CII GOA SEMINAR ON
POWER - CHALLENGES AND OPPORTUNITIES

By

Mr. F. A. Vandrevala,

Managing Director

July, 2003

CONTENTS

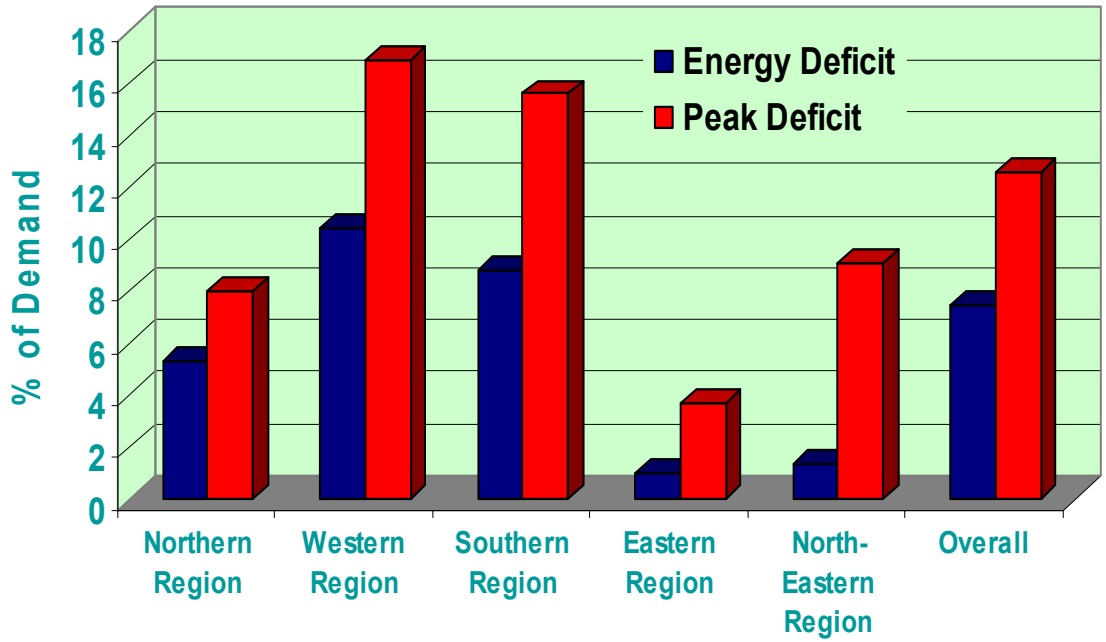
TATA POWER

TATA

1. The Power Sector in India & GOIs Vision.
2. The Challenges
3. Facilitating measures -The Electricity Act 2003
4. Opportunities in Generation/Transmission/Distribution /Trading
5. Goa - Status & Opportunities
6. Conclusion

The Power Sector in India

Energy and Peak Shortages 2001 - 2002



Despite a manifold increase in the installed capacity, supplies have not been able to keep pace with demand

Per-Capita Energy Consumption Country-wise

TATA POWER

TATA

PER CAPITA ELECTRICITY CONSUMPT	
(Kwh per Year per Capita)	
Indonesia	303
India	360
China	804
Mexico	1642
UK	5760
USA	12,211
Canada	15489

Large potential for the growth of the power sector in India, even as compared to China

Per capita Consumption State-wise

TATA POWER

TATA

Per capital consumption Of electricity (Kwh)		
	94-95	**99-00**
Arunachal	66	69
Manipur	107	70
Nagaland	59	85
Assam	98	95
Tripura	66	95
Mizoram	112	121
Bihar	134	141
Meghalaya	140	160
Sikkim	143	192
West Bengal	125	204
Orissa	333	355
Andhra Pradesh	374	391
Tamil Nadu	430	484
Maharashtra	500	520
Goa	**602**	**712**
Punjab	759	921
ALL STATES	**320**	**355**

Future Vision

TATA POWER

TATA

- **Vision of the Government of India – " Power for All by 2012 "**
  - **Generating Capacity to be increased from 105,000 MW to 212,000 MW**
  - **Share of the Private Sector to be increased from 10% to 16.5%**
  - **Hydel contribution to mix to be increased from 25% to 30% : addition of almost 40,000 MW of new hydel capacity.**
  - **Inter-regional transfer capability to be increased from 9850 MW to 30,000 MW**
  - **Recovery of the power cost through the realised tariff from 70% to 100%**

Future Vision (contd.)

TATA POWER

TATA

- T. & D. losses to be reduced from 40% to 13%
- 100% rural electrification from the existing 86%
- Peak Demand and Energy Shortages to be eliminated
- Industrial tariff, presently about Rs. 5 per Kwh to be lowered to Rs. 2.50 per Kwh in support of global competitiveness.
- SEB commercial losses of Rs. 26,000 crores to be reduced and the sector made financially viable.

Vision 2012 - OFIs

TATA POWER

TATA

- **What can be counted need not necessarily count**
  - **Vision is silent on measurement of service standards.**
  - **Internationals metrics for service standards**
    - ✓ System Availability – System Average Interruption Duration Index (SAIDI)
      - o Total No. of Customer Minutes of Interruptions / Total No. of Customers.
    - ✓ System Security – System Average Interruption Frequency Index (SAIFI)
      - o Total No. of Customer Interruptions / Total No. of Customers
    - ✓ Momentary Interruptions – Momentary Average Interruptions Frequency Index (MAIFI)
      - o Total No. of Customer Momentary Interruptions / Total No. of Customers
    - ✓ Average Interruptions – Customer Average Interruption Duration Index (CAIDI)
      - o Sustained Customer Outage Minutes / Total No. of Customer Outages

Source : T & D Annual Report, 2001

Vision 2012 - OFIs

TATA POWER

TATA

- **Captive Power Utilisation**
  - **Source of un-competitiveness**
  - **Downstream businesses have to invest scarce financial resources for infrastructure rather than for their own processes.**
  - **Captive power in India estimated at almost 20,000 MW, almost 20% of India's total installed capacity today.**
  - **No clear policy in place to harness the surplus power available from this resource.**
  - **D G sets abound in cities like Delhi, Bangalore, Kolkatta, and other cities, but absent in Mumbai thanks to reliability of Tata Power supply.**

Vision 2012 - OFIs

TATA POWER

TATA

- **Investment in Distribution**
  - **To meet the target of "Power for all" by 2012, required investment is Rs. 800,000 crores, Rs. 400,000 crores in generation and Rs. 400,000 crores in transmission and distribution.**
  - **Ratio of Generation : T. & D. – 1:1**
  - **Abroad ratio of Generation : Transmission : Distribution – 1:1:2**
- **No measure of power affordability in the Vision.**

The Electricity Act 2003

(In force from 10 June 2003)

Salient Features of the Act

TATA POWER

TATA

- Generation free from licensing except for hydro projects
- Captive generation free from controls
- Open access to transmission lines
- Open access in distribution to be allowed by SERC in phases
  - Consumers free to source power
  - Each area would have more than one distribution licensee.
  - Sub-licensees permitted
- Retail tariff to be determined by regulatory commission
- Trading of power permitted under a specific license
- Central Government to prepare National Electricity Policy and Tariff Policy
- Strict anti-theft provisions.
- Road map for SEB reform

Power - The Challenges

Challenges

1. Achieving the capacity addition target of 100,000 MW in G/T/D to ensure power for all by 2012.

2. Refurbishing existing G/T/D through APDRP and other means to provide reliable, low loss and quality supply.

3. Converting a loss making sector requiring massive budgetary support into a profitable, self-sustaining consumer oriented operation.

Challenges (contd.)

- Implementation of the New Act by timely issue of clear and fair policies, plans , rules & regulations, strengthening institutions eg ERCs, setting up the Appellate Tribunal for speedy dispute resolution.

- Political stumbling blocks - coalition governments, federal structure, electricity a concurrent subject, electoral politics.

- Change in social behaviour

Fiscal status of S E Bs , 2001-2002

Profit / Loss (without subsidy)

TATA POWER

TATA

	SEBs	(Rs. Crore)
1	Andhra Pradesh	-2820
2	Bihar	-753
3	Assam	-370
4	Delhi (DVB)	-1092
5	Goa	-27
6	Gujarat	-3491
7	Haryana	-1949
8	Himachal Pradesh	-48
9	Jammu & Kashmir	-1141
10	Karnataka	-2340
11	Kerala	-1354

	SEBs	(Rs. Crore)
12	Madhya Pradesh	-3682
13	Maharashtra	-3527
14	Meghalaya	-49
15	Orissa	-230
16	Punjab	-1633
17	Rajasthan (Transco.)	-2412
18	Tamil Nadu	-2510
19	UP (Power Corp.)	-2687
20	West Bengal.	-1086
21	**Total**	**-33201**

Source: Planning Commission Annual Report 2001-02

APDRP Status as on 31/3/2003 (Rs Crs)

TATA POWER

TATA

S.No.	State	Project Cost	APDRP Cost			Counter part fund	Utilisation
				Investment	Incentive		
1	Andhra Pradesh	1476.5	738.25	163.82		738.25	69.48
2	Bihar	717.57	358.79	66.11		76.95	0.48
3	Chattisgarh	424.58	212.29	10		10	23.9
4	Delhi	946.46	473.23	105.51		473.23	25.2
5	**Goa**	**176.34**	**88.17**	**22.04**		**4.45**	**12.53**
6	Gujarat	1035.8	517.9	105.42	236.37	291.96	27.44
7	Haryana	450.66	225.33	56.33	5.01	163.38	35.93
8	Jharkhand	444.85	222.43	12		137.25	9.32
9	Karnataka	1161.19	580.6	145.15		580.6	69
10	Kerala	350.35	175.18	30.43		173.18	17.19
11	Madhya Pradesh	598.98	299.49	74.87		62	11.96
12	Maharashtra	1107.85	553.93	138.48	137.89	345.42	65.09
13	Orissa	592.22	296.11	54.35			
14	Punjab	667.46	333.73	53.98		333.73	

APDRP Status as on 31/3/2003 (Contd) (Rs Crs)

TATA POWER

TATA

S.No.	State	Project Cost	APDRP Cost			Counter part fund	Utilisation
				Investment	Incentive		
15	Rajasthan	1255.05	627.53	125.64		308.02	71.68
16	Tamil Nadu	968.17	484.09	111.57		484.09	77.14
17	Uttar Pradesh	718.19	359.1	80.12		301.77	
18	West Bengal	132.71	66.36	19.02		66.36	
19	Assam	365.98	365.98	96.97			0.05
20	Arunachal Pradesh	67.29	67.29	0			
21	Himachal Pradesh	105.51	105.51	43.04			4.69
22	Jammu & Kashmir	453.48	453.48	20			
23	Manipur	10.13	10.13	2.67			
24	Meghalaya	26.29	26.29	6.57			
25	Mizoram	9.77	9.77	3.78			3.78
26	Nagaland	47.22	47.22	13.14			2.67
27	Sikkim	63.48	63.48	17.2			2.67
28	Tripura	13.27	13.27	2.67			
29	Uttaranchal	361.51	361.51	174.63			56.6
Total		**14748.9**	**8136.4**	**1755.51**	**379.27**	**4550.64**	**586.8**

Power - The Opportunities

Opportunities in Generation

TATA POWER

TATA

- Big push to Hydro - 162 projects = 50,000 MW identified. Facilitating policies in the pipeline
- Licensees can set up pit-head stations and avail open access in transmission to source low cost power
- Captive Plant installation by Industries/Groups facilitated by elimination of SEB & techno-economic clearances
- Joint ventures possible with CPSUs eg NTPC & States - NTPC financially strengthened by one-time settlement scheme.
- Facilitating policies eg Revised Megapower policy, Freedom from licensing, Open access in transmission, New tariff policy wef 2004.

Opportunities in Transmission

TATA POWER

TATA

- Evolution of National Grid with inter-region transfer capacity of 30,000 MW by 2012, and transmission evacuation capacity of 100,000 MW will provide scope for:

- Private participation via
- - Independent Power Transmission Companies
- - Joint ventures with Powergrid

- Enhanced transfer capability will support power trading and open access and help match regional surplus & shortages, also resolve mismatch between fuel location and load centre need.

Opportunities in Distribution

TATA POWER

TATA

- Open access for consumers
- New distribution licenses in existing license areas to new players
- Distribution sub-licensing
- Unbundling & privatisation of SEB distribution zones
- Select customers qualifying for open access
- Rural distribution combined with distributed generation

Opportunities in Distribution (Contd.)

TATA POWER

TATA

- Refurbishing of sub-transmission and distribution networks.
- Standalone rural electrification systems (HLL distribution model)
- Metering, meter reading systems, energy accounting and MIS hardware & software.
- Conversion to LT-less High Voltage distribution systems.
- Technology enhancement for improved reliability - SCADA, Advanced Communications, Mobile Facilities, GIS
- Web enabled facilities for consumers.

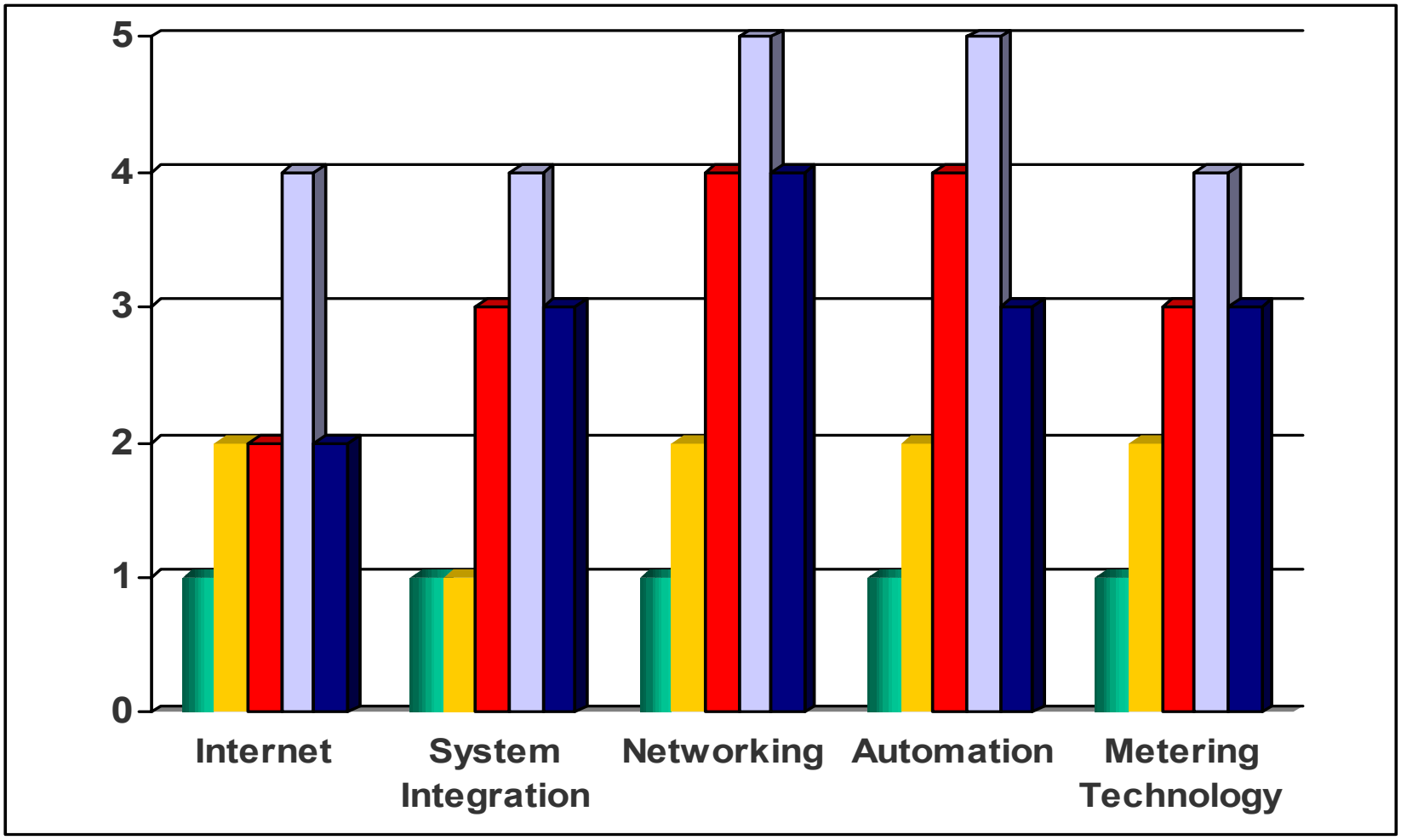
Opportunities in Trading

- Substantial scope for trading in new Act scenario.
- PTC has traded 1327 MUs in April & May, 2003.
- Tradeable surplus capacity available from SEBs, Licensees, GENCOS, and CPPs on firm or infirm basis.
- Norms for issue of trading licenses to be finalised early.

IT Application in Power

TATA POWER

TATA



Source : Government of India I T Task Force Report

GOA - Status of Power Sector

TATA POWER

TATA

- **Installed capacity (incl private sector) - 48.16 MW .**
- **Peak Shortage - Nil**
- **Power purchase - 1738 Mus (Central Sector - 1482, Others - 256)**
- **Power sales - 1322 Mus (Dom- 301,Comm - 90, Agr - 20 Ind - 761)**
- **Per capita consumption - 712 kWH (1999-2000)**
- **Energy shortfall - 0.2%**
- **Number of consumers - 4 lacs.**

- Source: Planning Commission Annual Report for 2001-02

GOA - Status of Power Sector (Contd)

TATA POWER

TATA

- **Power purchase cost - Rs 356 crores**
- **Cost per unit of power - Rs 3.42**
- **Realisation from sale of power - Rs 3.19 per unit**
- **Goa Electricity Department : Gross operating loss - Rs 27.5 cr.**
- **T&D loss : 31.6 %**

- Source: Planning Commission Annual Report for 2001-02

GOA - Status of Power Sector Reform(MOU with GOI)

TATA POWER

TATA

MOU Item	Target date	Status
Setting up SERC & filing tariff petition	31/12/01	SERC constituted but Chairman to be appointed
HT & EHT metering	31/12/01	Electronic meters for HT/EHT consumers completed. Metering for DTs pending.
100% metering for consumers	31/12/02	Pending
Energy audit/loss reduction	31/10/03	Pending
Financial breakeven	31/10/03	Pending
Corporatisation of Dept.	31/03/02	Consultants appointed
Computerised billing of towns	31/12/02	Partly completed in Panaji only
Electrification of Wadas	31/12/02	Completed by June 2002
APDRP works	31/03/05	GOI has sanctioned Rs 196 cr (Rs 22 crores released)

INVESTMENTS NEEDED IN NEXT 10 YEARS

TATA POWER

TATA

	Rs - crores
Generation Projects	604,000
Transmission schemes	139,000
Distribution network	79,000
Rural Electrification	75,000
Renovation & modernisation	33,000
Total	9,30,000

CONCLUSION

TATA POWER

TATA

- The Indian Power Sector needs to move more rapidly
- Legislation is in place and Reforms are in progress
- Ambitious generation capacity addition target of 100,000 MW by 2012 with matching capacities in T&D
- Inter-regional power transfer capacity to be augmented to 30,000 MW
- Estimated investment of Rs 9,30,000 crs. over 10 years - Huge opportunity for all stake-holders including operators, suppliers, traders and investors.

Thank You !