12 Captive Generation in India

The Dilemma of Dualism

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The power sector in India is facing significant shortages for both energy and peak to the tune of 10.1 per cent and 12.7 per cent[1] respectively in 2010, and the deficit has been growing over the years as generation capacity addition has been unable to keep pace with the rapidly growing demand. Further, where power is available, the quality of supply has been a major concern for the consumers suffering economic losses. Growth and development needs are expected to further add to the demand for energy, thus exerting stress on existing energy resources. Load shedding or curtailment of power has been widely resorted to by distribution companies to manage the power deficit. Thus, faced with the acute power deficit situation, the paying consumers, primarily industrial and commercial establishments, in their effort to secure their supply have been depending largely on captive power plants.

Captive power plants have been growing at a fairly aggressive pace in India. In 2008, the total installed capacity of captive plants in India, where plants are greater than 1MW in size, was about 25 GW; these constitute around 17 per cent of the total installed capacity in India. Studies have also inferred that it would be beneficial to encourage captive growth in India as this can add the much needed capacity while increasing competition in the power market (Hansen 2008). Thus, by encouraging captive capacity addition so far to overcome the power crisis affecting economic productivity, policymakers have in fact devised a way to add the much needed generating capacity (Joseph 2010) so as not to jeopardize the desired growth momentum. The phenomenal growth of captive power plants over the years has created a dual track in the power sector. It is also a reality that the growth of captive plants, which may have been spurred by specific failures in the state system, is expected to continue (forecast by Crisil Research 2009) and perhaps cannot be reversed easily in the medium term.

India is also faced with the daunting task of balancing its growth and development objectives with the challenge of ameliorating environmental damage and the threat of climate change. The complexity arises from the fact that India's energy use comprises mostly of fossil fuels, making the energy sector one of the greatest contributors to global emissions in the country. The power sector accounts for around 40 per cent of total GHG emissions in India, with coal generating 72 per cent of utility supplied electricity in the country. The choice of fuel for captive generation is no exception. A key concern with this dual track power sector development is that proliferation of spatially distributed fossil fuel-based smaller captive plants is likely to be environmentally more damaging than the well planned and monitored development of large utility power plants. Thus, the dilemma of dualism arises from the low carbon development perspective!

While there are a number of studies which have examined the development of generation utilities (that is non-captive power plants), few studies have explored the issues

[1] CEA (2010).

around growth of captive plants and fewer still on their effect on the environment. This chapter examines the growth of captive power plants in India and tries to assess the environmental implications of such proliferation of captive generation. To this effect, this paper identifies key factors contributing to the adverse emission intensity associated with the prevailing captive generation. The paper further infers and argues that through better capacity utilization, bringing more uniformity in state policies, rationalizing cross subsidies and tariffs, and encouraging use of low carbon fuel, the emission intensity of captive generation could be mitigated considerably.

Growth of Captive Power in India

Historically the growth of captive plants in India has been quite steep. Just after independence in the late 1940s the country had only 544 MW of non-utility plants generating about 1300 GWh. With industrialization in the early 1980s and lesser reliability of state-owned supply, the captive capacity addition received a boost which continues even today (see Figure 12.1). Captive power plants are owned by the industry, primarily for self-consumption. The captive capacity as of March 2007 was 22,335 MW with a total generation of 82 TWh. However, this accounts for only plants in the organized sector having more than 1 MW capacity (see Figure 12.2). This growing captive capacity has been mostly catering to the captive demand of the parent industries and played very little role in catering to the overall system demand. Till recently, surplus power from captive plants, after meeting self-requirements, could not be sold to third parties, a situation which changed with the introduction of the Electricity Act 2003 that provides transmission open access to these plants. Further, India has targeted electricity access to all by 2012. Centralized generation alone is unlikely to meet this target, and in this context captive and distributed generation systems are likely to be important (Banerjee 2006).

A study by Shukla et al. (2004) has shown that the growth of captive plants in India can be broadly attributed to (a) need for backup power arrangement, (b) requirement of better quality supply, (c) the co-generation benefits of steam and electricity from production process of industries, and (d) need to generate electricity at costs lower than the high industrial tariffs set to cross subsidize other categories of consumers.

Though captive capacity in India has been growing, the average capacity utilization of these plants is quite low. In 2007, the plant load factor (PLF) of the captive plants was only at 41 per cent (see Figure 12.3). This is due to the fact that a substantial part of this capacity is used for back-up generation due to the unreliable grid supply.

Within industries also there is significant variation in captive capacity utilization. Metals, heavy engineering,

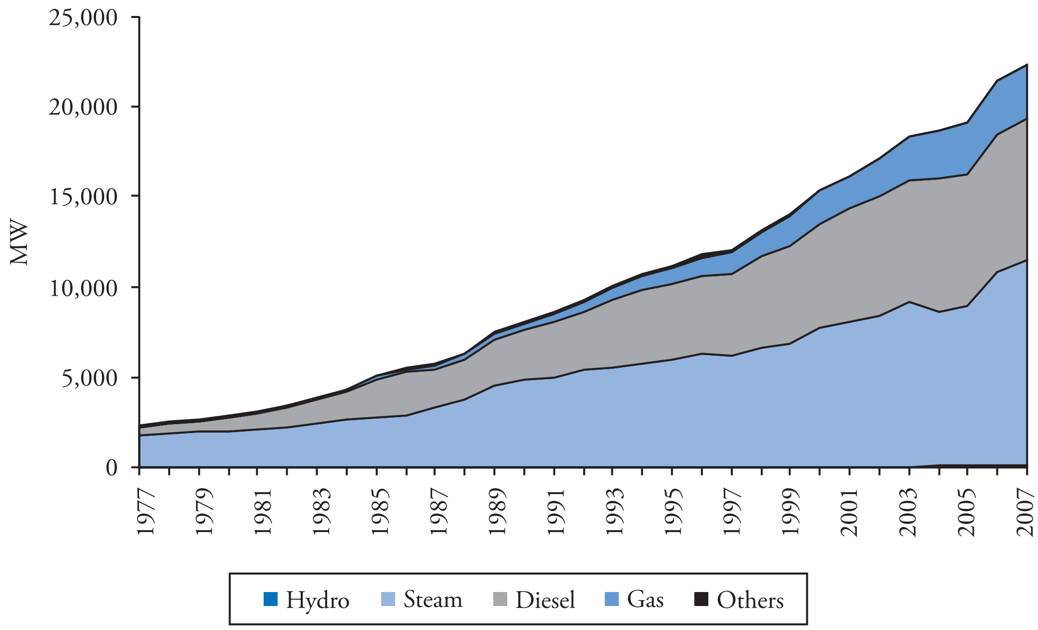

Figure 12.1 Growth in Captive Capacity in MW

Source: CEA (2008).

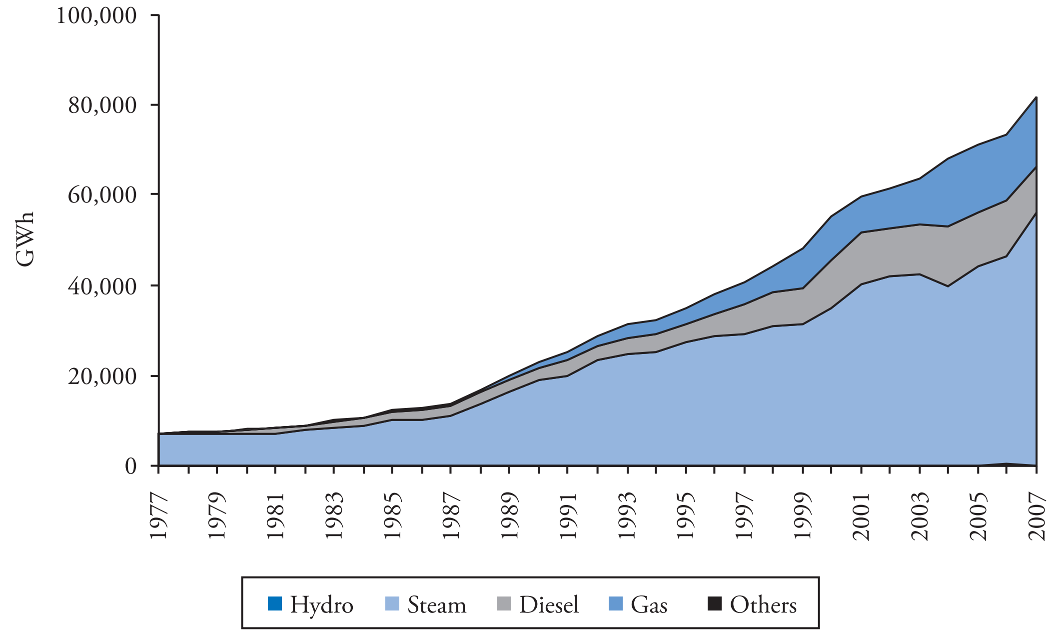

FIGURE 12.2 Growth in Captive Generation in GWh

Source: CEA (2008).

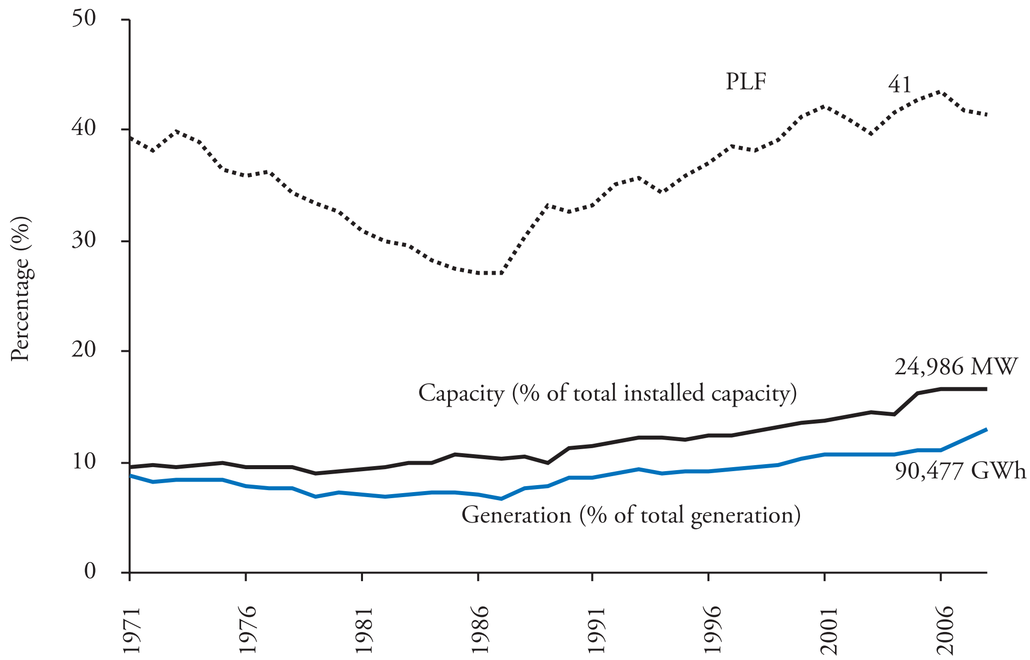

FIGURE 12.3 Captive Capacity, Generation, and Efficiency in 2008

Source: CEA (2009).

chemicals, petroleum, paper, and cement industries account for 70 per cent of the total captive capacity and 85 per cent of the generation. Through better coordination of the requirements of the industries and utilization of the captive capacities, around 55 TWh of surplus generation could have been available from the captive plants in 2007 (see Figure 12.4).

With reference to the fuel composition of the captive plants, coal comprises the major share in the fuel mix of the captive installed capacity although there has been rapid

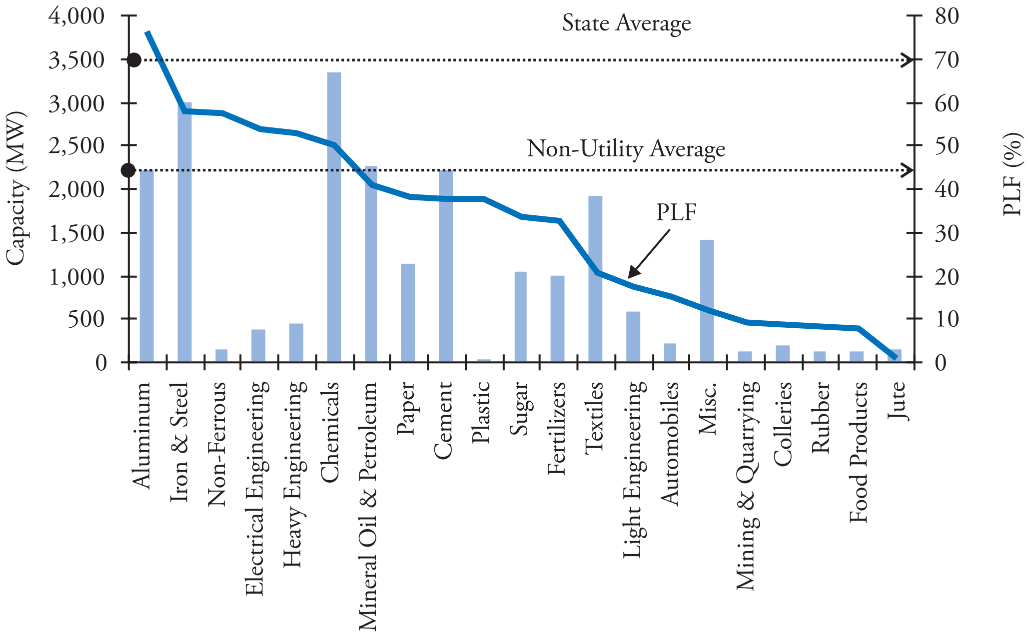

Figure 12.4 Captive Generation Capacity across Industries in 2007

Source: CEA (2008).

growth of gas-based captive plants. If the fuel mix across industries is examined, it becomes clear that industry fuel preferences are not very prominent, especially for coal and oil, where we find a spectrum of industries. However, markets for coal are yet to be fully developed and linkages with the coal mines are quite difficult to obtain within a limited time. On the other hand, oil-based captive generation has grown substantially, despite risks arising from volatility in prices since procurement of fuel is market-based and oil-based captive plants have a shorter gestation period for commissioning. Further, oil-based generating equipment are smaller in scale and quite easy to acquire. Thus, for captive plants not utilizing their full capacity, oil-based generation is sometimes preferred. But notwithstanding the demonstrated preference for coal- and oil-based captive plants so far, gas-based captive plants have also grown recently. However, the price volatility of gas and issues around its availability have been the major concerns in India.

Addressing Power Shortages

That captive plants are not operating to their full potential, and can contribute to greater economic gains, has been studied by researchers. Research drawing upon the experience of Gujarat shows that low PLF for each industry and collective PLF for all captive plants indicate a considerable dead weight loss from the under-utilized capacity (Morris 2003). Captive generation especially from large industries is in a position to supply to the grid as these industries are already connected to the grid. India's concern of electricity shortages could in part be addressed by better coordination of such industrial power surpluses. An example of this can be seen in the zero load shedding model in Pune, an innovative initiative introduced by the partnership between Industry Association, Distribution Utility, and Regulatory Commission with the confidence of the civil society (see Box 12.1).

The discussion so far has been referring to the captive plants above 1 MW. Information about captive plants below 1 MW is not so readily available in India. One such source is the information gathered from the manufacturers of small captive plants. However, such an estimate based on data provided by the manufacturers is expected to have a downward bias as it neither takes into account the contribution by local manufacturers nor does it account for the market for used capacities. The total capacity of such plants was about 24 GW in 2004—around 16 per cent of India's generating capacity, and most of these small plants were liquid fuel based (see Table 12.1). This indicates that captive plants—less than and the greater than equal to 1MW in capacity—together constitute a large pool of generation capacity, which could play a big role in meeting the electricity needs in the country.

Thus, the captive plants, whether grid-connected or stand-alone, could contribute towards greater availability of power in the system, either by increasing consumption from captive generation and drawing less from the grid,

Box 12.1
Zero Load Shedding Model in Pune

By 2005–6, the state of Maharashtra, which once boasted of surplus power availability, was reeling under an acute peak power deficit of 23 per cent (that is 3700 MWs). Pune, like many other cities in the state, faced regular load shedding for about 2–4 hours a day. With the objective of curbing the increasing electricity deficit, the Pune Chapter of the Confederation of Indian Industries (CII) had formulated a proposal (popularly known as the 'Pune Model') for using the under-utilized captive generation capacity of industries in Pune. The proposal was submitted to Maharashtra Electricity Regulatory Commission (MERC) for its consideration.

Pune faced an estimated a shortfall of 90 MW in the worst case scenario, while the top 30 industrial undertakings of Pune—which is home to major industries such as Tata Motors, Bajaj Auto, Bharat Forge, Kinetic Engineering, and DaimlerChrysler India—had unutilized captive capacity in excess of 100 MW.

The 'Pune Model', introduced in June 2006, involved industries with under-utilized captive power plants (CPPs) in Pune. The idea was that these industries would generate and consume additional captive power to the extent of the scheduled load shedding, so that equivalent grid power is made available to other consumers. To get uninterrupted power, the consumers would have to bear the incremental cost of generation by CPPs to the extent of the difference between the variable cost of generation by CPPs and the average High Tension (HT) industrial tariff. MERC conducted a public hearing and on 2 March 2006 issued an Order setting the (normative) variable cost of generation at Rs 8.24/KWh for light diesel oil (LDO)-based CPPs and at Rs 11.04/KWh for high speed diesel (HSD)-based CPPs. The model works through cooperation and coordination among the consumers of power, owners of CPPs, power distribution utility, and the Regulatory Commission.

There were issues around reliability charges to be paid by the consumers for the better reliability of power provided by the above mechanism. MERC approved Rs 0.42/KWh to be levied on the consumers of Pune Urban Circle excluding domestic consumers consuming up to 300 KWh/month. MERC, by exempting small domestic consumers (consuming up to 300 KWh/month) from paying a reliability charge, brought benefits to nearly 6 lakh consumers of the total 8 lakh consumers in the Pune Urban Circle. Industries were also required to pay reliability charge without any preferential treatment. The rate and terms of reliability charge for enjoying zero load shedding were acceptable to all stakeholders. From 4 June 2006, the model became operational and led to zero deficits over a considerable period of time.

The principles under which the model was proposed are given below:

- Users must be willing to pay a premium for reduced or no load shedding and the incremental cost should be borne by the beneficiaries (that is consumers) and not by the distribution company or the government;
- Load shedding mitigation should not be at the expense of any community;
- There must be enough idle captive power capacity to meet the entire unmet demand or at least a significant part of it;
- It should operate within the framework of governing laws and regulations.

Source: IDFC (2008).

thereby releasing more power into the grid, or by directly injecting surplus captive power into the grid.

Environmental Implications

Captive generation has some specific economic advantages compared to the grid. On-site power production has the advantage of avoiding transmission and distribution costs especially considering that, in India, considerable amount of the power generated is lost as transmission and distribution losses. Besides the economic advantages, captive generation could also contribute towards protecting the environment. To the extent that captive generation

Table 12.1 Sale of Captive Plants less than 1 MW from 1990 to 2004

Manufacturer	*Total Capacity (MW)*	*Number*	*Max Unit Size (MW)*	*Min Unit Size (MW)*	*Average Size (MW)*
Birla Power Solutions Ltd	508	457,210	0.001	0.001	0.001
Kirloskar Oil Engines Limited	22,138	354,200	0.063	0.063	0.063
Man B & W Diesel	14	18	0.900	0.700	0.767
Rolls-Royce Energy System	9	31	0.290	0.290	0.290
Tractors India	887	2,703	1.000	0.210	0.533
Wartsila India Ltd	29	49	0.980	0.315	0.695
Summary	23,585	814,211	1.000	0.001	0.440

Source: CEA (2005).

contributes to improving access to electricity and replaces less efficient use of energy (that is, wood, dung-cakes, kerosene, etc.), the resultant impact on environment is positive.

However, the present pattern and growth of captive generation in India rakes up some issues, highlighted below, which may be environmentally onerous and may place a major impediment along the path to low carbon economic development.

- Small plant size: Despite the advantages, the growth of captive plants may be a concern for a clean environment. A large number of the small-capacity captive plants have been added and the size of the plant has a definite influence on specific carbon emissions. As shown in Figure 12.5, specific emissions gradually decrease with higher plant sizes. Also, emission control equipments are often not installed in small captive plants and emission from widely dispersed large number of small-capacity plants are difficult to monitor. Figure 12.5 captures the declining trend of specific CO_2 emissions (primary vertical axis) with increasing plant size (horizontal axis) and notes that majority of the captive plants (number of plants denoted by secondary vertical axis) due to their smaller sizes may be prone to higher specific emissions. A detailed study of emissions from such captive plants needs to be undertaken to reach a definitive conclusion about the linkage between plant size and emission intensities of captive plants.
- Fuel mix: Apart from size, the fuel mix of captive plants is carbon-intensive as large generating capacities are coal- and diesel-based. Emission neutral technologies like hydro and renewable constituted only 0.6 per cent of the total captive generation in 2007, when grid supplied renewable energy and hydro generation was 18 per cent (see Figure 12.6).

Lower cost of coal-based generation with increasing availability of coal linkages has been steadily pushing the fuel mix of the captive plants towards coal-based generation. Since 85 per cent of the total captive capacity additions are expected to be coal-based (Crisil Research 2009) (see Table 12.2), such bias for fossil fuel-based captive capacity addition would worsen the fuel mix. A

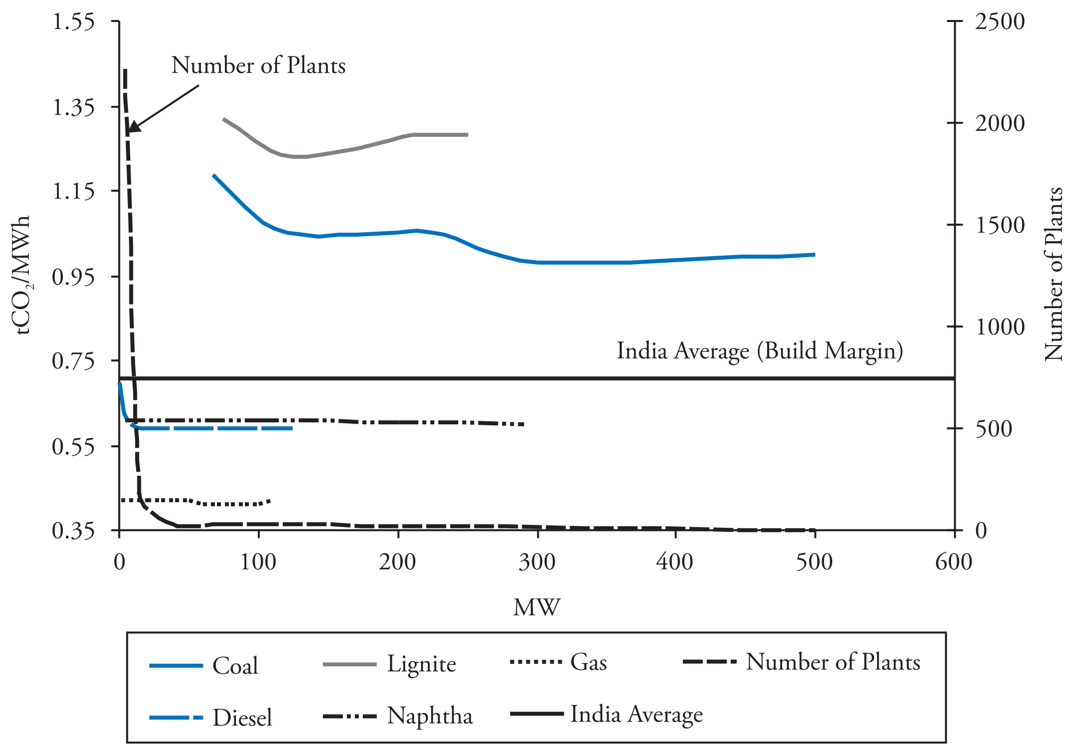

Figure 12.5 Specific CO_2 Emissions and Number of Plants More Than 1 MW in 2007

Note: The CEA database provides assumptions by capacity for units in the build margin where data was not provided by station, and not specifically for captive units.

Source: CEA, CO_2 Baseline Database, November 2009 and Infraline.

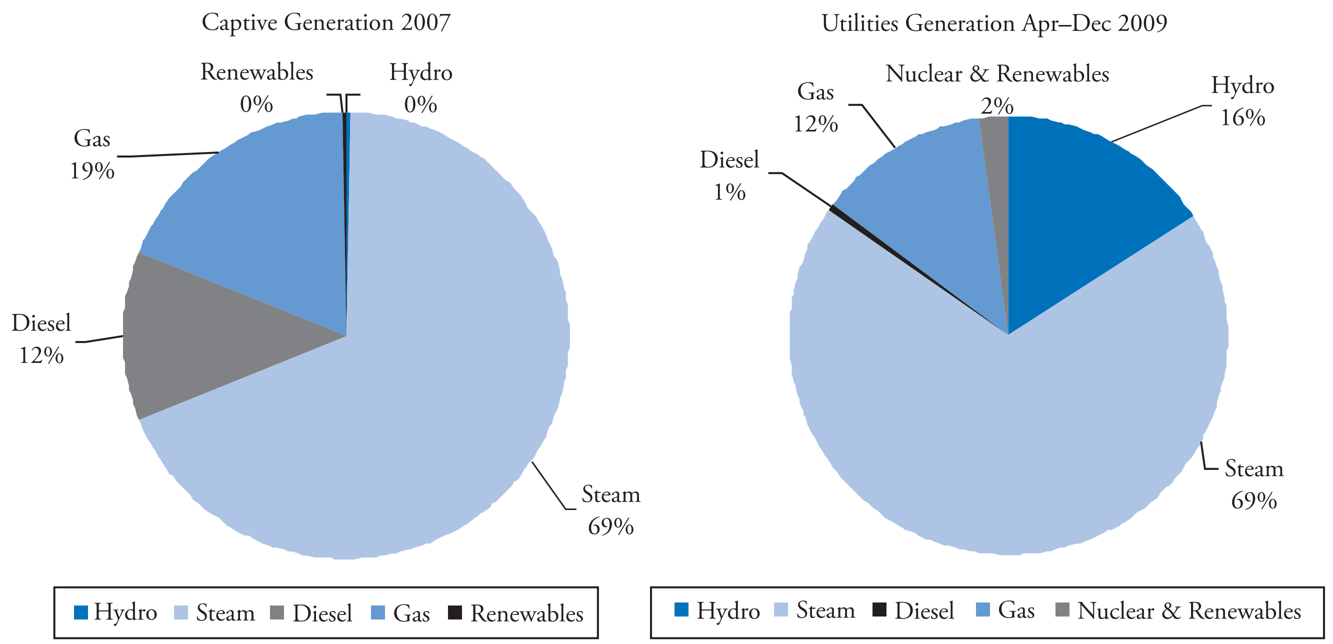

FIGURE 12.6 Comparison of Fuel Mix of Captive Plants and India Average

Source: CEA (2010).

shift towards less emission intensive fuel mix would help overcome the roadblock in transiting towards a low carbon economy.

TABLE 12.2 Fuel-wise Cost of Generation

Fuel	*Rs/KWh*
Coal/Steam/Gas	2.3
Diesel/Furnace Oil	6.3
Wind/Bagasse/ Waste	2.7

Source: Crisil Research 2009.

- Partial loading: Emission intensity of smaller plants running at low PLF is expected to be higher than larger plants operating at optimal loading. The energy conversion efficiency is dependent on plant operation and dispatch (Ministry of Power 1997). Running on partial loads have also been cited to be reasons for achieving higher heat rates (DVC 2005). Studies have reported that partial loading could result in an estimated impact of around 1–5 per cent on the heat rate (Lars-Erik Schöring 2004), and that a PLF below 70 per cent could increase the value of heat rate by 50 kcal/kWh (Presentation by Tata Power Company Limited).[2] Thus, impact of partial loading and low PLF on heat rates translates into higher emissions (see Figure 12.8).
- Emission control: Emission control technologies in small captive plants are not always economically viable and the distributed proliferation of the small captive plants makes emission monitoring by authorities difficult. However, this is not the case with large coal-based captive plants of sizes above 100 MW that comprised half the total captive generation in 2008 (see Table 12.3). Notwithstanding the muted effect on emission of the large plants, the growing pool of small fossil fuel-based captive plants is an imminent threat to the local and global environment and a major impediment to realizing sustainable low carbon economic development.

WAY FORWARD

Proliferation of captive capacity is inevitable in the medium term for a resource constrained growing economy, but this poses challenges to low carbon growth. Policymakers have to recognize this dilemma of dualism and carefully address the multi-faceted issues around captive generation. Besides the bias of fuel mix towards coal and oil, the key to higher emission intensity of captive plants is found in operational inefficiency arising from partial loading and sub-optimal utilization of the plants. It could be argued that the solution may be sought in aggregation

[2] Tata Power Company Limited (2003), 'Discussion on Terms and Conditions of Power Tariff: Generator Perspective', Jamshedpur Division, 12 November 2003.

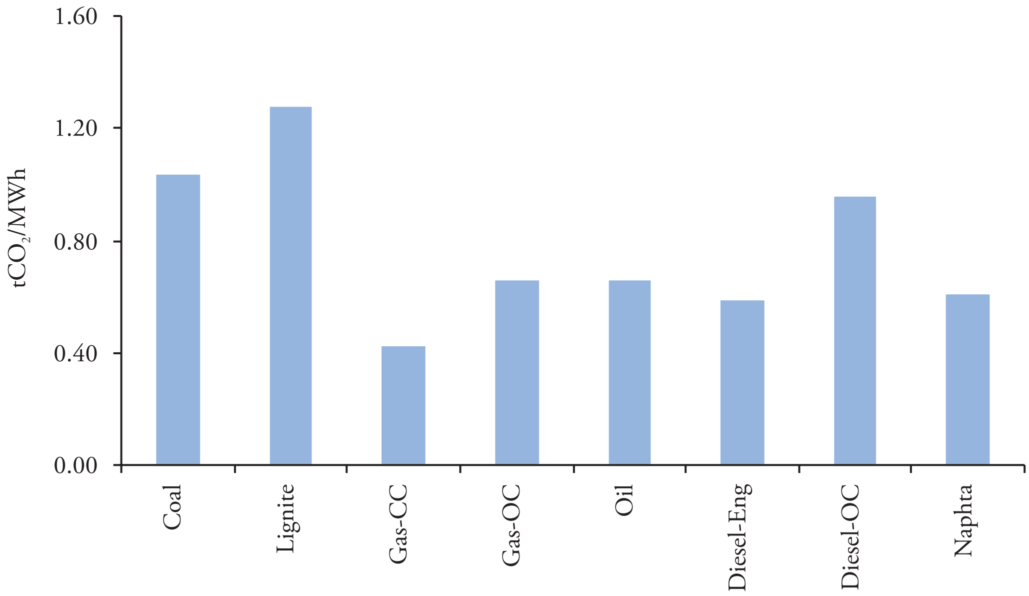

Figure 12.7 Specific Emissions (based on assumptions)

Source: Based on CEA Assumptions for utilities, 2009.

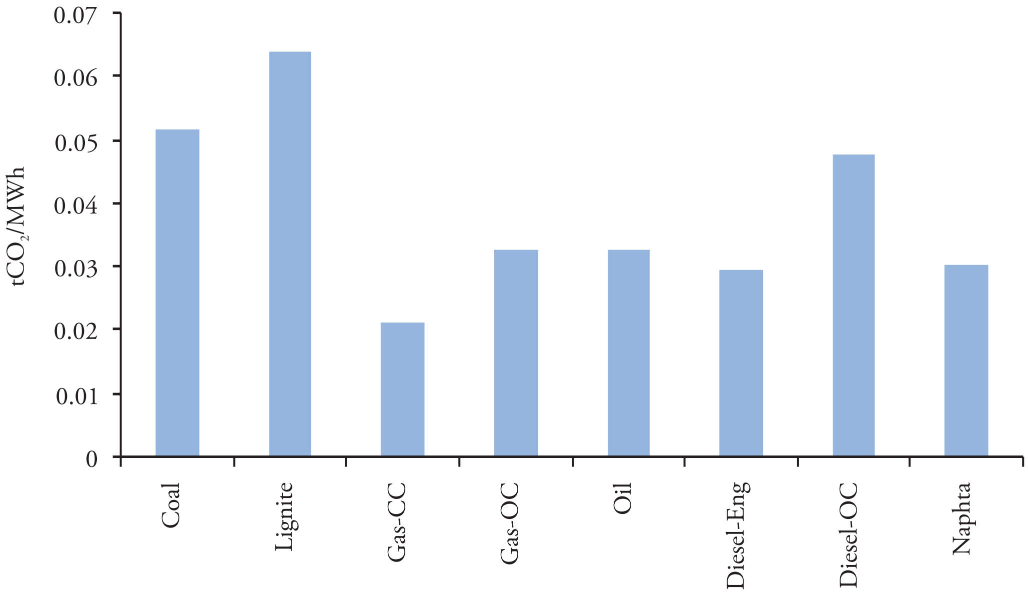

Figure 12.8 Additional Emissions for 5 per cent Impact on Heat Rates

Source: Based on CEA Assumptions[3] for Utilities 2009, and author's analysis.

and coordinated operation of captive capacities. Thus, through crafting of innovative solutions and progressive policies, besides ensuring austere governance and implementation practices, growth in captive capacity and generation could be better aligned with the a low carbon economic development.

Some of the measures for ameliorating the emission intensity of fossil fuel-based captive capacity addition and generation are:

- Encouraging larger plant sizes through group captives: Metal and chemical industries account for over

[3] CEA: CO_2 Baseline Database, Version 5.0, November 2009. The analysis assumes 5 per cent increase in heat rates across all fuel categories and projects the marginal increase in CO_2 emission intensities.

Table 12.3 Generation Details of Captive Plants above 1 MW in 2008

Range of Unit Capacities (MW)	*No. of Industries*	*Capacity (MW)*	*Generation (GWh)*	*Percentage of total Captive Generation*
01 to < 10	2,347	6,838	8,603	10
10 to<20	195	2,831	6,913	8
20 to < 30	88	2,245	8,525	9
30 to < 40	36	1,267	5,289	6
40 to < 50	27	1,228	5,660	6
50 to < 100	35	2,341	11,095	12
100 & Above	31	8,236	44,392	49
Total	2,759	24,986	90,477	100

Source: CEA (2009).

half the captive power generation in the country. An estimated 14 GW of capacity is expected to be added over 2008–14 with 75 per cent of capacities in the metal industry, and 60 per cent of these additional capacities are likely to be based in eastern India (Crisil Research 2009). Information asymmetry and absence of coordination between industries may not result in an environmentally optimal solution of setting up a large group captive plant. Thus, there may be a need for the government to identify newly growing clusters within specific sectors like metals and chemicals and set up mechanisms to encourage group captive plants. There are examples of established clusters, particularly in the metals industry.[4] Such mechanisms are quite evident in case of SEZs where fiscal benefits are applicable and these plants are allowed to sell power to other industries within the SEZ subject to certain conditions.

- Formulating a model captive power policy for removing barriers and encouraging sale of surplus power to the grid: Around 19.5 GW (as of March, 2007) of captive power is connected to the grid (Crisil Research July 2009) which can create considerable opportunities for sale of surplus power. Most states have their own policy or approach towards treatment of captive power with extensive inter-state variations. Several of these state policies inflate the cost of captive power through mechanisms like higher rates of electricity duty, minimum demand charges for grid support, uneconomical wheeling charges and losses, cess on captive power generation, high entry tax on heavy fuel oil, and high sales tax. Thus, there might be a case for setting up of a model captive power policy which the states could adopt to provide a level playing field to captive generators. The implementation of this would be similar to the CERC tariff regulations which are incorporated in spirit by the states, the model PPA, and the model competitive bid guidelines. A policy environment that is conducive would encourage captive power developers to set up large plant sizes and achieve higher plant utilization through sale of surplus capacity or increasing self-consumption.
- Reducing cross subsidy charges: Power tariffs in India chargeable to industrial, commercial, and household consumers are among the highest in the world in PPP[5] terms. Consequently, there is constant pressure exerted upon electricity regulators to ensure that tariffs for state distribution utilities are not raised further (Planning Commission 2005). It may be important to rationalize retail tariffs by reducing cross subsidy elements in tariffs so that industries can get back to the grid and

Box 12.2

A unit can be set up within the SEZ to generate power as a product or have a captive power plant and will be located in the processing area.

Such a power plant will be entitled to all the fiscal benefits covered under Section 26 of the SEZ Act, including the benefits for initial setting up, maintenance, and the duty free import of raw materials and consumables for the generation of the power in such plants. Such a unit can supply power to other SEZ units subject to certain conditions.

Source: Excerpts from 'Guidelines for Power Generation, Transmission and Distribution in Special Economic Zone (SEZs)', Ministry of Commerce and Industry, February 2009.

[4] Refer to http://www.nif.org.in/bd/list_industrial_clusters

[5] Purchasing Power Parity.

also facilitate open access to encourage higher capacity utilization. This is likely to have a two-fold advantage of curbing the rapid proliferation of captive plants and also encouraging the sale of surplus captive power through open access at reasonable open access charges. In a favourable open access situation, better plant utilization is likely to enhance operational efficiency, which, along with deceleration of fossil fuel-based captive capacity addition can have a positive effect on the environment.

- Designing distinct policies based on plant sizes: Large captive plants (25 MW and above), which are more efficient and less carbon-intensive than smaller captive plants, could be encouraged through appropriate policy to further the sale of surplus power from the captive plants to the grid in a cost-effective manner. However, smaller plants which have come up primarily as back-up power facilities need to be treated differently and encouraged to meet peak power demand through self generation to lessen the burden on the grid. With increasing capacity addition and improvement in quality of grid power, the need for such back-up power may go down in the future. Categorization of large and small captive power needs to be studied and implications thought through carefully for formulating distinct and targeted policies.
- Encouraging renewable and low carbon technology: The fuel mix of captive plants shows a strong bias for coal, lignite, and diesel, with coal-based captive plants envisaged for the future. Presently, the share of hydro or renewables in installed captive capacity is almost negligible. Although low carbon gas-based captive plants are in operation, issues around the availability of gas and volatility in gas prices have been assuming greater importance. Besides encouraging renewable energy for distributed power back-up or stand-alone facilities to replace or complement smaller sized fossil fuel-based captive power units, there should be ample thrust on technological innovations in diesel generators (Powerline, 2008).

Large group captive capacities that are more efficient and thus less carbon-intensive should be encouraged so that plant capacities are better utilized and surplus power from these captive plants supplied to the grid. The rapid proliferation of captive plants of all sizes could be checked and environmental damage substantially restrained, by accelerating the pace of removing retail tariff distortions and improving the quality of power supply to consumers. All of these would restrain paying consumers from leaving the grid and encourage erstwhile consumers to migrate back to the grid. Further, taking policy measures to promote rapid development of renewable energy and hybrid low-carbon technologies as back-up and stand-alone power sources would assist in reducing the carbon footprint of captive power generation.

References

Banerjee, R (2006). 'Comparison of Options for Distributed Generation in India', *Energy Policy*, 34(1), January.

Barnes, D.F., J. Halpern (2000). *Subsidies and Sustainable Rural Energy Services: Can we create incentives without distorting markets?*, Energy Sector Management Assistance Programme (ESMAP) report.

Central Electricity Authority (2005). *Report on Tapping Surplus Power from Captive Power Plants*, Planning Wing, August.

——— (2008). 'Captive Electricity Generation Plants (Non-utilities)', *General Review 2008*, Chapter 4.

——— (2009). 'Captive Electrical Energy Generation Plants Non-utilities', *General Review 2009*, Chapter 5, May.

——— (2010). *Electrical Energy Generation during the month of December, 2009 and period April-December'09*. Operation Performance Monitoring Division, CEA/OPM/PPA/3/1/2009, 5 January 2010.

Crisil Research (2009). *Power Annual Review*.

——— (2010). *Power Monthly*, January.

DVC (2005). 'Reason for Variation of PLF, SOC, APC & Heat Rate from CERC Norms for Bokaro 'B' Thermal Power Station', Petition No. 66/2005, Appendix vii.

Hansen, Christopher Joshi (2008). 'Bottom-up Electricity Reform using Industrial Captive Generation: A Case Study of Gujarat', Oxford Institute for Energy Studies, India, March 2008.

IDFC (2008). 'Innovative Partnership Approach to Mitigating Load Shedding: The "Pune Model" and Beyond', *Policy Group Quarterly*, 2 December 2008.

Indiastat, Power Sector Database, available at http://www.indiastat.com

Infraline, Power Sector Database, available at http://www.infraline.com

Joseph, Kelli L. (2010). 'The Politics of Power: Electricity Reform in India', *Energy Policy*, 38(1), pp. 503–11, January 2010.

Lars-Erik Schöring (2004). 'Lifecycle Costs—The Driver for Power Plant Investment Decisions', *Energy News*, 18, February 2004, Wartsila, Finland.

Ministry of Power (1997). 'Guidelines for Inviting Tariff Based Bids', D.O No. A-53/95-IPC-I, 3 June 1997, *Government of India*, New Delhi.

Ministry of Power (2003). *Discussion Paper on Rural Electrification Policies*, November, *Government of India*, New Delhi.

Morris, S. (2003). 'Restructuring Gujarat Electricity Board', in J. Ruet (ed.), *Against the Current: Organisational Restructuring of State Electricity Boards*, New Delhi.

Planning Commission (2005). *Draft Report of the Expert Committee on Integrated Energy Policy*, New Delhi: Government of India, December 2005.

Powerline (2008), *Design Improvements: Technological Advances to Reduce Diesel Engine Emissions*, July 2008.

Shukla, P.R., Debashish Biswas , Tirthankar Nag , Amee Yajnik, Thomas Heller, and David G. Victor (2004). 'Captive Power Plants: Case Study of Gujarat, India', Programme on Energy and Sustainable Development Working Paper 22, Stanford University, March 2004.

Tata Power Company Limited (2003). *Discussion on Terms and Conditions of Power Tariff: Generator Perspective*, Jamshedpur Division, 12 November.