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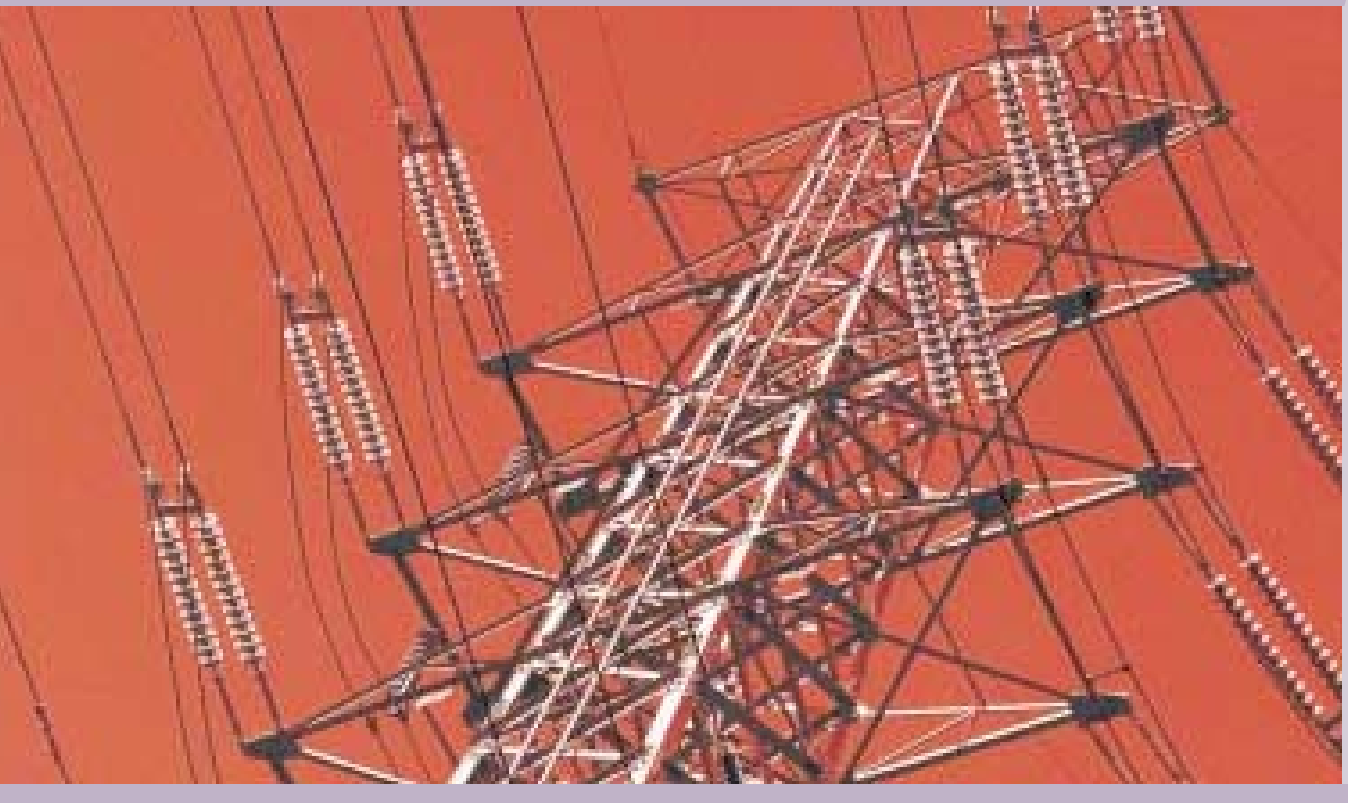
POWER



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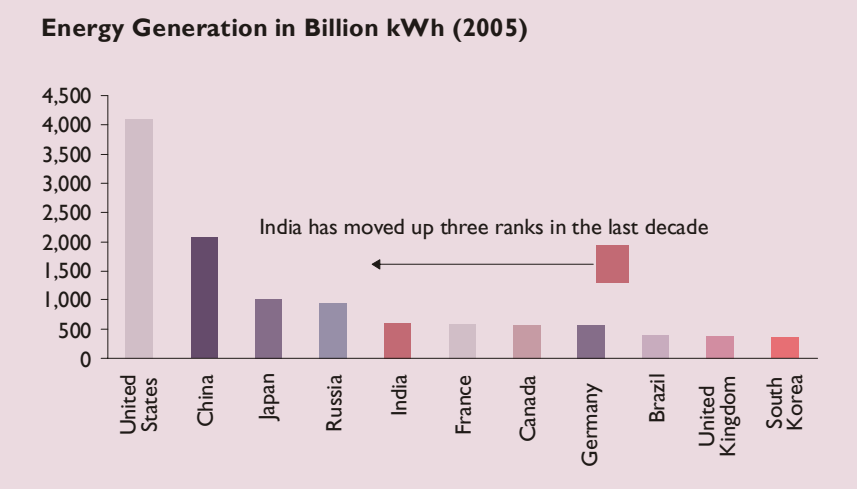
A report by PricewaterhouseCoopers Pvt. Ltd. for IBEF

Market Overview

The large and rapidly growing power market in India has undergone a radical change in sector structure and form of regulation, opening immense investment opportunities.

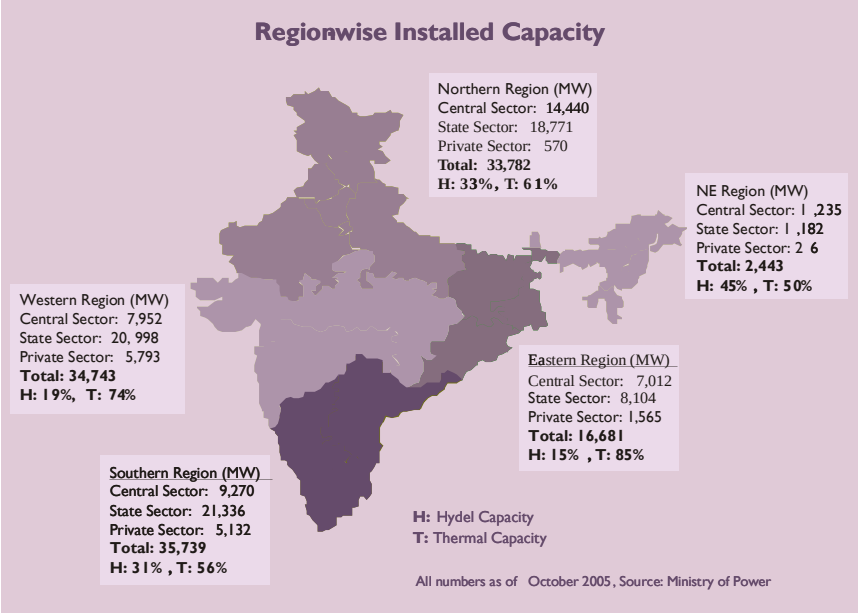
Large power market….

India's power market is growing faster than most of the other countries. With an installed generation capacity of 123 GW, generation of more than 600 billion kWh, and a transmission & distribution network of more than 6.3 million circuit kms, India has today emerged as the fifth largest power market in the world compared to its previous position of eighth in the last decade.



Source: WMRC Database

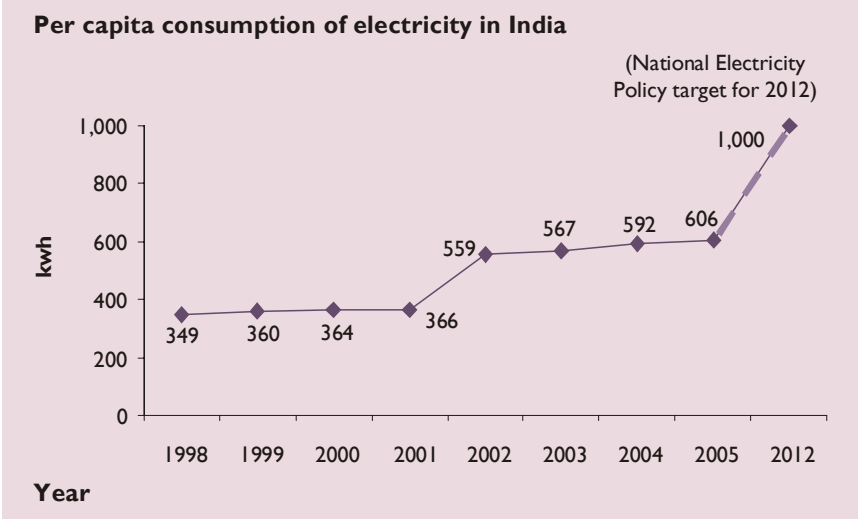
The power system in India is organised as five geographical regions for administrative purposes, management of transmission systems (regional grids), load dispatch functions and for the purpose of balancing & settling of inter-state energy transactions. The five regional grids are connected by high voltage AC & DC transmission lines thus forming a unified national grid catering to the inter-state & inter-region transfer of electricity.



…growing rapidly….

Electricity is a key driver for economic growth and social development. India has been experiencing unprecedented economic growth (in the range of 6-8 per cent) over the last decade and is projected to grow at similar rates in the foreseeable future. With economic development and a decline in the population below the poverty line, per capita electricity consumption is bound to increase.

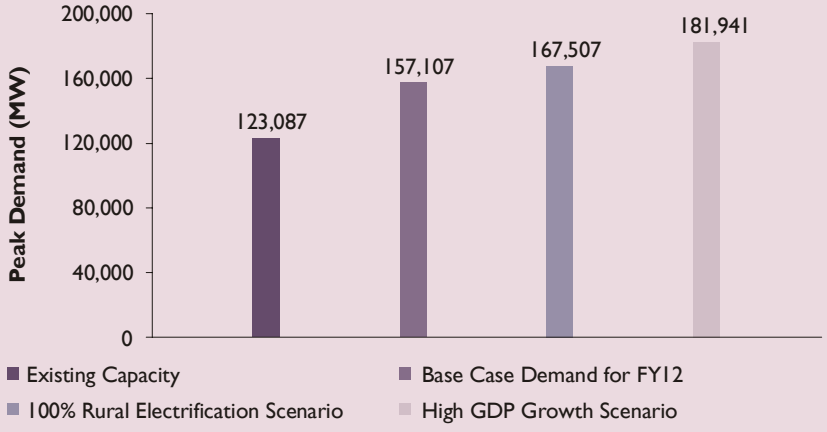
The following graph shows a near doubling of per capita consumption of electricity from about 350 units in 1998 to over 600 units in 2005.



Source: Ministry of Power

In order to support the GDP growth rate of around 7 per cent per annum, the rate of growth of power supply needs to be over 10 per cent annually. Currently, only 44 per cent of households in rural areas have access to electricity. The size of the power market is expected to grow more rapidly, with the emphasis on rural electrification and supply.
The Government has already announced an ambitious plan to provide "Electricity for all villages by 2007" and "Electricity for all by 2012", and the per capita consumption of electricity is targeted to exceed 1000 units by 2012. The "*Rajiv Gandhi Grameen Vidyutikaran Yojana* - Scheme for Rural Electricity Infrastructure & Household Electrification", with a budget of Rs. 16,000 crores (nearly US$ 3.5 billion), has been launched to attain the goal of providing access to electricity to all households in five years.

Demand Projection for All India - FY12



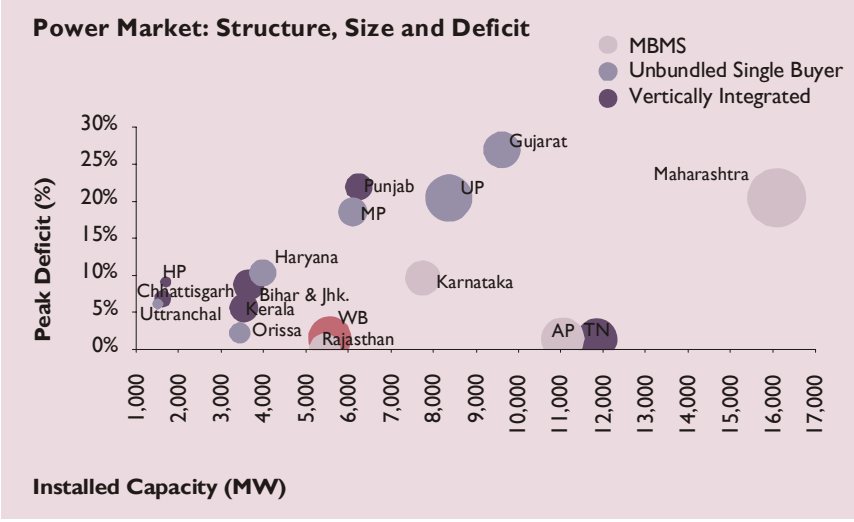
Source: Draft National Electricity Plan, Central Electricity Authority, Ministry of Power

Keeping in mind the socio-economic factors in the country, it is projected that India will need to target doubling its generation capacity from 2002 to 2012, with an associated increase in transmission and distribution infrastructure. The investment requirement in the sector is projected at over US$ 300 billion over this period.

…with structural and regulatory reform conducive to PSP

In the past, the power sector growth has not kept pace with the economic expansion and this has resulted in India experiencing a 13 per cent shortage in peak capacity and 8 per cent in energy terms, on an overall basis. Driven by the requirement to enhance the budgetary allocations to social sectors to meet the emerging requirements of sustainable growth, the Government has envisaged a manifold increase in the role of the private sector in the financing and operations of the power sector. Significant structural and regulatory reforms have paved the way for increased private sector participation in all aspects of the sector. Many of

the legal and regulatory requirements to enable this are in place, while the operational provisions are in different stages of implementation in different states. The following graph depicts the peak deficits across some states in India and the status of industry restructuring. All states need to adopt the Multi Buyer Multi Seller (MBMS) model within a stipulated timeframe.



Note: Bubble Size reflects size of the economy
PwC Research. Data from Ministry of Power, Ministry of Finance

Advantage India

Given its market opportunity and competitive positioning, India today is an attractive destination for foreign investment. The following table compares the size of the economy, size of the power sector and certain governance indicators with select countries which are similar in size or country risk.

India : Attractive Investment

Parameter	Worst	Best	India	Indonesia	Philippines	Russia	China
Fitch Sovereign Rating	D	AAA	BB+Stable	BB-Positive	BB-Negative	BBB Stable	A-Stable
Generation Capacity (MW)1	Low	High	123,463	25,120	14,700	214,420	356,090
GDP (PPP Billion USD)2			3,078	721.5	352.5	1,323.8	6,445.9
GDP Growth Rate (2005)3	Low	High	6.0%	5.2%	5.5%	6.0%	8.0%
Competitiveness Index, 20054	117	1	50	74	77	75	49
Governance Indicators5	-15.0	15.0	-1.57	-4.41	-2.45	-2.36	-2.93

Source :

[1] India - Ministry of Power website, Other countries - Energy Information Administration, USA (2003 data)

[2]Human Development Report of UNDP, 2005, (2003 data)

[3]ADB Update Report for countries other than Russia, IMF for Russia

[4]Global Competitiveness Report, 2005-06, World Economic Forum

[5]World Bank Governance Indicators, 2004. (The governance indicates reflect the statistical compilation of responses on quality of governance given by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries, as reported by number of survey institutes, think tank, non-governmental organizations, and international organizations.) The Indicator is the summation of ratings on parameters of Rule of Law, Regulatory Quality, Control of Corruption, Voice Accountability, Political Stability and Governance Effectiveness

The World Bank (May 2003) report on "What International Investors Look For When Investing In Developing Countries", presents a survey of investor expectations / requirements for infrastructure projects. The priority areas of investor confidence, according to the survey, are a legal and regulatory framework, payment discipline and enforcement and a guarantee from a sovereign or multilateral agency. The initiatives in the power sector in India present an attractive picture of these areas.

Priority areas for investor confidence	Status
Legal & Regulatory framework	Independent judicial system, in a democratic set up.Laws relating to power sector consolidated in E-Act 2003. Clear demarcations of the role of the Government and Regulator. National policies to promote Private Sector Participation (PSP): • National Electricity Policy • Competitive bidding guidelines for generation and transmission.

	• Guidelines for the development of Hydro Electric Project by Private Developers. • Policy Guidelines for private investment in transmission. • Independent regulators fully functional in most states. • Significant regulations on tariffs, open access, trading, operations (e.g. Grid Code), standards of performance, etc issued and in force. • Multi Year Tariff regime under implementation. • Appellate Tribunal, for appeal against regulatory decisions, is operational.
Payment discipline and enforcement	Significant financial improvement in a number of states, driven by strong anti-theft provisions, and focused improvement of efficiency at the distribution end. The gap between the average cost of supply and average revenue earned has reduced from Rs 1.10 per unit in 2002 to Rs 0.63 per unit in 2003. (Source: Ministry of Power)
Guarantee from government or a multilateral agency	Improving financial situation, and the development of a power market, expected to obviate the need for sovereign or equivalent guarantees. Recently, a 1000 MW IPP plant in Karnataka achieved financial closure without Sovereign guarantees.

Policy Initiatives

The Government of India has taken significant policy initiatives to improve conditions for attracting private investment, and Foreign Direct Investment, in the power sector. Broadly, 100 per cent foreign equity participation is allowed under the automatic approval route in all segments of the industry viz. generation (based on coal, gas, or hydro), transmission and retail distribution. For large generation projects, the Mega Power Policy extends incentives, such as capital import duty concessions, and the waiver of local levies to improve cost attractiveness. All power projects are extended a tax holiday viz. the Income Tax Act which permits the deduction of 100 per cent of profits of the generation, transmission or distribution company, for a period of 10 consecutive years out of 15 years from commencement, or from undertaking a substantial renovation or modernization of existing transmission lines.

Thus, the policy provides the benefit of 100 per cent foreign investment in all segments of the industry, certain fiscal benefits, and a tax holiday.

The Electricity Act 2003

The Act provides a liberal framework for the development of the power sector. The key provisions of the Act are as follows:

- Generation, other than for large hydro, is de-licensed
- Open access on Transmission and Distribution networks
- Retail competition: mandates that by July 2008 all consumers above 1MW are free to choose their supplier
- Rural power development: generation and distribution de-licensed in rural areas
- Power trading and market development are recognised
- Strong anti-theft and malpractice provisions
- Functional unbundling of the integrated State Electricity Boards and setting up of State Electricity Regulatory Commission (SERC) made mandatory by states.

The Electricity Act provides the necessary framework for broader participation in the power sector. Apart from the incumbent utilities, the new partners in developments are expected to be the captive generators, merchant plants, power traders, open access consumers, second distribution licensees, rural network operators, franchisees, etc.

National Electricity Policy

The Electricity Act 2003 requires the Central Government to formulate, inter alia, the National Electricity Policy in consultation with the Central Electricity Authority (CEA) and state governments for the development of the power system based on the optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy.

The **National Electricity Policy** aims at achieving the following objectives:

- Access to Electricity - Available for all households in next five years.
- Availability of Power - Demand to be fully met by 2012. Energy and peaking shortages to be overcome and adequate spinning reserve to be available.
- Reliability of Supply - Quality Power of specified standards in an efficient manner and at reasonable rates.
- Per capita consumption of electricity to be increased to over 1000 units by 2012.
- Minimum lifeline consumption of 1 unit/household/day by year 2012.
- Financial turnaround and commercial viability of electricity sector.
- Protection of consumers' interests.

The National Electricity Policy requires the SERCs to undertake the following towards the development of a power market, to facilitate private participation:

- Notify the regulations that would enable open access to distribution networks in terms of Section 42(2) of the Act, which stipulates that such open access be allowed, not later than 5 years from 27th January 2004 to consumers who require more than 1MW of power.
- Provide a facilitative framework for non-discriminatory open access to competing generators supplying power to licensees upon payment of a transmission charge to be determined by the commission.
- Notify enabling regulations expeditiously for inter and intra-state trading and also regulations on power exchange within 6 months.
- Determine wheeling charges and cross subsidy surcharge as required under Section 42 of the Act while creating regulations for open access in distribution.
- Ensure matching facilities such as load dispatch facilities with state-of-the-art communication and real time data acquisition capability (which is the case currently at Regional Load Dispatch Centres) with technology upgrades where necessary.
- Exercise regulatory oversight on commercial arrangements between captive generators and licensees for the harnessing of spare captive capacity and determine tariffs when a licensee is the off-taker of power from the captive plant.

- National transmission tariff framework to be developed – sensitive to distance, direction & related to the quantum of power flow. This will be developed by Central Electricity Regulatory Commission (CERC) taking into consideration the advice of CEA. SERCs to be guided by CERC.

Many SERCs have notified the regulations and tariffs associated with open access implementation, while these are under preparation in other states.

Rural Electrification Initiatives

The initiative – "Rajiv Gandhi Grameen Vidyutikaran Yojana" – to provide electricity access to all households in five years covers the entire country and provides for ninety per cent capital subsidy for rural electrification projects covering:

- Development of the Rural Electricity Distribution Backbone (REDB): Provision of 33/11 or 66/11 KV sub-stations and lines in blocks where these do not exist.
- Creation of a Village Electrification Infrastructure (VEI): Electrification of un-electrified villages and habitations and strengthening of distribution in electrified villages / habitation(s).
- Decentralized Distributed Generation (DDG) and Supply: Decentralized generation cum-distribution from conventional sources for villages where grid connectivity is either not feasible or not cost effective, provided it is not covered under the Ministry of Non-conventional Energy Sources programme to provide electricity from non-conventional energy sources under their remote village electrification programme of 25,000 villages.

Statua of Rural Electrification - Select States

State	Villagesto be electrified	%village un-electrified	Householdes to be electrified	%households un-electrified
Jharkhand	22.920	78%	3,422,425	90%
Bihar	20,449	53%	12,010,504	95%
Uttar Pradesh	40,389	42%	15,505,786	80%
Assam	5,640	23%	3,522,331	84%
Orissa	9,682	21%	6,651,135	81%
West Bengal	7,694	20%	8,899,353	80%

Source :Ministry of Power

Increasing the level of rural household electrification from 44 per cent (2001) to the targeted 100 per cent by 2012 would lead to a huge growth in both demand and consumption. The Rs. 16,000 crores (nearly US$ 3.5 billion) outlay for the scheme, also opens up big opportunities for electrical equipment manufacturers.

Other policy initiatives – Promoting private participation

- **Competitive bidding for awarding projects**: Detailed guidelines have been issued for competitive bidding procedures for generation projects and for transmission projects. The Electricity Act provides that tariffs determined through competitive bidding in accordance with such guidelines will be adopted by the Commission.
- **Incentives for Mega Power Projects**: To facilitate the setting up of large sized power plants in the country and in order to derive the economies of scale, all inter-state projects with a capacity of 1000 MW and above for thermal and 500 MW and above for hydel projects are being treated as mega power projects, subject to the fulfilment of required terms and conditions, and will be extended the concessions of 'Zero' customs duty on the import of capital goods.
- **Automatic approval for foreign direct investment**: Projects for electric generation, transmission and distribution are permitted foreign equity participation up to 100 per cent on the automatic approval route.
- **Relaxation of 40 per cent cap for debt exposure by Indian financial institutions**: The policy announced in 1991 envisaged that an amount not exceeding 40 per cent of the total outlay for private sector units may come from Indian public financial institutions (IFIs). The Government, subsequently, has decided that there will be no bar on the extent of domestic debt raised by a project developer, subject to the need of maximising financing from external sources and prudential norms exercised by IFIs. However, allowing a higher domestic debt component for projects which are developed based on indigenously sourced plants and equipment would be more desirable.
- **Inter Institutional Group for speedy financing:** An Inter Institutional Group (IIG) of financial institutions and a 'Green Channel' in the Ministry of Power was constituted in January 2004 to facilitate the financial closure of private sector projects likely to come up in the Tenth Plan. The IIG and 'Green Channel' have provided a forum for interaction amongst promoters of power projects, banks and financial institutions and the Ministry of Power. The IIG has been instrumental in bringing about speedy financial closure through better coordination with the relevant agencies.
- **Encouraging FDI in Transmission** - Two routes have been identified for encouraging private sector participation in transmission i.e. Joint Venture (JV) and Independent Power Transmission Company (IPTC) routes.

Key Trends

Out of a total of 123,010 MW of power generation, the private sector contributes about 12,930 MW (10.55 per cent). The majority of the distribution businesses in the metros of Ahmedabad, Mumbai, Delhi, Kolkata and in most parts of the state of Orissa are owned by the private sector.

FDI Limits

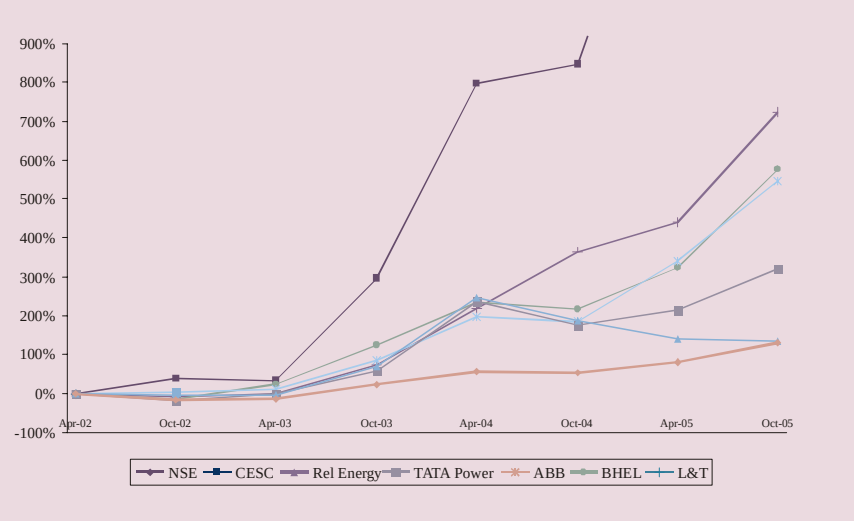
Foreign investor interest in Indian power sector

Starting in 1991, India has made significant efforts to attract private investment (particularly FDI) in the generation sector. A lot of interest was exhibited by foreign investors and some activity also took place in the form of the announcements and initial investments made. Some of the global giants who showed interest include Enron, GE, Bechtel, AES, Cogentrix, PSEG and El Paso Energy. Some of these (e.g. AES, CLP) continue to have investments in India and are evaluating opportunities in the post E-Act scenario.

At different stages, the policy attracted considerable investor interest. In generation, a number of prominent foreign and domestic investors pursued various opportunities in the country. Incidentally, about 7,000 MW of capacity was added by private investment. Distribution privatisation also attracted international interest initially, but soon waned, mainly due to concerns of continuing cash losses in the sector and the regulatory environment. Given this, and with better opportunities coming up in other parts of the world, investors moved away and sold their stakes. Subsequent to the passage of the Electricity Act 2003 and with one of the fastest economic growth rates in the world, the sector is witnessing positive trends.

Capital market confidence in power sector reforms

The policy changes with respect to open access and competition have attracted the interest of private capital in the sector. The investor community has demonstrated its confidence in the expected outcomes of the Electricity Act and related policy initiatives in the secondary market. The power sector related stocks have significantly outperformed the CN Nifty (National Stock Exchange index), indicating the interest in the secondary capital market. The capital market has been successfully tapped by both public sector companies (NTPC Ltd. and Power Trading Company) and private sector ones (Jaiprakash Hydro-Power Limited).



Source: National Stock Exchange of India Ltd.

Heightened domestic investor interest in the power sector

About 10 private sector power projects have achieved financial closure since the passage of the Electricity Act, and many Indian investors have drawn up plans for significant investments in the sector. More than 50 large private domestic companies are pursuing investments in the power sector. Some of the corporate plans reported in the press are:

- Reliance Energy, part of Anil Dhirubhai Ambani Enterprises (ADAE), proposes to develop 5,600 MW gas based generation at Dadri (Uttar Pradesh), and 4000 MW gas based generation at Shahpur (Maharashtra).
- Tata Power plans to set up 4,000 MW projects in Jharkhand.
- 1,500-MW gas-fired project in Hazira, Gujarat proposed by Essar Power. Essar Group has also signed a MoU with the Madhya Pradesh government to set up a 1000 mw power plant.
- 1,115 MW Nagarjuna Power project by Nagarjuna group in Karnataka
- 1,050-MW project in Surat (Gujarat) by Torrent group. The project has achieved financial closure, with IDFC lead-arranging the debt, of over Rs 2,000 crore, for the Rs 3,000-crore project.
- Jaypee Group is setting up a 1,000 MW thermal power plant in Sidhi, Madhya Pradesh.

Substantial growth in renewable energy based generation in the private sector:

Renewable energy source based generation is an area which has seen significant private interest. The Electricity Act encourages the development of renewable energy sources in the country and requires each State

Commission to specify a minimum level of purchase from such sources. Supported by attractive power purchase tariffs and tax incentives, a large number of wind, mini-hydel, bagasse based plants etc have been installed in the private sector. The share of private sector in the installed capacity of renewable energy generation is over 40 per cent. The growth of capacity addition has also been significant. The wind turbine capacity, for example, grew by about 250MW in 2003 and by 600MW in 2004. With significant potential remaining untapped, and the increased interest in the carbon credits market, this trend is likely to continue.

Public private partnership in transmission

The Tala Delhi Transmission Company Ltd. is the first public private partnership formed in 2003 to develop a transmission system (1,171 km) for wheeling power from the 1,020 MW Tala Hydroelectric Project in Bhutan to the eastern & northern parts of India. There is increased private sector interest in the transmission sector (e.g. Reliance Energy has applied for a transmission license). The Government is finalising the competitive bidding guidelines for developing transmission projects, and the Central Transmission Utility has identified specific elements of inter-state transmission systems under system expansion & system strengthening schemes (e.g. Western Region System Strengthening Scheme II).

The domestic & international investor confidence in the Indian economy is at its highest levels ever. A recent survey by AT Kearney - *FDI Confidence Index 2005* has concluded that India has replaced USA as the second most sought after investment destination in the World.

Opportunities

The Government of India's blueprint for the power sector envisages a capacity addition of 100,000 MW between 2002 & 2012, and a required associated investment for the transmission and distribution network. A similar substantial capital investment is required to develop the national grid, for renovation and modernization of inefficient and ageing generation plants and network, for electrification of rural areas, and to improve adequacy, reliability and the quality of power supply.

Growth Blue-print of MoP:

- An investment requirement of US$ 90 billion in generation of which US$ 19 billion is expected from the private sector
- An investment requirement of US$ 90 billion in transmission and distribution of which nearly US$ 15 billion is needed for the National Grid
- An investment of US$ 6 billion for the National Grid is expected to come from the private sector, the rest from the Central sector
- The rest of the investment in transmission and distribution will be financed through a mix of the state and the private sector
- Implies at least US$ 25 billion of investments from the private sector

The large capital and knowledge requirements cannot be met by the Government alone. Further, given the magnitude of actual and opportunity loss, these investments and efforts must be brought in at the earliest. A partnership and private & foreign investment is necessary to meet the rapidly growing demand and to achieve global standards in operating efficiency and quality of supply.

- In **Generation**, the development of the power market and deregulation of supply to large consumers, presents options for the sale of power to distribution utilities and to contestable consumers.
- In **Transmission**, competitive bidding guidelines are being finalised, and the Central Transmission Utility has identified specific elements of inter-state transmission systems. The JV or BOT model may be adopted in the intra-state transmission segment as well.
- In **Distribution**, privatisation continues to remain on the agenda of states (e.g. Uttar Pradesh), though the actual timing of initiation of any privatisation process remains uncertain. The Act envisages the possibility of more than one distribution licensee in an area. Some applications for such licenses have been made to the relevant SERCs, and the guidelines for issue of such licenses (including minimum service obligations) are expected to evolve.
- Power **trading** has been recognised as a separate activity, and a number of private firms have obtained trading licenses. The trading volumes have increased manifold over the last few years, and are expected to increase further as the national grid is strengthened and inter-regional flows

increase. The trading business offers opportunities as a stand-alone business, as well as a strategic adjunct to investments in other segments.

- The "investment" required is not restricted to financial capital. The electricity sector incurs a commercial loss of about Rs 20,000 crores (nearly US$ 4 billion) per annum; a significant part of which is attributed to inefficient operation. To plug this, the power sector, and specifically, the distribution companies must re-engineer their business processes, invest in modern IT systems for billing, MIS, tracking, energy audit etc., train their operating staff to improve their management, commercial and technical skills, and undertake other such performance improvement measures. All of this provides significant business opportunities to various service providers.

The emerging opportunities in two key areas are described in detail.

Open Access – Contestable market of US$ 3-5 billion

Development of power market: The present power market is dominated largely by long-term contracted generation, priced under cost-plus regulation. However, subsequent to the Electricity Act, there has been a substantial increase in short term trading, driven by a number of power traders. The trading volume of the biggest trader (PTC) has increased manifold, from 1,617 MUs in FY02 to 8,887 MUs in FY05. The relatively high prices prevailing in the spot market (based on an administered price which is a function of the system frequency) have also helped in the growth of the short term market. Though the spot market and short term contract market are still comparatively small in volume, they are acting as important signals for investment decisions. The following schematic shows the diverse opportunities for the sale of power in the emerging power market.

Power			
Timeframe	Spot Market	Short Term Contract Market	Long Term Contract Market
Present	UI Rates for Imbalance in Regional Pool (in Operation in each Region, under Cerc regulations).	Short term contract (1-6 months) have emerged UI Rate acts as a	Regulated prices ("sec 86 requires Commissions to determine tariffs)
		Sale to Distribution Utility	
Emerging	State Pools are emerging ("Sec 66 requires State Commissions to promote market development) (Rajasthan, UP, AP)	Competition "in the Market" could grow.	Competition "for the market" to emerge ("sec 63 requires Commission to adopt tariff determined through competitive bidding)
		Open access sale to direct consumers ("Sec 42 terms to be bilaterally Terms for network use to be determined b Commission)negotiated	

*Sec: Sections refer to the Electricity Act, 2003

Source :PwC Research

Open Access for sale to contestable consumers: The E-Act envisages an open access regime with a phased opening of the market for large consumers. All consumers with a demand greater than 1 MW will be able

to choose their supplier by 2008, under a non-discriminatory open access regime. A significant number of State Commissions have laid out the roadmap for the opening of the power market. Regulations and other implementation requirements are in varying stages of development.

Phased opening of the market: The diagram below shows the phasing of Open Access in select states. This would lead to about 15-25 per cent of the demand, representing the portion of the power market which pays the highest tariffs, becoming contestable, thus representing a significant opportunity to be tapped.

Contestestable Market : Phasing					
State/Yea	2005	2006	2007	2008	2009
Rajastha	15 MV A (Apr)*	5 MV A (Apr)	1.5 MV A (Apr)	1 MV A (Apr)	
Maharashtra	5 MV A (Apr)*	2 MV A (Apr)	1 MV A (Apr)		
Karnataka	5 MV A (Jan)	5 MV A (Apr)	3 MV A (Apr)	1 MV A (Apr)	
Madhya					
Entire State	10 MV (Jun)	5 MV (Apr)	2/1 MV A (Apr/Oct)		
Industrial Growth Centers	5/2 MW (Jun/Oct)	1 MW (Oct)			
Uttar	20 MW (Jul) 10MW (Apr)		5MW (Apr)	1 MW (Apr)	
Orissa					
Power from licensee	5MW (Aug)	2 MW (Apr)		1 MW (Apr)	
Power from generator				5/2 MW Apr/Oct)	1MW (Jan)
Andhra	5 MW (Sep)	2 MW (Sep)		1 MW (Apr)	
Gujarat		5MW (After Intra -State AB/Jan 2006; whichever later)		1 MW (Dec)	
Tamil				1MW (Dec)	

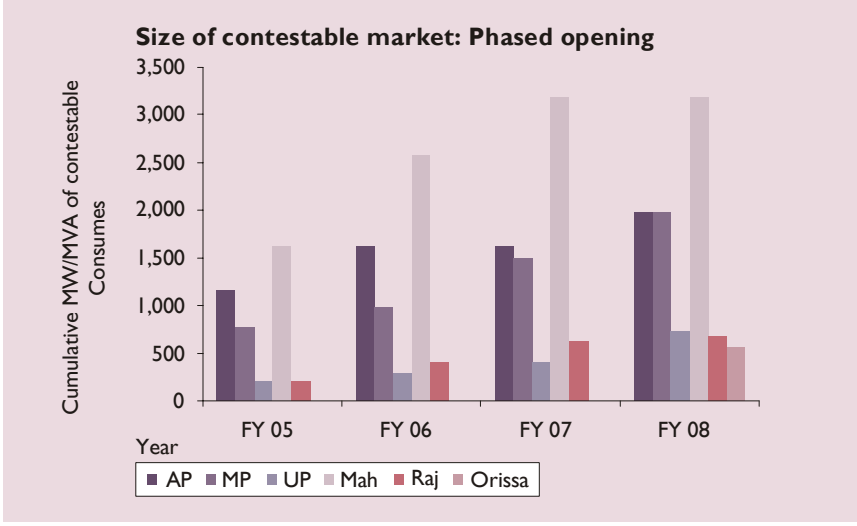
*15 MVA (Apr) means all consumers with demand 15 MVA will have chioice of supplier from April of that year; similarly for others.

Source: PwC Research

States	Size of contestable market (MW/MVA):: Phased opening			
	FY05	FY06	FY07	FY08
Andhra Pradesh	1,169	1,628	1,628	1,975
Madhya Pradesh	756	993	1488	1,969
Uttar Pradesh	199	280	401	733
Maharashtra	1,616	2,575	3,175	3,175
Rajasthan	205	395	614	686
Orissa				556

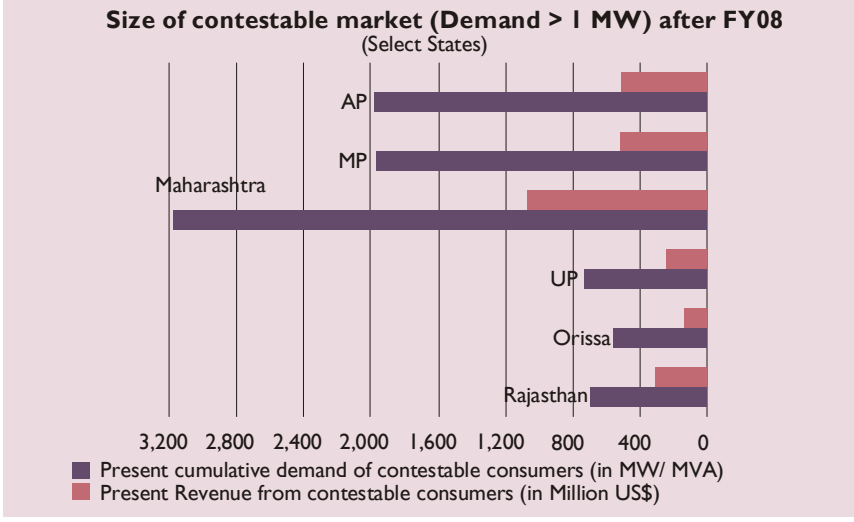
Source: PwC Research

For the select states, shown in the graphic, this implies a market size of about 3,000MW, increasing to over 9,000MW in three years.



Source: PwC Research

The contestable market segment has annual revenues of US$ 3-5 bn: The size of the contestable market in 2008 (based on present consumption) for select states is shown below. The size would be larger given the demand growth in the interim, and the large number of consumers who use captive power plants.

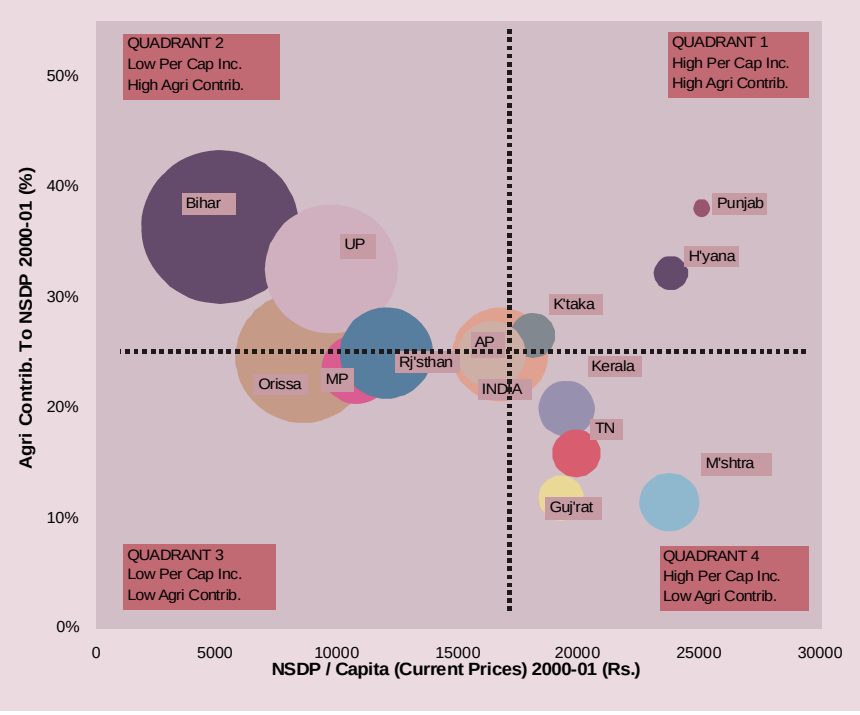


Source: PwC Research

These states account for about half of the country's generation. Extrapolated for the country, and accounting for network charges and surcharges, the annual revenue of the contestable portion of the power market in 2008 could be in the range of US$ 3-5 billion.

Bottom of the pyramid – Emerging Rural market opportunity

The rural market opportunity is large in scale, as is the government commitment to the social development targets. The liberal provisions of the E-Act on setting up generation and distribution for supply to rural areas have added to this attractiveness.



The "Rajiv Gandhi Grameen Vidyutikaran Yojana – Scheme of Rural Electricity Infrastructure and Household Electrification" targets to electrify 125,000 un-electrified villages and provide power access to 78 million uncovered rural households within the next 5 years. The Central Government outlay for the scheme is Rs 16,000 crore (US$ 3.5 bn).

The scheme lays special emphasis on the sustainability of rural supply by collecting the electricity costs from beneficiaries. To achieve this objective, it is proposed that franchisees such as NGOs, consumer associations etc. will be deployed with appropriate involvement of the Panchayati Raj institutions. The State Governments will be free to provide appropriate targeted subsidies to poor households.

The franchisee model for private sector participation in rural supply has yielded positive results in states like Orissa, and is expected to be adapted and adopted in other states. Distributed generation and supply in rural areas (not linked to the grid) is de-licensed, and could potentially be an attractive option for rural supply.

NTPC, Reliance Energy investing in rural electrification projects

Hindu Business Line, December 15, 2005, Page – 3

The biggies of the power sector are warming up to the idea of investing in the hinterlands. State-owned NTPC Ltd and Reliance Energy Ltd are setting up electrification projects in the rural parts of the country, an area hitherto untouched by the bigger players. NTPC Ltd is taking up Distributed Generation (DG) projects at remote un-electrified villages with the objective of demonstrating a sustainable business model for such projects. Reliance Energy Ltd too has entered into an agreement with the Uttar Pradesh Government to electrify over 600 villages near Agra, Aligarh, Hathras and Mathura. REL plans to work for 100 per cent electrification of these villages, along with the construction of seven 33 kV substations in the four districts, by March 2007, government officials said.

According to company officials, NTPC plans to take up rural electrification projects in the vicinity of its existing power stations through the participation of the local community and the use of locally available renewable energy sources. For instance, NTPC is in the process of identifying un-electrified villages in Angul in Orissa, in the vicinity of its thermal power plant in Talcher. It is proposed to initially shortlist about four or five villages for detailed feasibility and preparation of DPR, following which actual work would begin on the ground. NTPC is encouraging the local community to get involved in the projects and is also carrying out their training and capacity-building to enable them to independently manage the plant and look after its operations, maintenance and revenue collection to run it in a techno-commercially viable manner. Two pilot Distributed Generation projects, one at a village in Korba in Chhattisgarh and another in a village in Sonbhadra in UP, have already been commissioned. The project in Jemara village in Korba is using biomass to electrify 100 households while the project in Jaraha-Chetwa in Sonbhadra uses Solar Photovoltaic technology (SPV) to electrify about 200 households. Another 14 DG projects are in the various stages of DPR preparation, officials said.

CONTACT FOR INFORMATION

Information on the market and opportunities for investment in the power sector in India can be obtained from the Confederation of Indian Industry (CII), which works with the objective of creating a symbiotic interface between industry, government and domestic and international investors.

Confederation of Indian Industry (CII)
Plot No 249-F
Sector 18
Udyog Vihar, Phase IV
Gurgaon 122015, Haryana
India
Tel: + 91 124 4014060-67
Fax:+ 91 124 4014080/4013874
Email: v.raghuraman@ciionline.org

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India Brand Equity Foundation
c/o Confederation of Indian Industry
249-F Sector 18
Udyog Vihar Phase IV
Gurgaon 122015 Haryana
INDIA

Tel +91 124 401 4087
Fax +91 124 401 3873
E-mail ajay.khanna@ciionline.org
Web www.ibef.org