



AN OVERVIEW OF INDIAN POWER MARKET
and
PROSPECTS OF INDIA - BANGLADESH CO-OPERATION

PTC India Ltd.

New Delhi

15th July, 2009

Areas of Focus



1. Indian Power Sector & Power Trading
2. PTC India Ltd.
3. More about Power Trading
4. PTC – Power Trading and Investments
5. What Next ??





**INDIAN POWER SECTOR
&
POWER TRADING**

INDIAN POWER SECTOR Overview



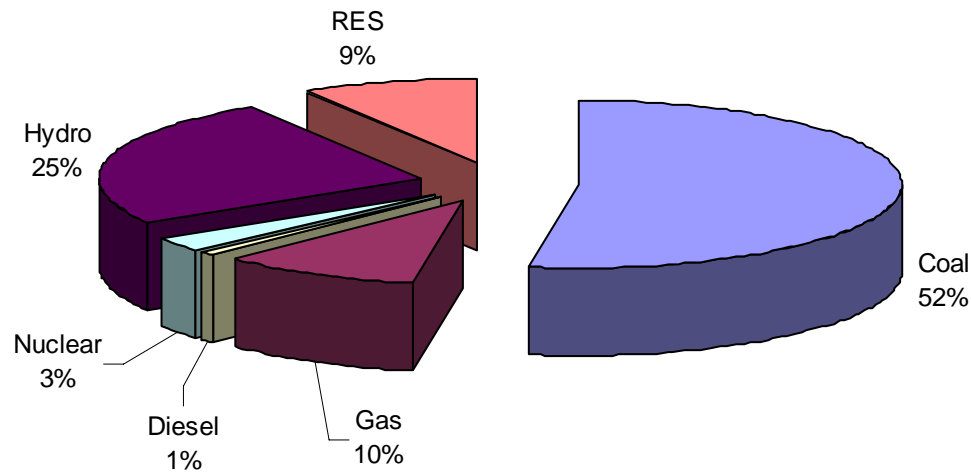
- Indian Power sector – 3rd largest in Asia after China & Japan
- 11% energy shortages and 12% peak shortages
- Share of hydro declining in the generation mix (25% against a target of 40% as ideal)
- Aims at “Power for All” by the year 2012
- Increased emphasis on Renewable Energy resources, including Nuclear Power
- Need for diversification of energy resources and regional cooperation – for energy security



Capacity



Total Installed Capacity in India is **148 GW**, of which Thermal (Coal, Gas, Diesel) contributes 63%, as compared to RES (9%)

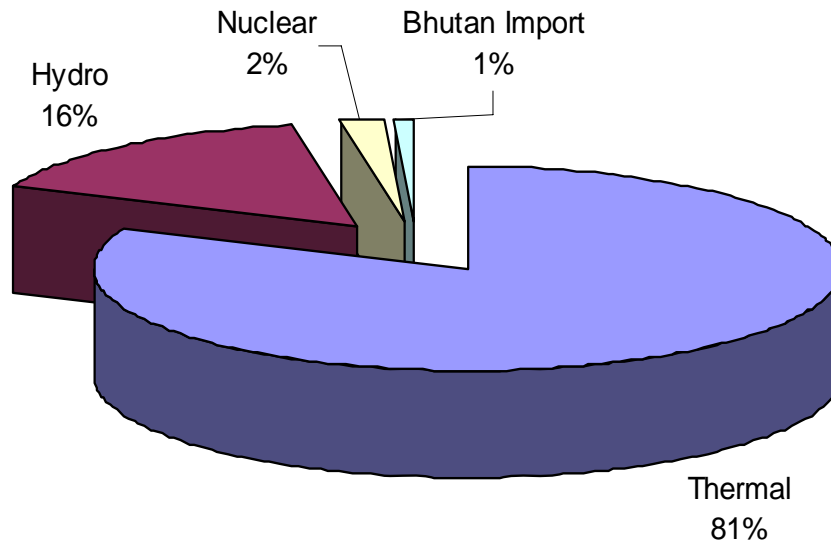


	Installed Capacity
Coal	77649 MW
Gas	14877 MW
Diesel	1200 MW
Nuclear	4120 MW
Hydro	36877 MW
Res	13242 MW
TOTAL	147965 MW

Electricity Generation

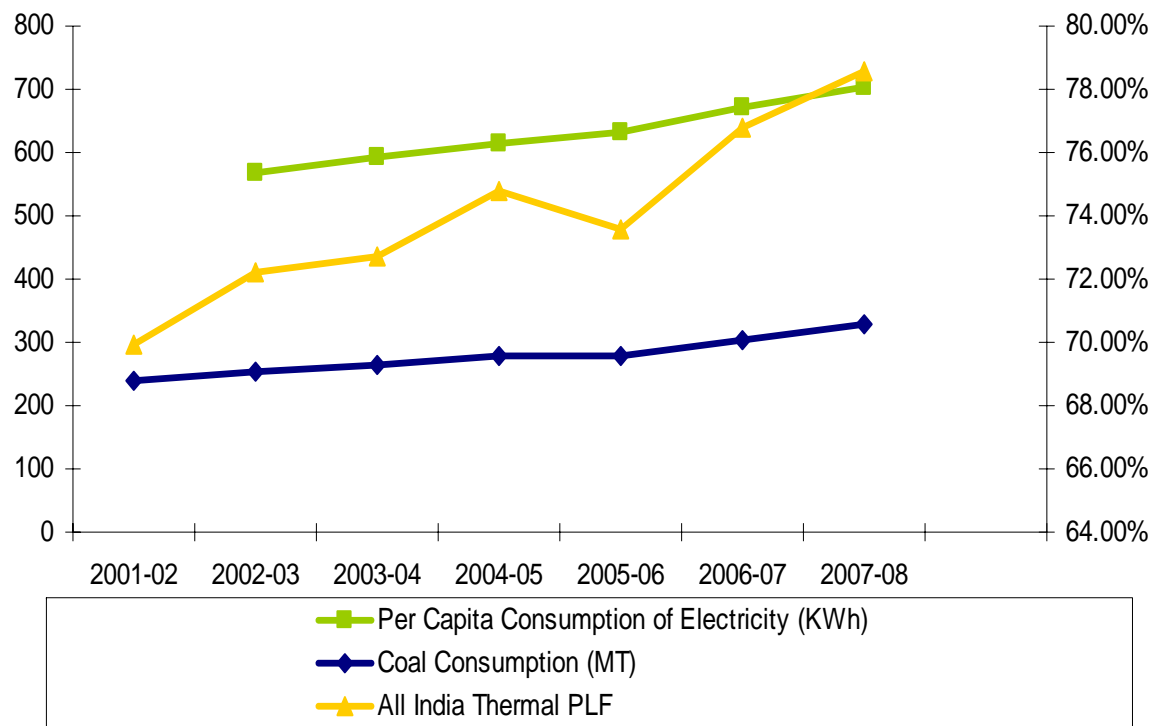


Total Electricity generated in India was **724 BU**s, 6.5% short of target (2008-09)



	Electricity Gen.
Thermal	590 BU
Hydro	113 BU
Nuclear	15 BU
Bhutan (import)	6 BU
TOTAL	724 BU

Other Variables



Variations

	2002-03	2007-08
Per Capita Electricity Consumption (KWh)	567	704
Coal Consumption (MT)	253	330
Thermal PLF %	69.9	77.19

Future Power Scenario



11 Plan (2007-12) capacity addition planned ~78000 MW

Number of power projects, including Ultra Mega Power Projects, facing delays

Total Energy Shortage:

2008-09 -- 11%
 2009-10 – 9.6% (projected)

Peak Power Shortage:

2008-09 – 11.9%
 2009-10 – 12.61% (projected)

Expected Peak Power Shortage (2009 – 2010)	
10 States	> 20%
7 States	10% – 20%
11 States	< 10%



INDIAN POWER MARKET

Evolution of Indian Power Market

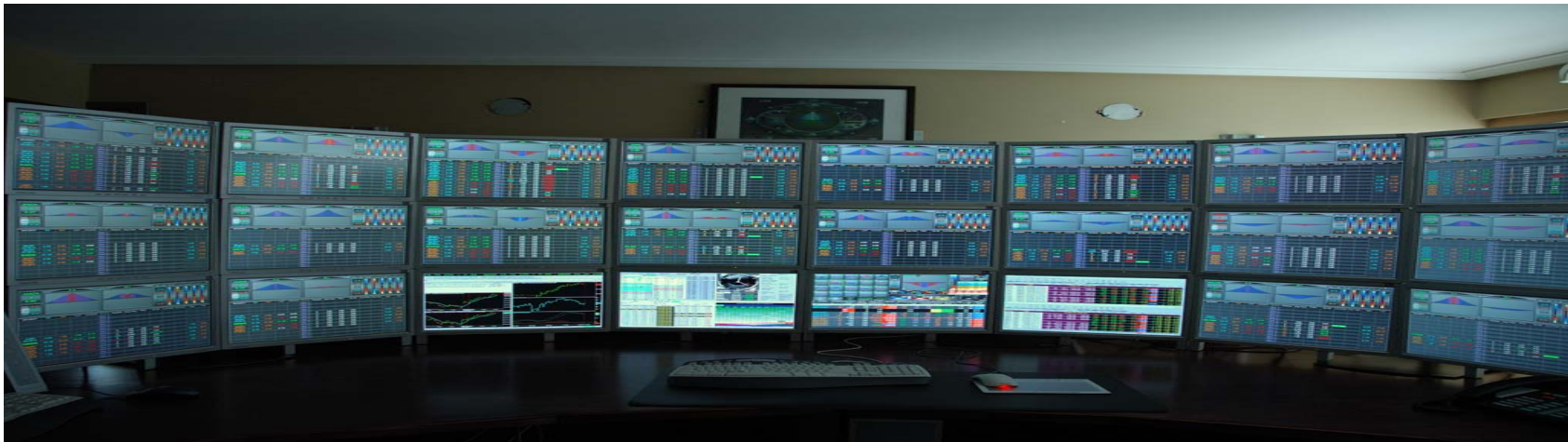


Power as a resource for earning revenue did not exist in this cost based regime

INDIAN POWER MARKET

Emerging concept of Trading

- Prior to trading as a business concept, there were power exchanges between the States mostly for emergency support but without any commercial arrangements
- The exchanges were further limited due to lack of transmission inter-connection
- Sustained shortages, both in energy and peak demand, discouraged initiatives – skepticism about success of trading was widespread
- Private investment in the generation was not forthcoming
- Government and policy makers felt the need for trading intermediary to insulate the developer/lender from marketing and credit risks



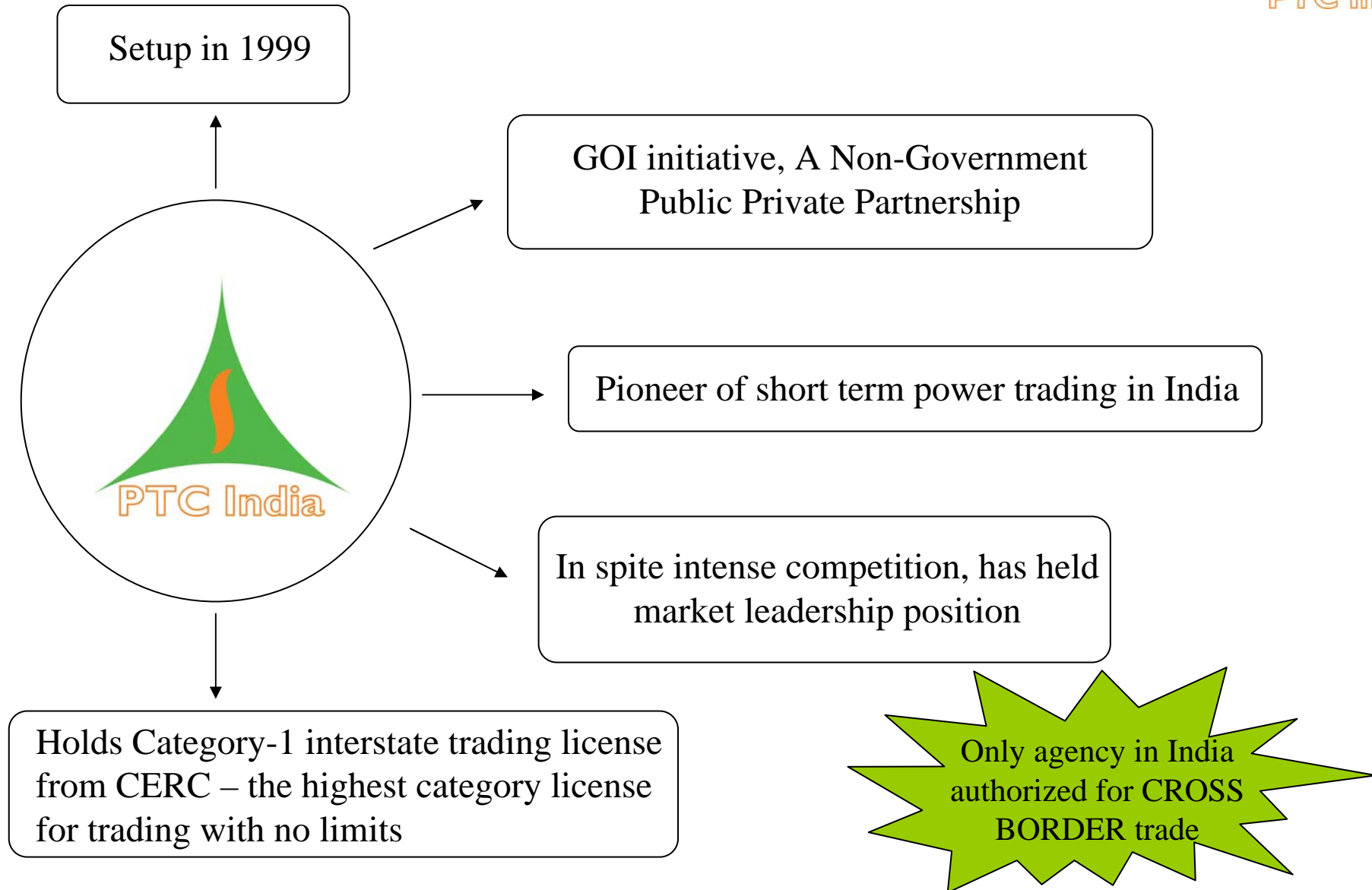
PTC India Ltd.

(formerly known as Power Trading Corporation of India Ltd.)



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How it all started



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Original Promoters



Power Grid Corporation of India Ltd.

- Designated as Central Transmission Utility; One of the largest in the world
- Manages the NLDC and RLDCs
- 45% of India's market share (71,500 Circuit Kms. & 120 substations)

Power Finance Corporation Ltd.

- Non-Banking Financial Institute dedicated to Power Sector financing and its development
- Net worth of the company in 2008-2009 was Rs. 9605cr, 10% growth over previous year



NTPC

- Largest power utility in India; generated 19.2MU in January 2009
- Accounts for 28.51% of country's power generation with 19.11% (29894MW) installed capacity

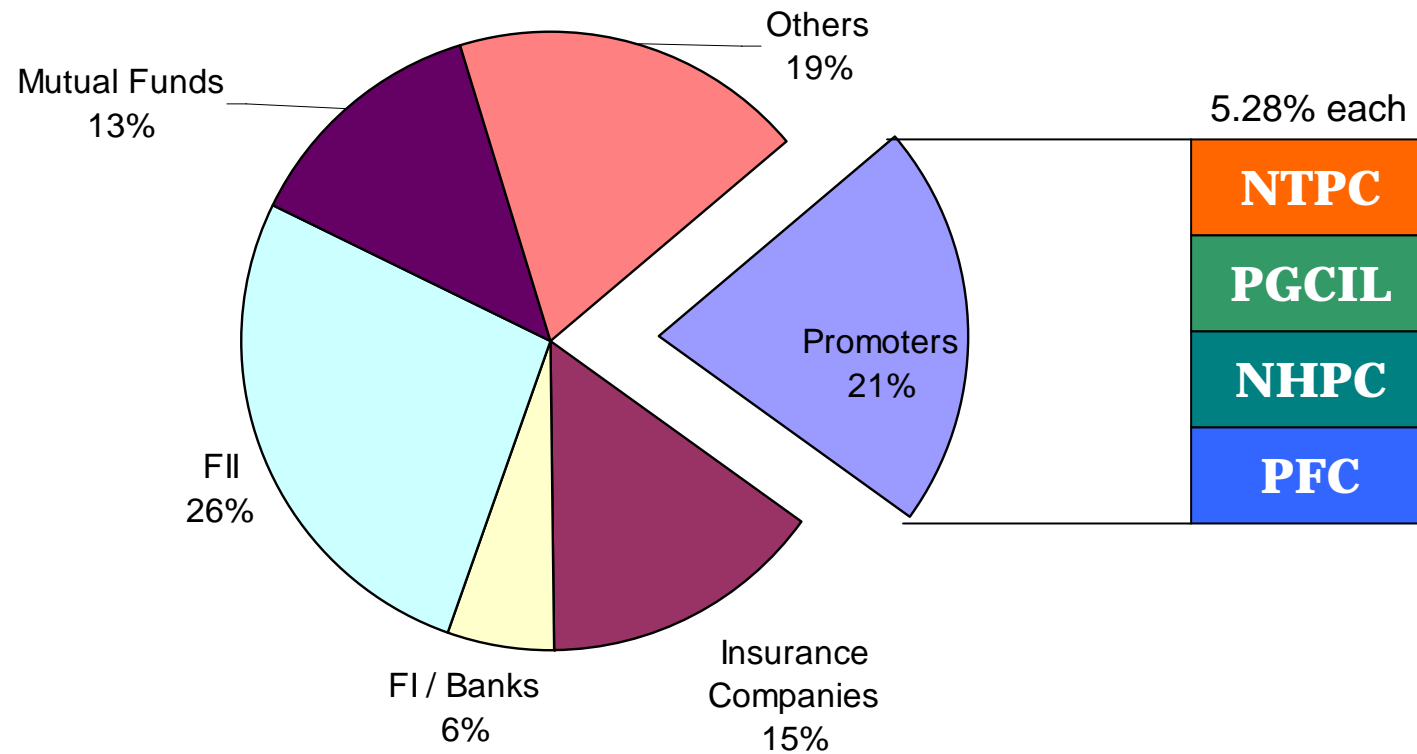
NHPC

- To promote and organize development of hydroelectric, geothermal, tidal, wind etc. powers
- Has a share capital of Rs. 150 billion, with Net profit of Rs. 10 billion
- In FY 2007-08, NHPC Power stations achieved highest generation of 14813MU



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Shareholder Structure



as on 31st March, 2009



PTC

Diversified Board of Directors

CHAIRMAN &
MANAGING DIRECTOR

Shri T.N. Thakur – Ex-IA&AS, Former Director (F&FO), PFC

WHOLE-TIME
DIRECTORS

Shri Shashi Shekhar – IAS Officer of the Tamil Nadu Cadre, 1981

Shri Deepak Amitabh – IRS 1984

PART-TIME DIRECTORS

Shri I.C.P. Keshari – Joint Secretary, Ministry of Power, GOI

Shri Satish C Mehta – Joint Secretary, Ministry of External Affairs, GOI

Shri M.K. Goel – Director, PFC

Shri R.G. Yadav – Executive Director, PGCIL

Shri M.S. Verma – Former Chairman, SBI & TRAI

Shri D.P. Bagchi – Former Chief Secretary, Government of Orissa

Shri P. Abraham – Former Secretary of State, GOI

Shri G.P. Gupta – Former Chairman, IDBI

Shri I.J. Kapoor – Director (Commercial), NTPC

Shri A.B.L. Srivastava – Director (Finance), NHPC

Shri Balachandran – Former Addl. Member, Ministry of Railways

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At a glance



→ **POWER TRADING**

- Short Term Trading
- Long Term Trading
- Cross Border Trading
- Power Tolling
- Power Exchange
- Power Banking

→ **INVESTMENTS**

- PTC Financial Services Ltd.
- PTC Energy Limited
- Athena Energy Ventures Private Ltd.
- Teesta Urja Ltd.
- Krishna Godavari Power Utilities Ltd.
- Wind Power

→ **FUEL INTERMEDIATION**

→ **CONSULTING**

→ **GENERATION**

Short Term Trading

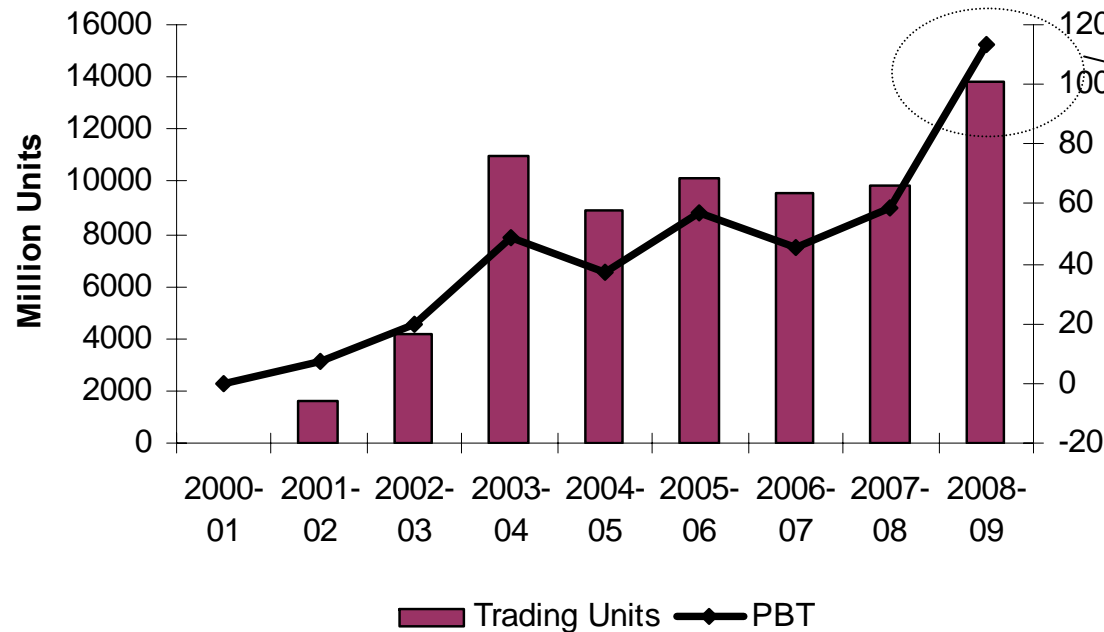


PRODUCTS

- Firm Power
- Day Ahead Power
- As & when Available Power
- Holiday Power

Each of these are customized for →

- Off Peak Power
- Peak Power
- RTC Power
- Night Power
- Day Power



FY2007-08 vs FY2008-09
Traded Volume jumped 40%
PBT increased by 92%

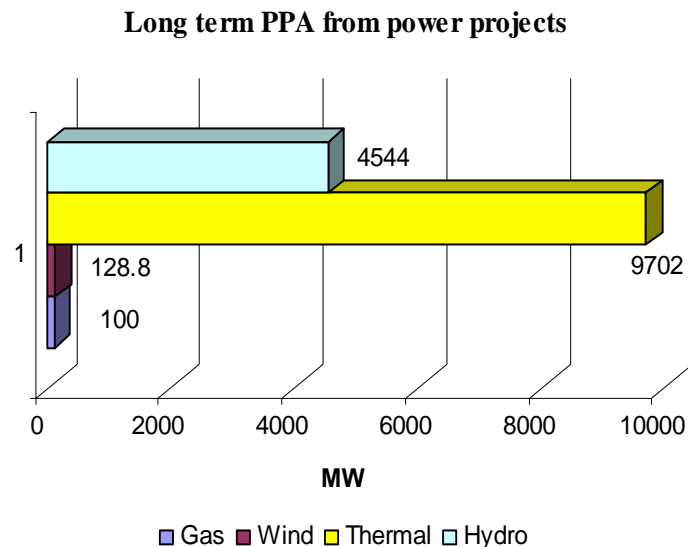
Present market share ≈ 50%



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Long Term Trading

- Long Term contractual agreements for electricity trade with Private Power Projects
 - Power Purchase Agreements (PPAs) with Independent Power Producers (IIPs), Power Utilities, in India & abroad
 - Power Sale Agreements (PSAs) with users / State Electricity Boards (SEBs)
- PSAs and PPAs range from 10 to 35 years
- PTC takes marketing risks and credit risks
- Has signed Power Tolling Agreement – provide coal to the project and buy power for sale



FY2008-09

- **Total Long Term PPAs = 14,478.8MW**
- **Total PSAs / MOUs initialed / signed > 3500MW**
- **Active discussions for more than 10,000MW capacity**



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Key Achievements

- Established the viability of concept
 - *Power market can play key role in growth of sector*
- Managed diverse power portfolio
- Introduced products and services as per customer needs
- Credible intermediary
 - *Payment Security Mechanism*
 - *Weekly billing to reduce credit risks*
 - *Right to divert in case of default*
 - *Relationship of trust, transparency*
- Comfort to developer of power projects –by addressing market risks
- Comfort to lender – by addressing credit risks
- A catalyst for private investment in the sector

A decade of innovative services to the power sector

Sustained Leadership position; present market share ~ 50%



Role in Power Market Development



- PTC has successfully contributed to power market development-which is one of the main thrust of the **Electricity Act 2003**

- Recognized Trading as a distinct activity
- Development of Power Market – Electricity Act 2003, Section 66, “The Appropriate Commission shall endeavor to promote the development of power market...”, guided by the **National Electricity Policy**

“ To promote market development, a part of the new generating capacities, say 15% may be sold outside long term PPAs. As the power markets develop, it would be feasible to finance projects with competitive generation costs outside the long term PPAs....this will increase the depth of power markets....and in long run would lead to reduction in tariff”

- PTC continuously make efforts to deepen the power market
- It co-promoted, along with FTIL (MCX), the 1st National level Power Exchange- IEX

MORE ABOUT POWER TRADING

Scenario in India



Trading is a licensed activity as per EA 2003

No. of Trading Licenses = 44

Category I has 16 licensees, with no trading limits (PTC being one of them)

Rank 06-07	Rank 07-08	Trader	2006-07		2007-08	
			Vol. of trade (MUs)	% volume traded	Vol. of trade (MUs)	% volume traded
1	1	PTC India Ltd.	6575.41	43.77	9552.79	45.57
2	2	NTPC Vidyut Vyapar Nigam Ltd.	2662.98	17.73	3324.07	15.86
7	3	Lanco Electric Utility Ltd.	744.00	4.95	2600.02	12.40
4	4	Tata Power Trading Co. Ltd.	1206.38	8.03	1681.95	8.02
5	5	JSW Power Trading Co. Ltd.	967.94	6.44	1478.57	7.05
3	6	Adani Enterprises Ltd	1844.66	12.28	1321.88	6.31
6	7	Reliance Energy Trading Ltd.	878.29	5.85	776.25	3.70
		TOTAL	15022.74		20964.77	

2008-09 projection

More than 30BUs
(including Power Exchange)

Trading in 2007-08 was 3.15% of the Total Energy Generation, up from 2.41% in 2006-07

Benefits of Trading



- Increasing realization among utilities of power as a source for revenue earning
 - Improved PLF, particularly of State Power Utilities

(An example: DVC - a rise of 5% in PLF)

 - No backing down
 - Reduction in load shedding
 - Rapid capacity build-up
-



All this results in optimization of resource utilization



POWER TRADING

Benefits of Trading contd.

- Encouraged IPPs to invest in generating assets- spurt in investment based on competitive tariff due to widening demand –supply gap
 - Market-based returns; No sovereign/government guarantee
- Large merchant capacity is being funded
- States Governments of Chhattisgarh, Jharkhand, Orissa, Himachal Pradesh, J&K, Uttaranchal, etc. have recognized “ Power as Resource”
- Planned rapid capacity additions – *have devised policies to become Power Hubs*
- IPPs have filed applications for setting up of more than 75,000MW capacity without any Government / Sovereign Guarantee

Market Determined
Returns

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POWER TRADING & INVESTMENTS

PTC Challenges



- 100% turnover from short term sale of power
 - Volatile market, Higher risks
 - Competition
 - Low Margin (fixed by CERC)
 - Uncertainty in Regulation
 - Open Access Issues – Minimum products, no financial products
- An ideal trading company normally has in its portfolio
 - 70% long term
 - 30% short term
- Diversification to spread risks



PTC Repositioning



PTC is repositioning itself to meet the challenges

- Long-term intermediation
- Short-term and Medium-term trading by power portfolio management
- Major player on Power Exchange (~ 25% share)
- Equity in power projects- untied power in hand – market maker
- Financial Services including equity and loan syndication
- Fuel Aggregation
- Advisory Services



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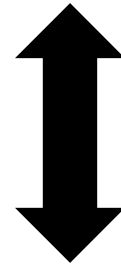
Thrust Areas



Long Term Contracts

PTC has entered into PPAs / MoUs to procure long term power

- *PPAs signed for:* 11,226 MW
- *MOUs signed for:* 25,907 MW



PTC has entered into PSAs / MoUs to ensure long term sale of power

- *PSAs signed for:* 3,373 MW
- *MOUs signed for:* 1,200 MW

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Thrust Areas contd.



Private Sector Investment in Power Sector

- PTC has become a vehicle for private sector investment in power sector
- More than Rs. 40,000 to Rs. 45,000 Crores investment committed by the private investors
 - Expected investment– additional Rs. 50,000 Crores (at 50% success rate)
- Financial closure of projects on the strength of our PPAs
- Encouraging private investment in neighboring countries:
 - 750 MW West Seti in Nepal (PPA initialed)
 - 300 MW Lower Arun in Nepal (MOU signed)
- Cross-border Transmission Inter-connection between India and Nepal





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Thrust Areas contd.

Subsidiaries

Set Up a financial subsidiary “PTC India Financial Services Ltd.” (PFS)

- Equity- long term sustenance
- Debt Syndication
- Taken 20% equity stake in **Athena Energy Ventures Private Limited** for promoting power projects

Teesta Urja (1200 MW)

Krishna Godavari (60 MW)

Tolling Projects (2x 200 MW)

Set up “PTC Energy Ltd.” (PEL) for investment in power project assets mitigating regulatory risks:

- JV projects
- Holding Company
- Distribution
- Large Renewable
- Consultancy

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Thrust Areas contd.

Others

- **Investment in Energy Efficiency projects**
 - Agreement with BEE to implement EE projects under performance guarantee contract
- **Investment in Renewable Energy projects**
 - Developed a 6 MW Wind farm, commissioned in March 2008
 - MoU signed with IREDA
 - Setting up Holding Company to promote RE projects
- **Developing Power Portfolio**
 - Long Term PSAs with distribution utilities
 - SEZs, Industry, Real Estates, Market complexes etc

Unlock Captive Power Potential (Group Captives)



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Cross Border Trading



Enhancing regional electricity trade in SAARC region is one of the main objectives

Nominated by the Govt. of India as “Nodal Agency” for exchange of power with Nepal and Bhutan

BHUTAN



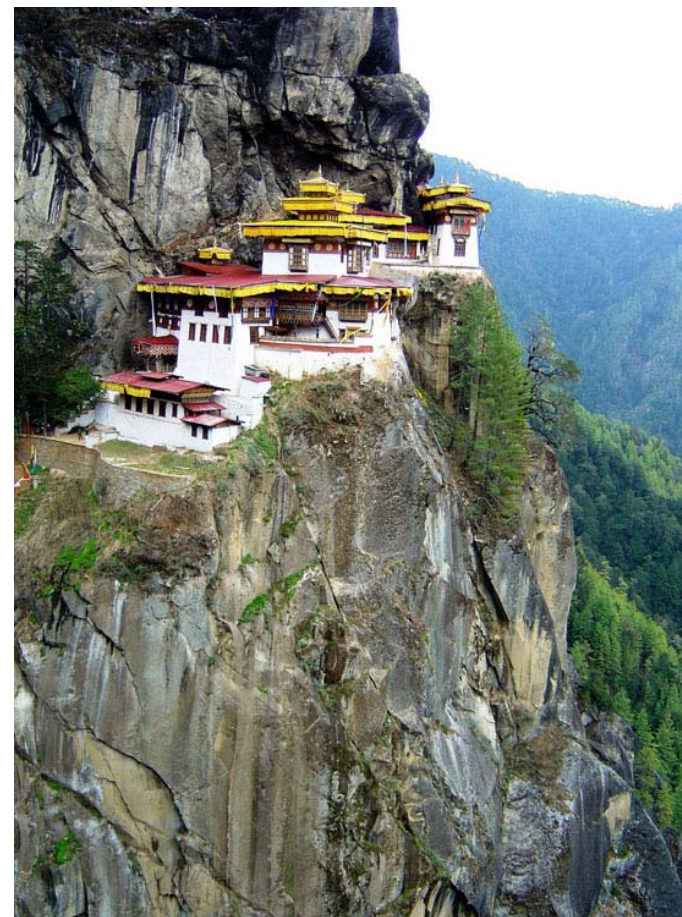
NEPAL



Cross Border Trading contd.

Bhutan

- Signed Long Term Agreements with Department of Energy, Bhutan
- Bilateral contractual agreement with tariff fixation
- Purchase of surplus power from
 - Chukha (336MW – 4X84MW)
 - Kurichhu (60MW – 4X15MW)
 - Tala (1020MW – 6X170MW)
- Total energy supplied by Bhutan in FY2008-09 was 5882MU (power sale to Eastern & Northern States of India)



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Cross Border Trading contd.



Nepal

- Bilateral Exchange of power between the two countries
- Tariff decided through the Indo-Nepal Power Exchange Committee
- Present exchange with Nepal is moderate
- PTC provides power to Nepal during shortage
FY2008-09 trade was 50MU
- PTC has initialized Long Term PPA for import of power from West Seti (750MW) hydro-electric project (under development)
- MOU with M/s. Braspower (JV between Nepalese & Brazilian company) signed and negotiations underway for PPA



Other Energy Cooperation Initiatives



India- Sri Lanka

- A submarine cable inter-connection is being planned by the two governments
 - HVDC – 500 MW capacity
 - Provisions for further enhancement of capacity

India- Bangladesh

- Transmission inter-connection under discussion
- Economic exchange of power

India – Pakistan

- Transmission Inter-connection
- Iran-Pakistan-India Gas pipeline

India –Myanmar

- Hydro project development
- Gas supply



WHAT NEXT ??

Prospects for Cooperation



- Development of energy infrastructure projects
 - *Private*
 - *Public-Private Partnership*
- Trading of power under
 - *Short Term, Medium Term and Long Term*
 - *A combination of above*
- Financing of energy infrastructure projects
 - *Equity*
 - *Debt syndication*
- Import of fuel : coal, gas, LNG
 - *Development of coal mines*
- Import of project equipments and construction materials
- Development of CDM and RE Projects



Indo-Bangladesh Prospects



- Export / Import of power between two countries
 - *Coal based thermal power station of adequate size (say 1000 MW) could be setup in India as an export project to meet base load requirements of Bangladesh*
 - *Bangladesh may conserve gas and supply during peak hours*
 - *Two countries could jointly develop hydro-electric projects in NER of India*
- Seasonal Diversity would act as a big factor for this power exchange
- Transmission system to be setup (depending on committed exchange) between the two countries with each party taking up the liability within its boundary
 - *No. of studies have been carried out but this would be the 1st major step*
- Funding arrangement to be discussed
- Exchange technical / commercial / legal / regulatory protocols
- Long term Government support & Public-Private initiatives essential

Way Ahead.....



- Power market in India has a positive outlook
- Power market is transforming the sector
 - *Competition*
 - *Efficiency Gains*
 - *Investment*
- A fledgling, nascent market – needs to be nurtured, expanded
- Power market can help in enhanced Indo-Bangladesh energy cooperation

“ Power trading share is 3% of India’s total energy generated – but its indirect impact on the power sector is several times bigger ”



THE RIPPLE EFFECT

THANK YOU

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