistan may lose the benefits of economies of scale.

Moreover, dependence on imported oil is not a good sign for the country.

The rate of success of privatisation of power policy is poor because of various obstacles. One such is the nuclear test by Pakistan. After India's nuclear test in May 1998, Pakistan immediately followed the suit. This resulted in banning of different project aids/loans including loan/assistance to power sector. This badly affected the power sector.

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97 Government of Pakistan, op. cit., n. 60, p. 6.
Pakistan has faced severe obstacles within the country to its privatization programme. The September 11, (2001) attack on WTC have caused serious difficulties for Pakistan as it has witnessed its exports, imports, industrial production, tax revenue, foreign investment and privatization program badly affected. Its efforts to consolidate the gains of the last two years and take the economy to a higher growth path have been interrupted. Yet another epoch-making development relates to the events of December 13, 2001 (attack on Indian Parliament) leading to the unprecedented massing of troops in its borders in a response to India’s deployment. This led to over-run in defence spending. This has seriously undermined Pakistan's efforts towards further fiscal consolidation. Heightened tensions with India have also dampened investor's sentiment and have adversely affected pace of economic turnaround.

The continuation of drought over last few years has been yet another exogenous shock, affecting economy adversely. The acute shortage of irrigation water and substantially lower than normal rainfall have adversely affected the agriculture. The impact of rain has also been felt in electricity and gas distribution compounding the shock to the economy from the energy sector. Lower reservoir levels in both Mangla and Tarbela and lower releases of water from these reservoirs resulted in shortfall of hydel generation, forcing WAPDA to purchase expensive thermal electricity from IPPs and thus, generating negative value addition in this sector for three years in row.

There is a general perception that privatization of power sector in Pakistan has been slow. But privatization of sectors like power is not that easy. It is not like any other sector that it is simply a unit and you sell it. Privatization of Power sector takes time, because before doing so, regulatory authority need to be in place to regulate the prices
and guard against private monopolies raising prices arbitrarily. This took time in Pakistan and finally it is in place. Subsequently, as has been pointed out, NEPRA has been very active in protecting the interest of consumers, producers and the government. In the process it has also passed few orders for the same. Around 25 per cent of electricity generation capacity is installed by the private sector. IPPs have come up in commissioning power stations particularly after 1996. There are many more projects in the hands of the private sector expected to be completed soon. As pointed out earlier Government of Pakistan has been able to take some positive initiatives in the direction of privatization of distribution. Moreover, privatisation of power utilities needs a cautious approach. Hasty decision will cost the country heavily. Therefore, a slow and steady process is required and Pakistan is, perhaps, in the right direction.

4.4. Prospects of Indo-Pak Power Trade

The prospect of Indo-Pak power trade is one bilateral power trade option. This has been facilitated by the privatisation drive undertaken in both the countries. In fact, Pakistan as a result of this private policy was able to install around 5,955 MW of its installed capacity by the private sector, which constitutes almost 34.11 per cent of its installed generating capacity and thereby generating surplus electricity. Moreover, Pakistan expecting higher growth rate initiated privatization policy in early 1990s, but as the time passed by industrial recession all over world including Pakistan forced many of its industrial units to close, thereby creating surplus installed capacity. By 1998-99, it was estimated that Pakistan had 3000 MW of surplus power. By then over 19 IPP projects

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with net capacity of 3,153.39 MW had already achieved financial closure\textsuperscript{100}. Now, with the addition of 5,955 MW by the private sector, the surplus power in Pakistan no doubt is high. Though India increased its installed capacity to 1,01,630 MW by March 2001 (and provisional figure of 1,04,900 MW by March 2002), of which private sector contributed 6796.01 MW as a result of private power policy, still it is not sufficient to match its requirements. Moreover, many more IPP projects are on the pipeline and they could not come up due to many domestic inconsistencies as pointed out earlier. However, India of late has taken some drastic steps not only in reducing subsidies in the power tariff but also in privatising distribution system in some of the states and more are in the offing. Thus, privatisation in both countries opened a new vista for power trade. Pakistan with its surplus generating capacity could sell its surplus power to India while India with privatisation of distribution can ensure payments to Pakistan in turn.

In other words, from the point of view of Pakistan incentive package for independent power producer system under the privatisation policy was so attractive that a large number of private investors came forward and Pakistan is now facing the fear of a power glut. This situation led to search for an international market to export surplus electric power such as India\textsuperscript{101}. Surplus power production is causing Pakistan great loss as WAPDA is bound to buy all the power from IPPs, which is many times costlier than its own. This has forced WAPDA to close down some of its own thermal power stations\textsuperscript{102}.


\textsuperscript{101} Ghafoor, Abdul and John Weiss, \textit{op. cit.}, n. 98, p. 82.

\textsuperscript{102} M.P. Lama and Rasul Bakhsh Rais, \textit{op. cit.}, n. 100, p. 11.
In fact, with the surplus power during 1998 Pakistan was looking for India as a market because of two principal reasons. First, as pointed out earlier Pakistan was obliged to buy power produced by IPPs under PPA. Having done so, it could not sell power in its domestic market owing to slack in the industrial growth to absorb the installed capacity. This made the already sick WAPDA more insolvent. Second, Pakistan was looking for a stable market to sell the power. This was in view of the fact that the international financial institutions that had extended loans or guarantees to the power sector investors wanted to have an uninterrupted repayment of debts. Therefore, India was considered as the stable market.

No doubt, there is power deficit in India. The potential markets are the northern and the eastern regions. The largest consuming industrial areas in northern region include most populous states of Uttar Pradesh, Punjab, Haryana, and Delhi. In eastern region, states like Bihar, West Bengal, Assam and Orissa have larger number of industries in operation, which have continual capacity deficits.

Power trading between India and Pakistan can be advantageous to both of them in many ways. First, Pakistan, which has surplus power, can be utilized properly by exporting to India easily. Second, this will help Pakistan financially enormously which can be further utilized for power sector development. Third, power trade will be beneficial to India as well. India instead of bringing power from southern or eastern India to parts of Rajasthan or Punjab by spending a lot on transmission can import from Pakistan. Buying power from Pakistan for consumption in parts of India like Rajasthan

\[103\] Ibid., p. 14.
and Punjab would be obviously cheaper than transmitting from far corner of India. Fourth, trade or for that matter cooperation in power sector will help both the countries in the sense that since both the countries have opened up their power sector to private (including foreign) investors, they can learn from each other's experience. The experience includes handling foreign direct investors and independent power producers and in dealing with the critical issues involved like pricing, PPA, transmission and distribution and regulatory mechanism\textsuperscript{104}. Finally, cross-border trade in energy, particularly power, may work as an effective confidence building measures in India-Pakistan relations.

No doubt, there exist potential for power trade between India and Pakistan, given Pakistan's surplus electricity. Also, the geopolitical proximity of the existing grids on both sides of the border is another inducing factor for power trade between these two countries. However, the key issues to be settled before the cross border trade is concretised are the cost of transmission line and its sharing mechanism; the determination of power tariff; the payment mechanism including the currency to be used and the channel like Asian Clearing union and most importantly the power supply sustainability and its geopolitical immunization\textsuperscript{105}.

Recognizing the potentiality, both countries had discussions on power trade. In fact discussions between the organizations like Power Grid Corporation of India Limited (PGCIL) and various independent power producers in Pakistan were held for import of electricity for the states of Rajasthan, Punjab and Gujarat. Export of electricity to India

\textsuperscript{104} Ibid., p. 3.

will be a non-traditional high value item in the Pakistan's export basket. This may lead to use of power plants in Pakistan at 80 per cent capacity rather than the current 60 percent which was originally envisaged in the PPAs. Further since the structure of tariff is broken into fixed capacity payment, the tariff will fall as capacity utilisation rises \(^{106}\).

In order to transport the power, a massive programme is now being undertaken to extend the transmission systems. Pakistan has 500 kV primary transmission system extending from Jomshoro in the south to Tarbela and Peshawar in north. All these lines are very much near to the adjoining borders of India and may not require much complex transmission extensions to the Indian borders \(^{107}\). Therefore, to operationalise the power trade between the two countries major investment is not required to set up a grid to export electricity from Pakistan to India, as exporting grid on both sides of the border were just 15 km apart. However, the transmission linkage between the two countries is not that formidable problem. In fact, this can be facilitated by National Grid Company plc (NGC), which is the largest privately owned independent transmission company in the world is already there in Pakistan in a big way. NGC can play a major role in concretizing the Indo-Pak power transmission. To quote Pakistan's Power Minister: "There is a complete network on our side and of course on their (India) side as well. What we need are the connections, which would take only a couple of weeks."\(^{108}\) There was a proposal of laying a 50 km high voltage double circuit (HVDC) transmission line to evacuate power

\(^{107}\) M.P. Lama, *op. cit.*, n. 105, p. 31.
from the Dinanath sub-station near Lahore to Patti sub-station in Indian Punjab. If this takes place, it is likely to bring about a major transformation in the political economy of regional cooperation in South Asia. As such Pakistan was considering allowing its IPPs to export initially 200 MW of surplus power. This would earn $1.2 billion yearly for what could be a 20 years period. This will be a non-traditional high value item in the Pakistan's export basket.109

The success of power trade between India and Pakistan very much depends upon the improved relations amongst them. Both the countries acknowledge and understand the benefits of power trade amongst them; but it is the political relations, which has been an impending barrier to the economic relations and its advantages. This has been acknowledged during 1997 by Khawaja Muhammad Asif, the then Federal Minister and Chairman of the Pakistan's Privatisation Commission when he added that the deal of exporting electricity to India could be made taking advantage of improved relations between the two countries110.

Apart from exchange of power between India and Pakistan, there is another similar area where cooperation can be concretized that would lead to development of power sector is the cross border gas trade. This is in view of the expected shortfall of gas in both the countries unless some major exploration and drilling operations are undertaken. This is the reason why the option of importing natural gas from neighbouring countries (Qatar, Oman, Iran, Bangladesh and Turkmenistan) is being seriously pursued.

109 M.P. Lama, op. cit., n. 105, p. 31.
Though the South Asian countries particularly India and Pakistan have been envisaging both on-shore (Iran-Pakistan, Turkmenistan-Pakistan) and off-shore (Qatar-Pakistan, Iran-India and Oman-India) pipelines, nothing concrete has emerged because of (i) financial implications, (ii) geo-political considerations, (iii) confirmation of reserves of natural gas, (iv) pricing of supplied gas, (v) third country approval of transits and (vi) environmental fallouts\(^{111}\).

Most of the gas trade is through pipeline mode. The transport of natural gas via pipeline requires transit through more than one nation. This enables optimal utilisation of scale economies by involving many countries in the distribution process. The often-quoted example is that of Qatar-Pakistan-India pipeline. The cost effectiveness is much higher if these countries have one joint pipeline ($4-5 billion) instead of two independent pipelines ($6-8 billion). This is based on preliminary hydraulic simulation done by the Pakistan's Sui Southern Gas Company Limited\(^{112}\). All studies, moreover, concur in the view that, from the strictly economic standpoint, cooperation between the two countries, more specifically for the utilisation of joint pipeline for the import of natural gas would enable vast economies of scale resulting for each of them out of a substantial decrease in the unit cost of gas\(^{113}\).

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\(^{112}\) Ibid., p. 305.

The most important aspect of power trade is again the aspect of tariff and other commercial terms. Given the massive investment required by the IPPs in Pakistan and the nature of power purchase agreements these producers have entered into the import of power by India is likely to be much costlier. It is believed that Pakistan is quoting slightly higher than Rs. 3.00 (7 cents) per unit (kWh), as against India's proposed formula, which works out to Rs.1.26 (3 cents) per unit. On the other hand, the indigenously quoted weighted average tariff by the National Thermal Power Corporation was Rs.1.30 to Rs. 1.50 per unit. Therefore, the issue of tariff needs to be addressed properly on the eve of initiating power trade.

No doubt the price asked by the Pakistani Government to supply power to India is high. This has had become an issue. Pakistan cannot reduce the price because it has agreed to the IPPs to pay. Neither India can buy at this high unit cost. This is a big issue, which needs to be resolved. The difference between the offered price and acceptable price is so much that it is difficult to bridge through negotiation. There could be some specific industries, which may still be keen to buy power from Pakistan even at this high rate. Besides these two countries some of the stakeholders need to play an advocacy role in identifying these industries across the border. Some of these stakeholders are World Bank, the guarantor of loans to the IPPs in Pakistan, foreign countries those have invested in IPP projects, and IPPs themselves.

114 *The Hindustan Times and Times of India* (Delhi), 2 February 1999, also quoted in M.P. Lama, *op. cit.* n. 105, p. 19.

115 M.P. Lama and Rasul Bakhsh Rais, *op. cit.*, n. 100, p. 12.
4.4.1. Obstacle to Power Trade

The take over of the WAPDA by the Pakistan army in view of corruption in the power system has halted the prospect of power trade between India and Pakistan. When the Army took over WAPDA in 1999, during fag end of Nawaz Sharief's second tenure, it opposed the power export agreement that was discussed by the two countries then. It described the proposed agreement as completely "non-practicable". In early 1999 a high-powered Indian delegation visited Islamabad to discuss the technical, commercial and administrative arrangements for establishing transmission links between the two countries to facilitate exchange of power. The Pakistani Government had indicated that it is interested in selling surplus power to India. No doubt, transfer of large volumes of power would require detailed system studies and setting up of mammoth transmission networks. The Government had, therefore, decided to begin work on a "short term initiative" to ensure that Pakistan starts exporting power to India within the next six months. But this did not materialise owing to dispute between two countries and subsequently owing to among others, the Kargil war.

Also, WAPDA raised strong objection to the power trade between these two countries. The WAPDA Chairman, who is also a top-ranking army official, had sent a report to the then Prime Minister Nawaz Sharief, citing technical reasons, which he claimed render the project unviable. The details of the report are confidential. Therefore, the grounds on which WAPDA has rejected the power transmission proposal are unknown.

Before Army took over in Pakistan, there was considerable initiative from both the countries for the prospect of power trade between them. Especially, Nawaz Sharief
Government was keen on having power trade between India and Pakistan. But with the fall of Nawaz Sharif Government followed by army takeover diminished the prospect of power trade. Moreover, with the offered price of electricity being costly, negotiations between these two countries broke off.

Despite the initial efforts by both the countries power trade did not materialize. The talk of power trade between these two countries was also in its peak when Chief-Executive-cum-President of Pakistan General Pervez Musharraf visited India for the Agra Summit in 2001. There were lots of speculations that apart from contentious Kashmir issue, President Musharraf and Indian Prime Minister Mr. Atal Behari Vajpayee would discuss various aspects of economic cooperation including power trade. But nothing concrete came on the bilateral economic cooperation front as the contentious issue figured only in their discussion and since they could not resolve the Kashmir issue, the other aspects were not discussed at all.

In fact, power trade through construction of transmission line and gas trade through construction of pipelines poses no technical problem. The obstacles in the way of implementation of such bilateral cooperation between the two countries in these sectors are manifestly of a political and psychological nature. The Kashmir conflict needless to recall here that it has been the reason for three wars in 1948, 1965 and 1999, which came in the aftermath of partition, has envenomed the relations between the two countries ever since independence. Their antagonism also has its roots in certain psychological factors. 'A nation of refusal', Pakistan has always opposed what it perceives as India's aspirations
to leadership in the region on account of its size, its population, its technological and industrial progress and its military superiority\textsuperscript{116}.

Failure of Agra Summit followed by September 11, 2001 attack on WTC, USA and subsequent attack on Indian Parliament on December 13, 2001 wiped up the prospects of any negotiation for economic cooperation between the two countries. Followed by attack on Indian Parliament, India deployed armed forces in its border almost in full preparedness for war. Equally Pakistan deployed its armed forces in its border to counterattack. Development of this sort of scenario wiped the prospects of power trade. Though both the countries adhering to international pressure withdrew slowly their armed forces from the border, there is hardly any positive signal from both the countries for further negotiations in this area. With the election in Pakistan in October 2002 electing Mr. Mir Zafrullah Khan Jamali as Prime Minister, there is a sign of improving relation between these two countries with the resumption of Delhi-Lahore bus services. So far, there is nothing concrete in the area of power trade. However, since 12\textsuperscript{th} SAARC Summit at Islamabad on 4\textsuperscript{th} January 2004 there are improved relations, which could help the matter. During the course of 12\textsuperscript{th} SAARC Summit Pakistan has agreed to support Iran-India gas pipeline passing through Pakistan, which is a very positive indication of improved relation and possibility of cross border gas trade. Since there exists a potential benefit over power trade both the countries forgetting the past animosity should strive to operationalise it. Cooperation in power trade and cross border gas trade will be beneficial enormously to both the countries.

\textsuperscript{116} Frederic Grace, \textit{op. cit.}, n. 113, p. 248.
4.5. Comparative Analysis

The initial response of the private sector to the private power policy in both the countries have been good. Lot of proposals in both the countries came from the private investors. Some of them have materialised. As such a total of 34 projects with combined capacity of 6796.01 MW have been commissioned in India since private power policy. Likewise, in Pakistan since private power policy has been in operation a total of 17 projects with combined capacity of 5,955 MW have been commissioned. Also, many are on the pipeline in both the countries.

No doubt, the absolute installed capacity in India is bit higher than Pakistan. But if one compares the private sector contribution in their respective country, Pakistan private sector contributed more than the India private power sector. By March 2001, of the total installed capacity of 1,01,630 MW in India, private sector contribution of 6,796.01 MW constitutes 6.68 per cent. During almost same period (June 2001) Pakistan's total installed capacity of 17,457 MW, of which private sector contributed 5,955 MW constituting 34.11 per cent. This implies the share of private sector contribution in Pakistan is much higher than India.

Private power installation and generation in both the countries have been basically in the thermal energy. In Pakistan out of the 17 private power projects operating, only one with 30 MW (Jagran) is hydel whereas other 16 are thermal. However, out of 34 private power projects operating in India, five are hydro projects of comparatively small size. These five projects contribute 133.25 MW of the installed capacity. Though thermal power is costly, thermal generation has been chosen because it does not have the problems of resettlement and rehabilitation as it involved in case of hydro projects. These
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thermal power plants are either combined cycle gas turbines based on gas/naphtha or thermal power stations based on naphtha or diesel.

Moreover, in the hydropower sector in India as a result of private power policy some small hydropower projects came on stream. Few more like, Vishnu Prayag (400 MW) in UP, Baspa-II (300 MW) in Himachal Pradesh, and Maheshwar (400 MW) in Madhya Pradesh are on the advanced stage of construction and hopefully will be commissioned soon. Whereas in the Pakistan, though Government opened this hydropower sector to the private sector, because of its inherent characteristics of high gestation period and problems of resettlement and rehabilitation except one small hydel plant (Jagran 30 MW) hardly any other project came up. But it is expected that few more projects in Pakistan incentivised by hydel policy of 1995 by the private sector will come up as per the "Hydropower Development Plan" (Vision 2025) for which the feasibility studies have been completed.

The electricity-installed capacity in India which was 66,086 MW in March 1991, reached 1,01,630 MW in March 2001 representing a compound growth rate of 3.99 per cent. In Pakistan the growth rate in installed capacity during this reform period has been higher than India. In fact, in Pakistan the installed capacity, which was 8,776 MW in 1990-91, reached 17,457 MW in 2000-01 representing compound growth rate of 6.45 per cent.

The growth in electricity generation during reform period is impressive one. In fact, in India the growth in electricity generation from 264.33 billion kWh in 1990-91 to 499.4 billion kWh in 2000-01 represent compound growth rate of 5.95 per cent. In Pakistan, the total electricity generation over 10 years period especially from 1990-91 to
2000-01 have increased from 41.0 billion kWh to 68.1 billion kWh representing compound growth rate of 4.7 per cent. Comparatively, India had higher growth rate in generation of power during reform period than Pakistan.

The composition of the installed electricity capacities in both the countries have undergone significant changes over the reform period. Thermal power dominates in both the countries. Its share, which was 69.25 per cent in March 1991 in India, grew to 72.45 per cent in March 2001. In Pakistan, the share of thermal, which was 65.42 per cent in 1990-91, grew to 69.71 per cent in 2000-01. The share of hydropower, which was 28.38 per cent in March 1991, declined to 24.74 per cent in March 2001 in India. In Pakistan, similarly the share of hydro declined from 33.02 per cent in 1990-91 to 27.65 per cent in 2000-01. The share of nuclear power, which was 2.37 per cent in March 1991 in India increased to 2.81 per cent in March 2001. In Pakistan the share of nuclear, which was 1.56 per cent in 1990-91, declined throughout the reform period except picking up to 2.64 per cent in 2000-01 owing to installation of second nuclear plant at Chashma. There is also similar trend in the generation of power implied by these three types of plants.

Creation of regulatory framework in both the countries is a positive sign of privatisation. This has been set up in both the countries. Apart from setting up of CERC by Government of India, states in India also have taken up similar step in this direction. As such 12 states have set up SERCs. Many states in India are in the process. Pakistan has also set up NEPRA. There is no state regulation of power in Pakistan because electricity generation, transmission and distribution had been the responsibility of two utilities, namely WAPDA and KESC. WAPDA was responsible for entire Pakistan except Karachi and its suburbs, which is the responsibility of KESC. However, NEPRA
as a single entity has been responsible for the entire Pakistan to regulate tariff. Regulatory authorities like CERC and SERCs in India and NEPRA in Pakistan have also brought many important tariff orders.

As a result of electricity generation, both in the public and private sector during the reform period, there have been substantial improvements in the village electrification in both the countries. In March 1991, the total number of villages electrified, which was 4.81 lakhs in India, went up to 5.08 lakhs by December 2001 representing a compound growth rate of 0.5 per cent. In Pakistan, the total number of villages electrified which were 37,135 by 1991 increased to 71,561 by 2002 representing a compound growth rate of 6 per cent. Comparatively, Pakistan has electrified more villages during reform period than India. But still Pakistan has more villages to electrify than in India. As per the 1991 Census total number of villages in India was 5.87 lakhs, out of which 5.08 lakhs villages were electrified by December 2001 representing 86.5 percent coverage. In Pakistan out 1,25,083 villages in the country, 71,561 villages electrified by 2002 representing 57.21 per cent coverage.

There was a perception among the employees of the electricity industry that privatization will lead to their unemployment. However, this is not the case. No employees have been retrenched on the grounds of privatization. In the distribution segment, while Orissa and Delhi have privatised the distribution network with 51 per cent equity owned by the private entities, employees of the erstwhile SEB and DVB were retained. The private entities have signed agreement with the Government to retain the employees of the erstwhile public sector utilities. Likewise, in Pakistan to minimize the adverse effects of privatisation on employees, the Government of Pakistan made it a
requirement for successful bidders to take over the entire work force in the unit and not to terminate their services for a minimum period of 12 months. Even after expiry of 12 months no employees of the erstwhile public sector units have been retrenched on the grounds of privatisation. Moreover, with the commissioning of few units in the private sector in both the countries, they have increased employment in this sector. No doubt, this is formal employment, which may be small in number. But this also at the same time creates informal employment in large numbers, which benefits the poor most. Comparatively, India has better provision of retaining employees forever even after privatisation whereas Pakistan only have provision of not terminating their services before 12 months. However, Government of both the countries recognised that public sector is over-employed. Rightsizing of public sector utilities like electricity utility will reduce their cost of production and increase profitability. Therefore, employees of these utilities were offered very attractive voluntary retirement scheme like golden handshake scheme.

Both the Governments opened the transmission segment of the electricity industry to the private sector. There has been hardly any good response so far. Only in India two pilot projects, each on Independent Power Transmission Company and Joint Venture route has been taken up to attract private sector participation. In Pakistan a National Transmission and Despatch Company has been established after unbundling of WAPDA which will be privatised after privatization of all 8 distribution companies and 3 generation companies of WAPDA are completed. However, transmission policy of both the countries identified the package of transmission lines, which are offered to private sector.
Agriculture which was subsidised before the privatisation of power sector, still continued to be subsidised during the reform period, but no doubt the degree of subsidy has been reduced. In fact, electricity is provided much below the cost of generation in India and Pakistan. In some states in India it was provided free of cost. This is making SEBs in India and WAPDA & KESC in Pakistan financially bankrupt. World Bank South Asian Region (Energy) Director Alastair J. Mckenchnie in May 2000 pointed out that subsidies to agriculture have created a "fiscal black hole in India and Pakistan"\textsuperscript{117}.

T&D losses are high in both the countries. Despite the concerted efforts, T&D losses have not been substantially reduced. Moreover, lack of metering has enabled the concealing losses under the heading of cheap agricultural supplies. Of course, agriculture in both countries is subsidised. But why it was high in DVB, which supplied power in Delhi where there is hardly 1 per cent of electricity, is supplied to agriculture sector? Why its T&D losses are around 40-50 per cent. Similar is the case with KESC, which operates in Karachi and its suburbs where there is hardly any agricultural supplies. Despite the endeavour KESC's T&D losses are above 40 per cent. It is only the faulty transmission- power pilferage coupled with theft and no metering that is taxing both the organisations. Since DVB and KESC are operating in the urban areas, it is the rich class and affluent who are the non-payers of bill making them uncover their bill.

In the name of privatisation of the power sector, privatisation of generation was focused in both the countries from the beginning. They ignored privatisation of distribution until they were riddled with IPPs saga connecting with PPA that gave an upper hand to the private producers. When they were unable to pay for the generation,

\textsuperscript{117} "Krishna for Power Subsidies in Farm Sector", \textit{Times of India}, 16 May 2000.
SEBs in India and WAPDA and KESC in Pakistan being bankrupt due to various reasons, were compelled to focus on privatisation of distribution as a stepping-stone in the privatisation of power sector drive. For last 3-4 years both the countries realised the importance of privatisation of distribution. Orissa and of late Delhi in India virtually have done privatization of electricity distribution in their respective area of operation. In Pakistan, although WAPDA was unbundled (with 3 generation companies, 8 distribution companies, and one transmission company), there is hardly any privatization of distribution. One of the distribution companies namely, Faisalabad Electricity Company, though initiated privatization process during 1997, it has not been completed yet. During 2001-02, after finalisation of draft distribution licence for distribution companies all the 8 companies were issued to distribution licenses. Therefore, both the countries in general and Pakistan in particular have to go a long way in privatising distribution of power. Alastair J. Mckechnie, Director (Energy) World Bank South Asian Region in May 2000 said, "in South Asian countries, the role of trade unions, politicians, bureaucrats and others seem to make an efficient public sector distribution company an impossible dream. Privatization is essential, not an option."118

Big hydropower projects like Kalabagh in Pakistan and Sardar Sarovar and Tehri in India have always attracted the attention of environmentalists in both countries. The main problem in these projects had been the resettlement and rehabilitation of the people displaced by the projects. The verdict of the Supreme Court of India allowing the construction of dam in Sardar Sarovar project and the political sensitivities, particularly inter and intra-province discontentment in Kalabagh in Pakistan have once again

118 Ibid.
highlighted the need for learning from each other's experience in dealing with such organized public movements.

There are lots of risks involved in power sector in India and Pakistan for its investment and its return. Both the Governments can go to any extent despite their commitment. This has been quite evident in the case of Enron Project in Maharashtra in India and HUBCO in Pakistan. However, there is assurance by both the Governments for high returns on investment. Besides, there is potential demand for power in both the countries. Given the privatization of distribution and tariff rationalization in both the countries, returns would no doubt improve.

The prospect of power trade between India and Pakistan cannot be ignored. This has been facilitated by privatization drive undertaken in both the countries. In Pakistan, private sector contribution of 5,955 MW of the installed capacity out of 17,457 by June 2001 constitutes almost 34.11 per cent of Pakistan's installed capacity and thereby generating surplus electricity. Though private sector in India contributed 6,796.01 MW of installed capacity out of the total installed 1,01,630 MW by March 2001 (and provisional figure of 1,04,900 MW by March 2002), still India faces the problem of power shortages. With the Pakistan surplus power and India with power shortages, there is an ample scope for power Indo-Pak power trade that is beneficial for both the countries. But due to various obstacles, both economic and political, power trade did not materialize yet. The economic reason is the settlement of tariff and the political is the unresolved Kashmir issue, which have wiped up the prospects of power trade. However, there are ample opportunities for Indo-Pak power trade. Both the countries should resolve the obstacles in paving the way for Indo-Pak power trade as well as cross border gas trade. Since 12th
SAARC Summit at Islamabad on 4\textsuperscript{th} January 2004 there are improved relations, which could help the matter. During the course of 12\textsuperscript{th} SAARC Summit, Pakistan has agreed to support Iran-India gas pipeline passing through Pakistan, which is a positive indication of cross border gas trade.