

# **Wartsila Operations & Opportunities in India**

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MD, Wartsila India  
9Nov, 2011  
Mumbai**

1. India macro economics & linkage to Wartsila business
2. Wartsila operations in India
3. Wartsila opportunities

# India Macro Economics & Linkage to Wartsila Business

*80% of India is yet to be built*

**Integration &  
Execution**



**Technology**

**Rising Political will  
Reforms / UID**

**Sustainability**

**Growth**

**Deficit**

**Globalization**

**Rising Aspirations**

**Billion+ People  
With 35% saving rate**

**Urbanization**

# The Game Changers in Current Decade

## The 1<sup>st</sup> Game Changer – **Savings Rate**

- Consistent Saving Rate of 33 - 35% of GDP witnesses quantum changes in physical infrastructure
- With inclusion of Foreign Investment ... 38% of GDP
- Changes in this decade will be transformational

## The 2<sup>nd</sup> Game Changer – **Productivity Gains**

- Incremental capital output ratio (ICOR) in India is 4.1 – with average investment rate of 38%, GDP Growth of 9% is feasible
- With ICOR improving to 3.5 – growth rate would increase to 10%
- Private Sector has increased their investment from 38% to 60% in the last 8 years & PPP model getting popular
- Government taking efficiency enhancing measures, eg. UID, e-governance, etc.

# The Game Changers in Current Decade (contd)

## The 3<sup>rd</sup> Game Changer – **Increased Spending by Government**

- GST to bring in additional income in the Government kitty
- Economic activity to boost spending of additional USD 800bn

## The 4<sup>th</sup> Game Changer – **Evolution of Consumer Demographics**

Current estimates . . . Urbanization moving from 29% to 39%

Today:

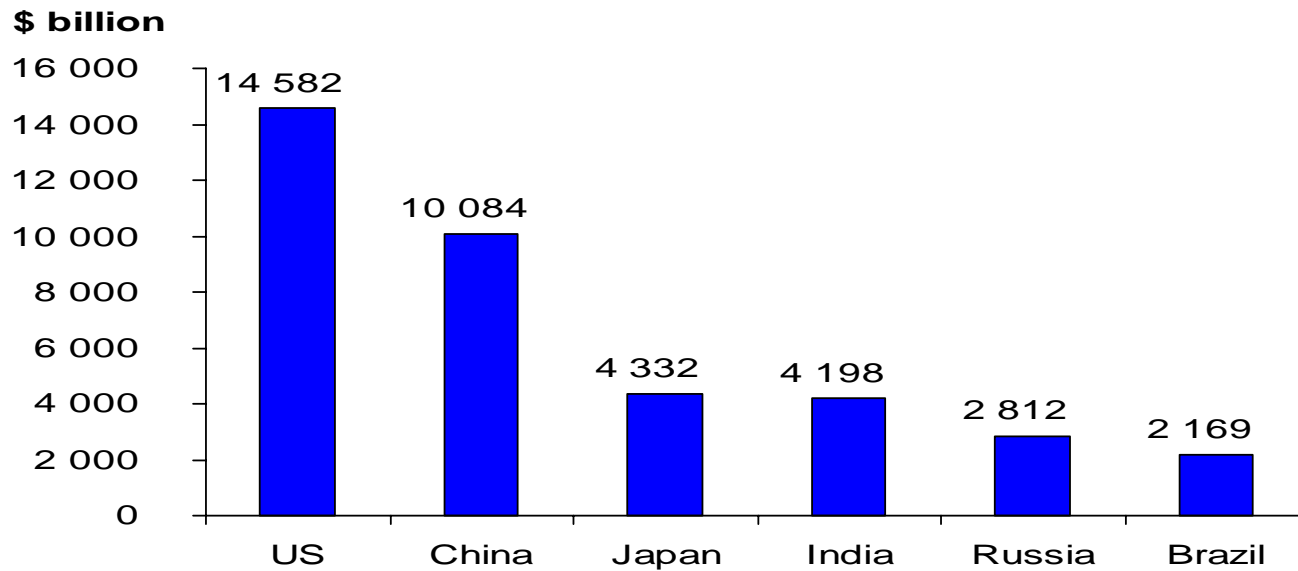
- “Have Alls” of 5m households earn USD50,000p.a.
- “Have Lots” of 22m households earn USD 18,000p.a.

10 years hence:

- “Have Alls” of 12m households earn USD80,000p.a.
- “Have Lots” of 44m households earn USD 36,000p.a.
- Strength of Consumption wave and risks on balance will remain on the upside

# India: A Large Economy

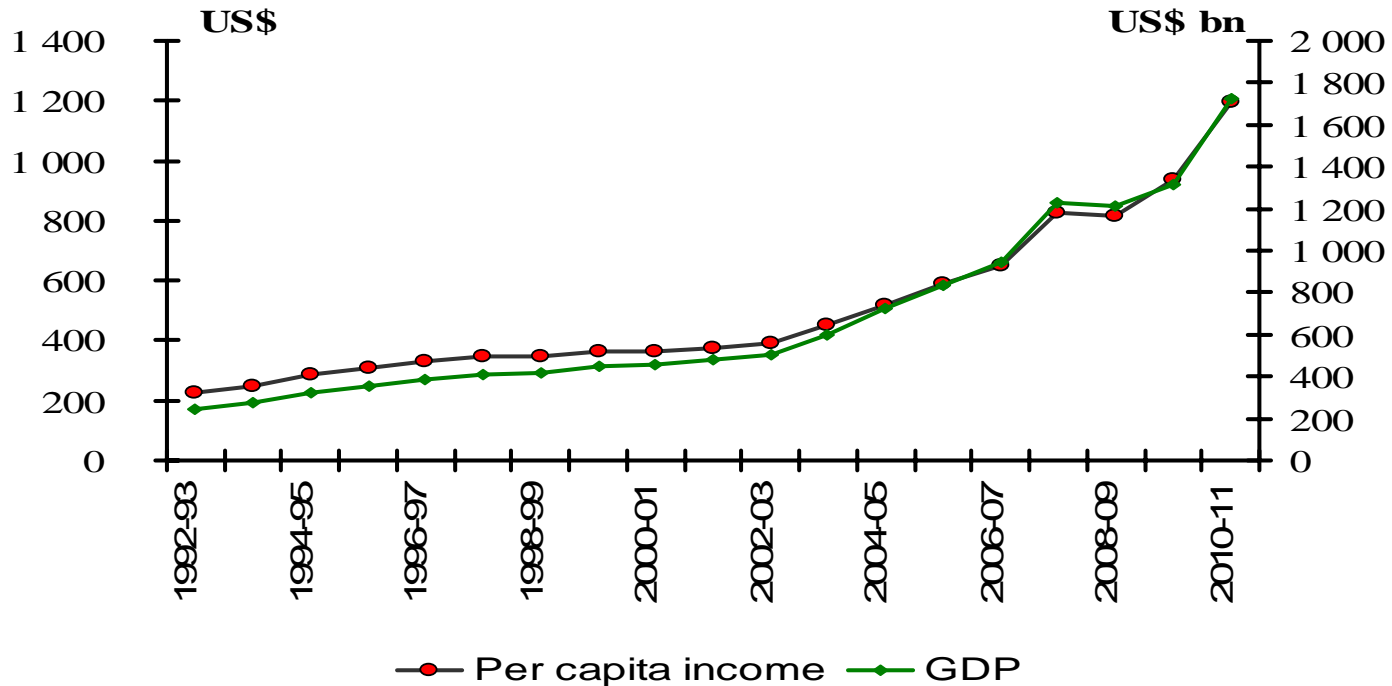
## GDP at purchasing power parity (2010)



**India is the fourth largest economy in terms of Purchasing Power Parity.**

Source: CII/World Bank

# India: A Rapidly Growing Economy



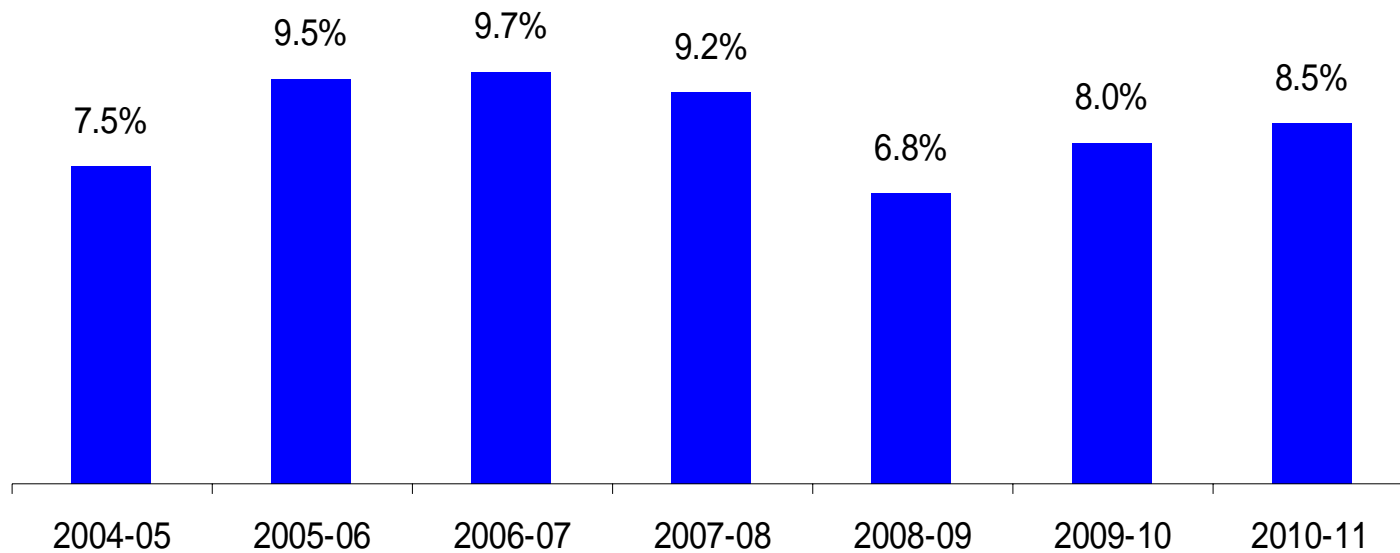
- **India's GDP has increased rapidly over the past 15 years from \$250 billion to over US\$ 1.3 trillion currently**

Source: CII/National Accounts



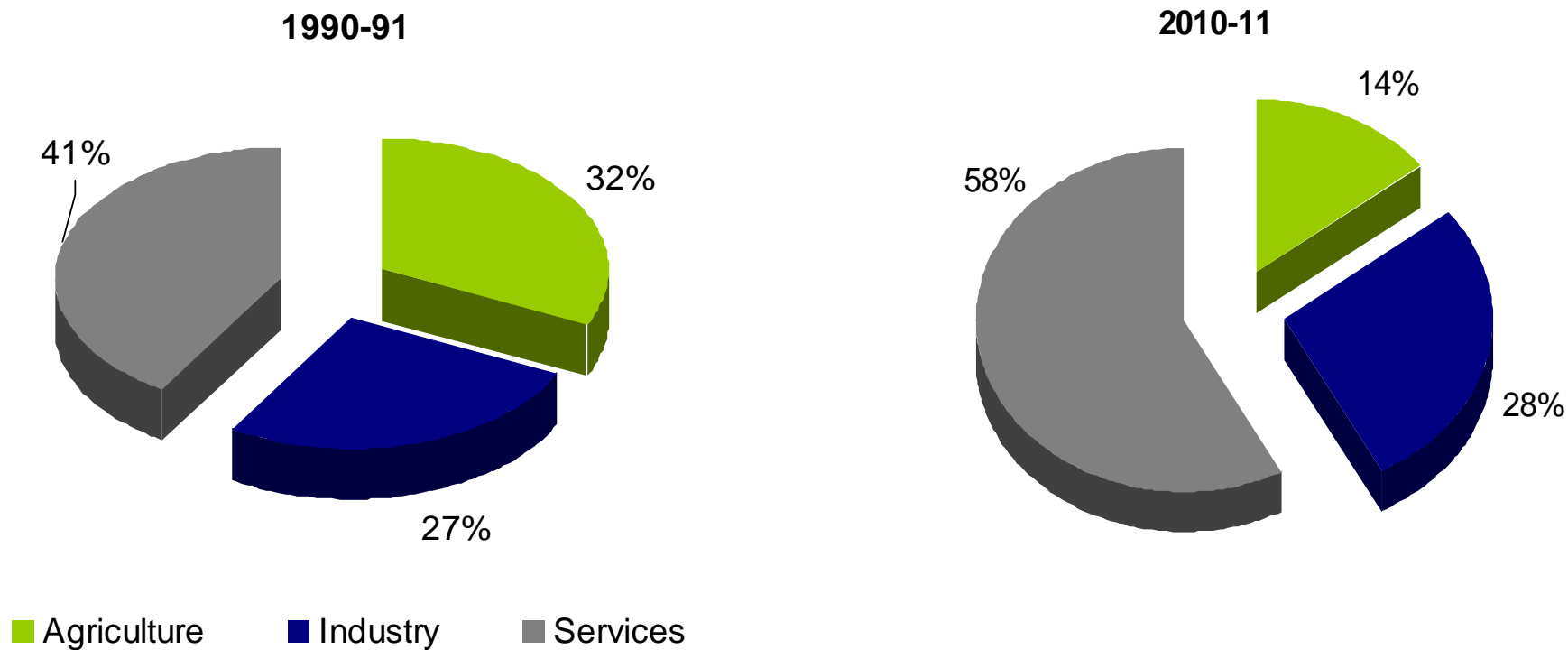
# Strong Growth in the Last Few Years

## GDP Growth (%)



# GDP Composition is Undergoing Change

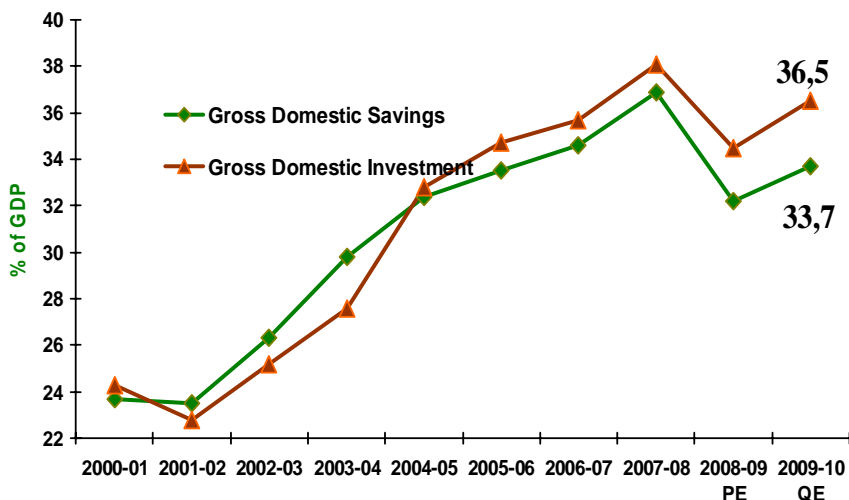
## GDP Composition: 1990-91 versus 2010-11



Source: CII/National Accounts

# Domestic Savings Fuelling Investments

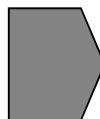
Savings and Investments



Savings Breakup: Households, public and private sector (% GDP)

Year	Household savings	Public sector	Private corporate sector
2004-05	23.6	2.3	6.6
2005-06	23.5	2.4	7.5
2006-07	23.2	3.6	7.9
2007-08	22.5	5.0	9.4
2008-09 PE	23.8	0.5	7.9
2009-10 QE	23.5	2.1	8.1

Recent decline in savings to GDP ratio has been due to lower savings by the public sector on account of the fiscal stimulus



**India's dependence on foreign savings for financing domestic investments is limited**

Source: CII/National Accounts

# Growing middle class

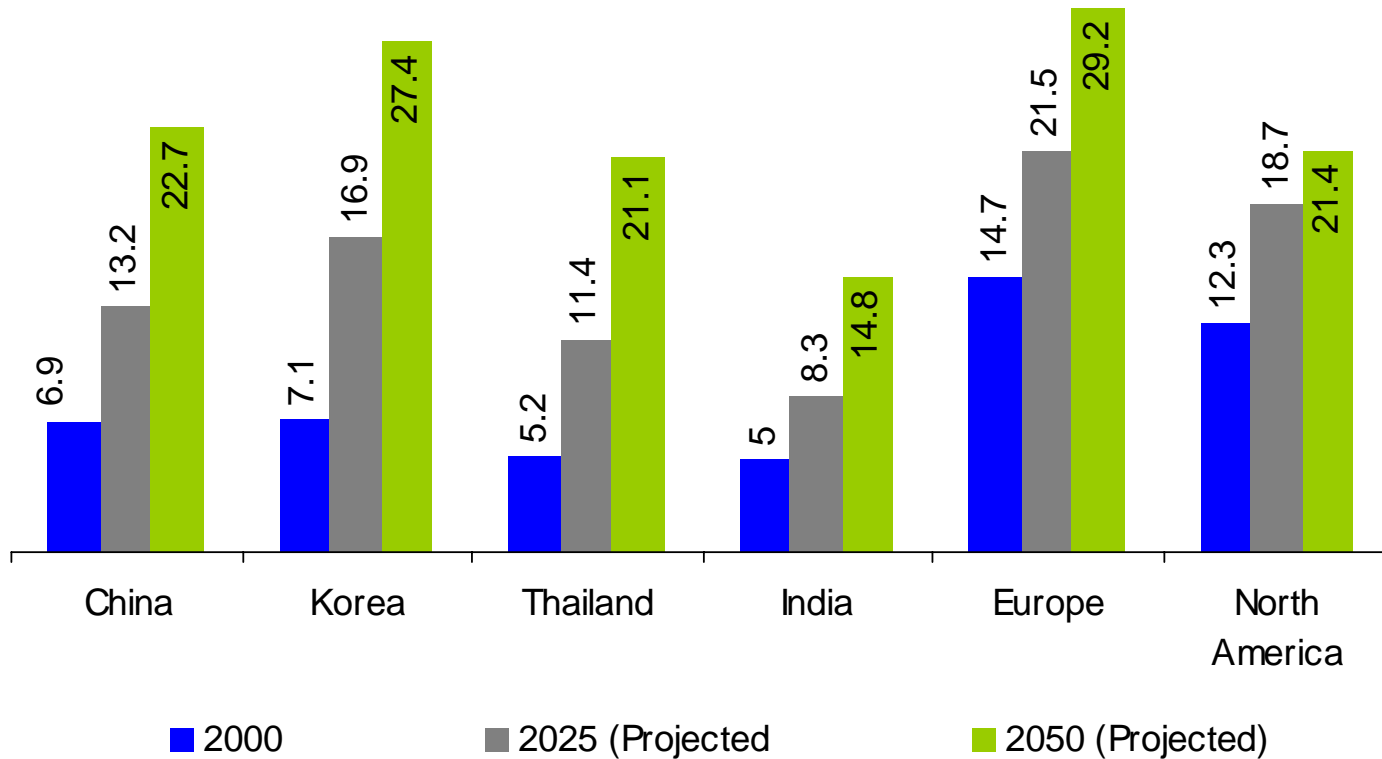
## Number of Households (In million)

Year	The Poor	Middle Class	The Rich
Annual household income (Rs.)	< 200,000	200,000 – 1,000,000	> 1,000,000
1995	160.1	4.6	0.3
2005	192.4	13.3	1.2
2015	180.1	60.6	3.3
2025	143.0	128.0	9.5

Source: National Council for Applied Economic Research/ McKinsey Global Institute

# Favourable Demographics

**India's Biggest Advantage: One of the youngest populations in the world**  
**Percentage of population aged 65 and older**

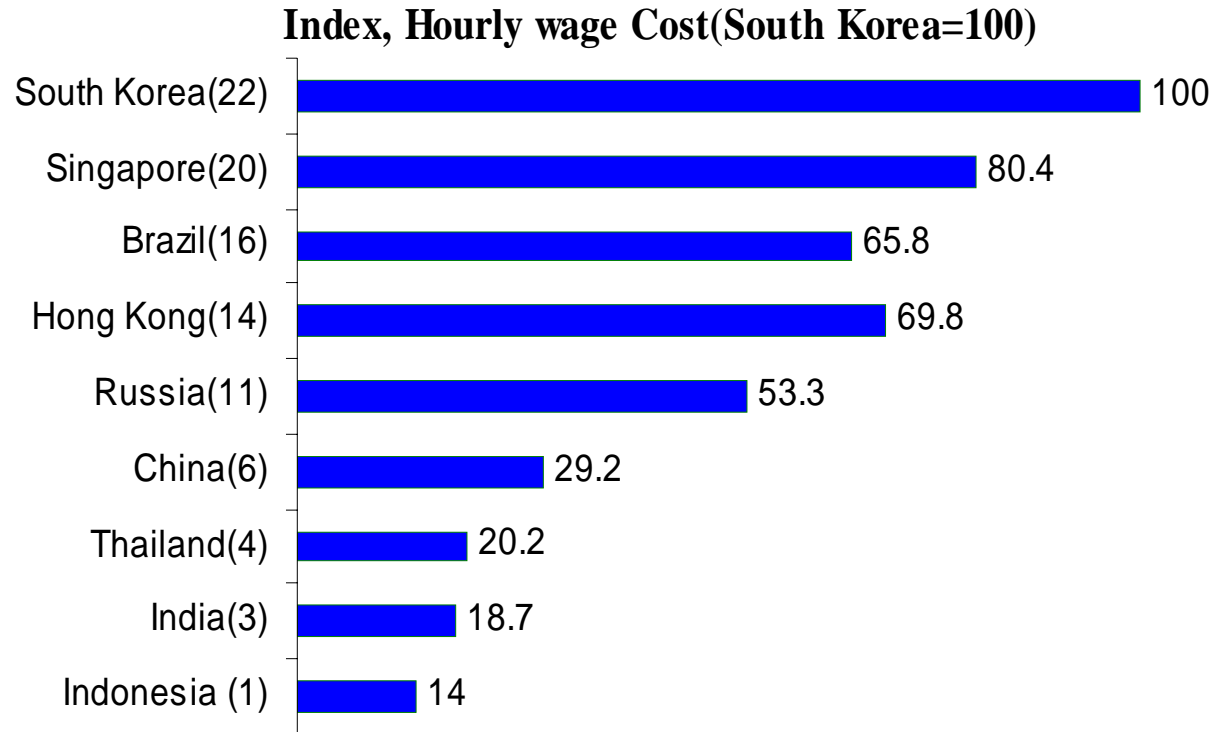


Source: United Nations, 2008

# Labour Cost

Wage index is based on labour cost data (collected by UBS) for 14 widespread professions in major agglomerations. Index values are weighted by the share of each occupation in overall employment.

India has a significant advantage in terms of labour cost



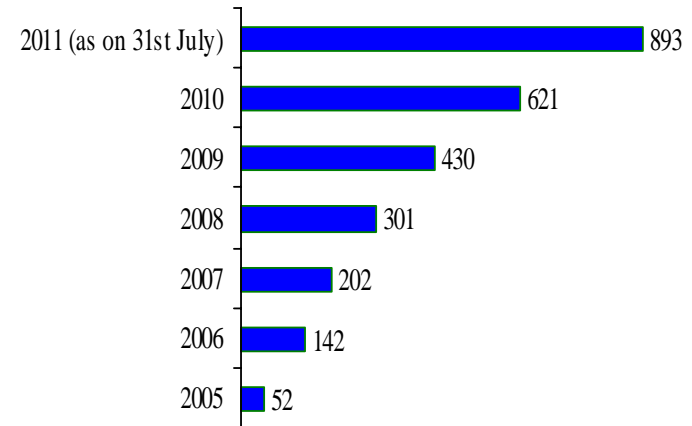
\* Ranks in ()

Source: [www.global-production.org](http://www.global-production.org)

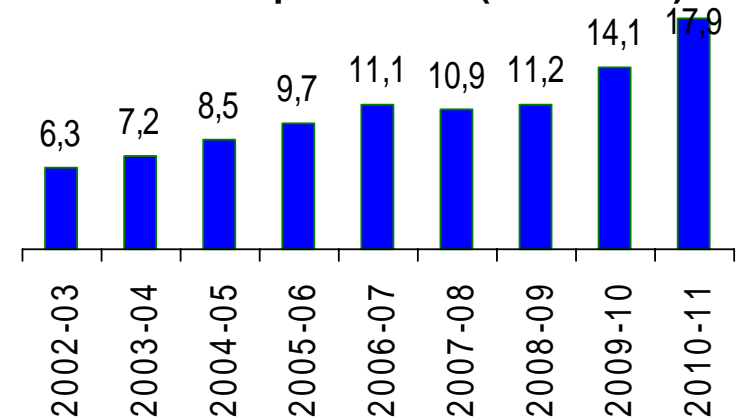
# The Domestic Market is Growing

- **Higher disposable income, easy availability of credit and high exposure to media and brands has increased the average propensity to consume**
- **India has a mobile subscriber base of over 800 million and is currently adding around 8-10 million subscribers every month; about 50% penetration is expected by 2012**
- **Automobile production now exceeds 15 million units per annum including passenger vehicles, commercial vehicles, two- and three-wheelers**

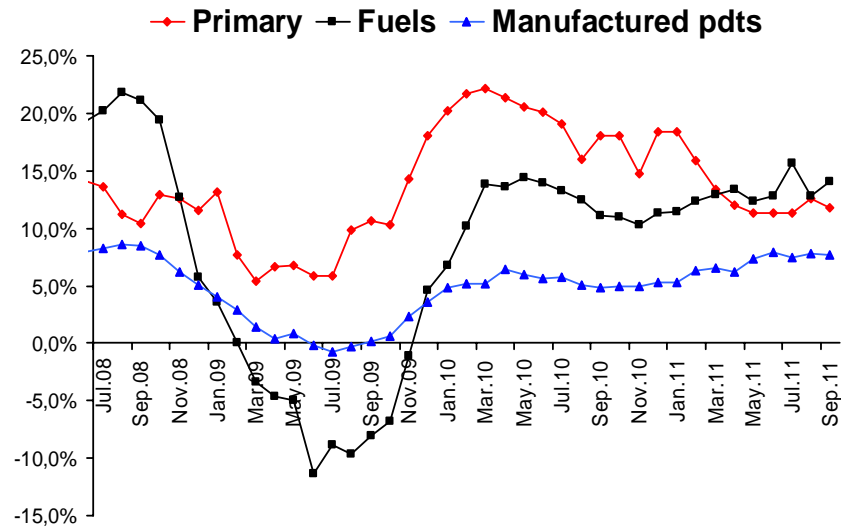
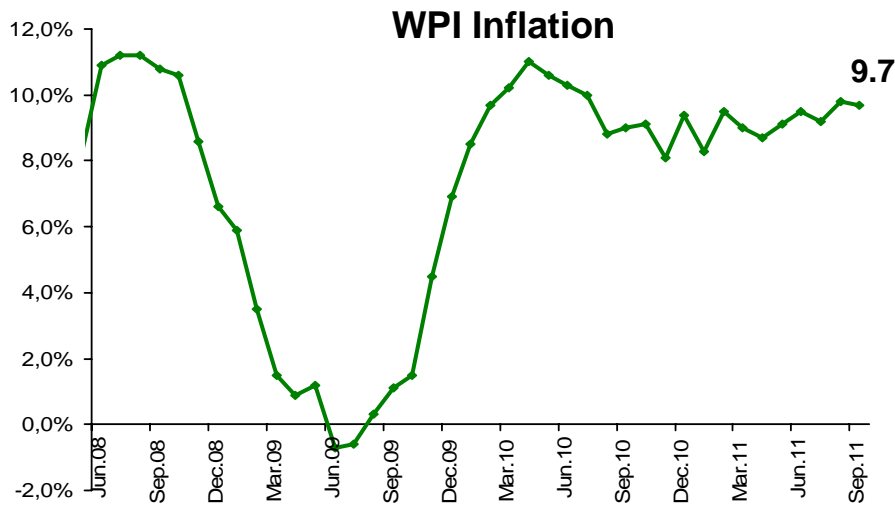
**Telecom subscriber base (in millions)**



**Automobile production (in millions)**



# Inflation has been High



Source: Office of Economic Advisor

- Inflation continues to show an upward trend and stands at 9.7% for September 2011, slightly lower than August 2011.
- Food inflation though moderated a bit yet a cause of concern. Supply side bottlenecks are responsible for still high level of food inflation
- RBI has been tightening monetary policy in order to prevent inflationary expectations from hardening.

Source: CII





# Tightening Monetary policy

## Change in Policy Rates of RBI

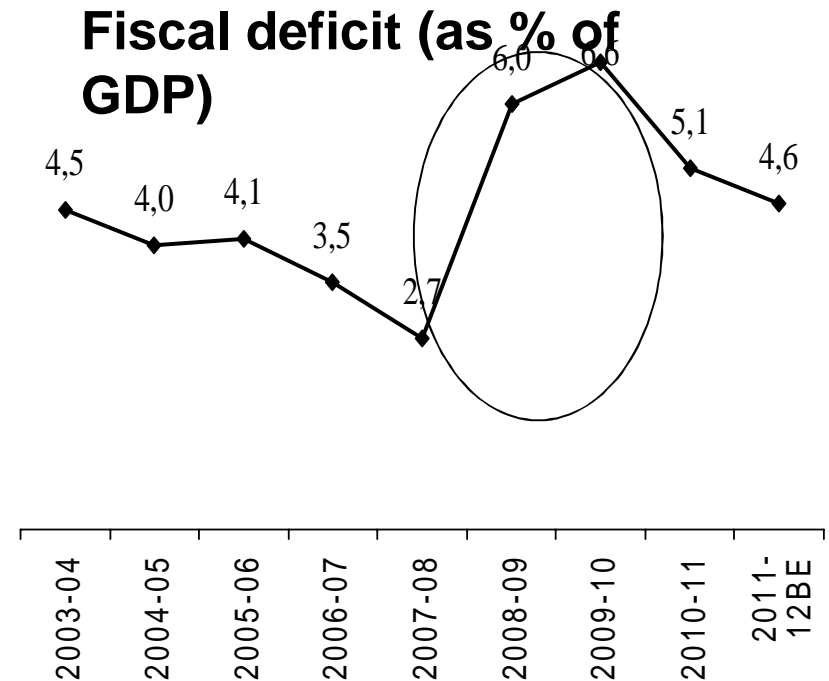
Effective Dates	Repo rate	Reverse Repo rate	CRR
<b>4-Mar-09</b>	<b>5.00</b>	<b>3.50</b>	<b>5.00</b>
<b>21-Apr-09</b>	<b>4.75</b>	<b>3.25</b>	<b>5.00</b>
<b>29-Jan-10</b>	<b>4.75</b>	<b>3.25</b>	<b>5.75</b>
19-Mar-10	5.00	3.50	5.75
20-Apr-10	5.25	3.75	6.00
24-Apr-10	5.50	4.00	6.00
27-Jul-10	5.75	4.50	6.00
16-Sep-10	6.00	5.00	6.00
2-Nov-10	6.25	5.25	6.00
25-Jan-11	6.50	5.50	6.00
17-Mar-11	6.75	5.75	6.00
3-May-11	7.25	6.25	6.00
16-June-11	7.50	6.50	6.00
26-July-11	8.00	7.00	6.00
16-Sep-11	8.25	7.25	6.00
25-Oct-11	8.50	7.50	6.00

Source: CII

- RBI has increased its reserve repo rate and the repo rate several times since March 2010, in order to tame unsustainably high inflation.
- Banks were not affected by the crisis as they are adequately capitalized and do not have any exposure to US mortgage related assets
- Banks have so far been able to protect their margins by raising interest rates on both deposits and loans. But the broader slowdown in the economy may have an impact on banks' profitability.

# Fiscal Stimulus is being Reversed Gradually

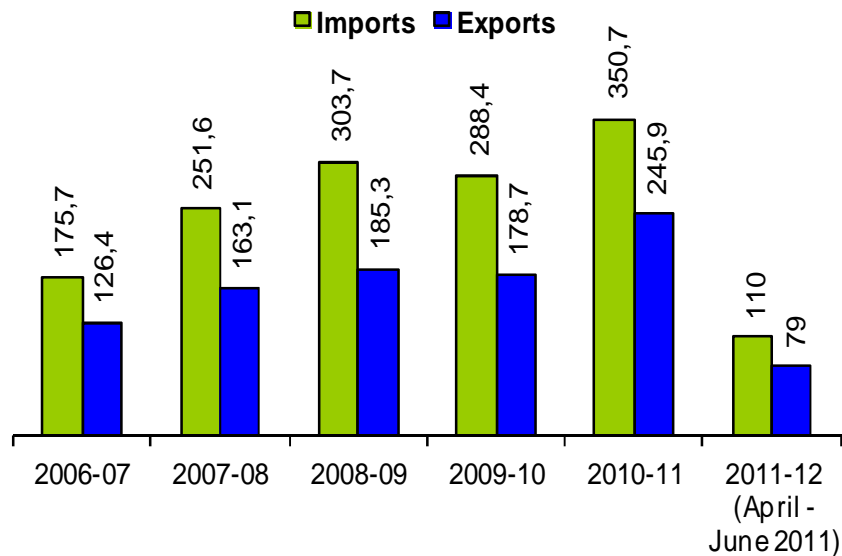
- Fiscal Deficit for 2010-11 stood at 5.1%, lower than the Budget 2010 estimate of 5.5%.
- Budget 2011 has projected a decline in the deficit to 4.6% of GDP in 2011-12.
- Fiscal Deficit to be progressively reduced to 3.5% by 2013-14.
- However, subsidies on account of high fuel prices may cause a problem



Source: CII

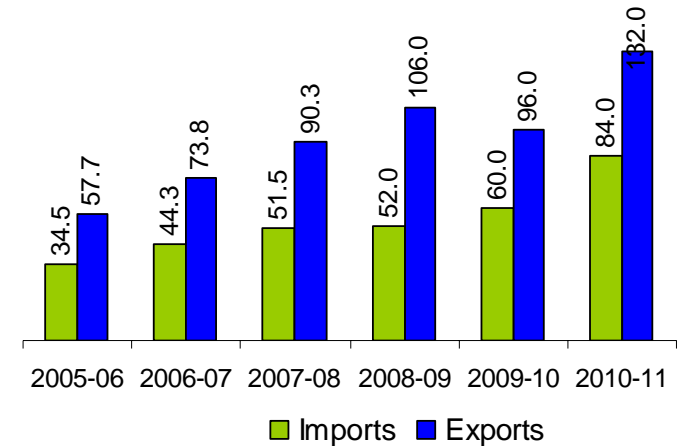
# Rising Importance in Global Trade

Exports and Imports of Merchandise (US \$ Billion)



- Both imports and exports contracted in 2009-10 in the aftermath of the global recession.
- However, India recorded a robust growth of 37.6% in exports in 2010-11.
- India's trade deficit in 2010-11 moderated slightly due to robust growth in exports.

Exports and Imports of Services (US \$ Billion)

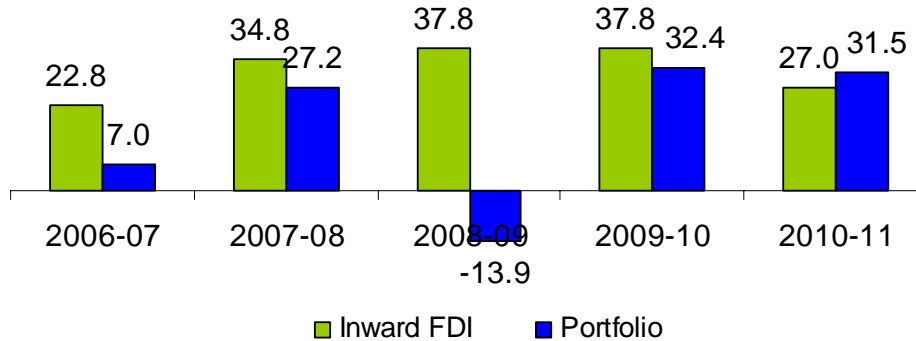


- Export of services has expanded rapidly at a CAGR of 17% in the last five years
- India runs a surplus in its services trade as opposed to a deficit in goods trade

Source: CII

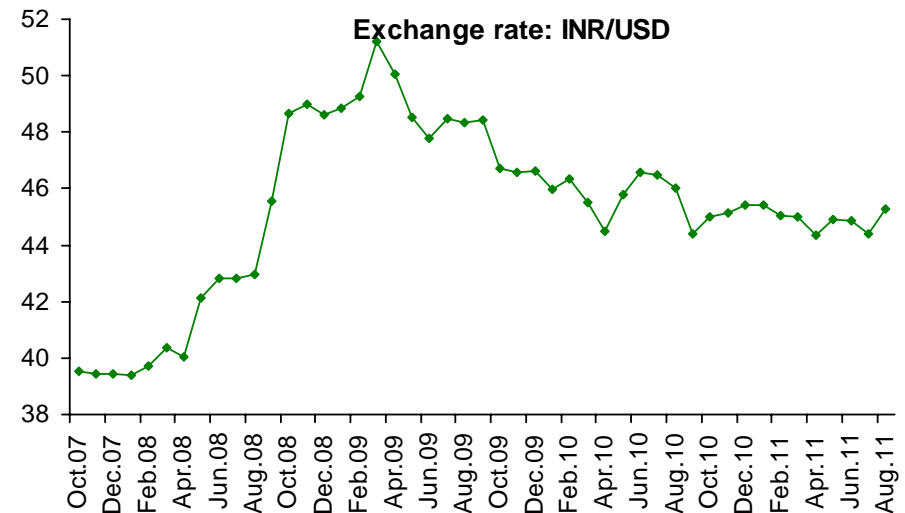
# Capital Inflows remain Strong

FDI and Portfolio Inflows (US \$ Billion)



- Both FDI as well as portfolio inflows moderated in 2010-11. While FDI has recovered, portfolio inflows remain volatile in the current year.

- The currency has tended to depreciate recently on account of India's current account deficit and the impact of global crises on capital inflows into emerging markets
- The rupee has traded in a band of around Rs 44-46 against the USD



Source: CII

# Wartsila in India

# This is Wärtsilä

SHIP  
POWER

POWER  
PLANTS

SERVICES

# We live by our Mission, Vision, and Values

## Mission

- We provide lifecycle power solutions to enhance the business of our customers, while creating better technologies that benefit both the customers and the environment.

## Vision

- We will be the most valued business partner of all our customers.

## Values

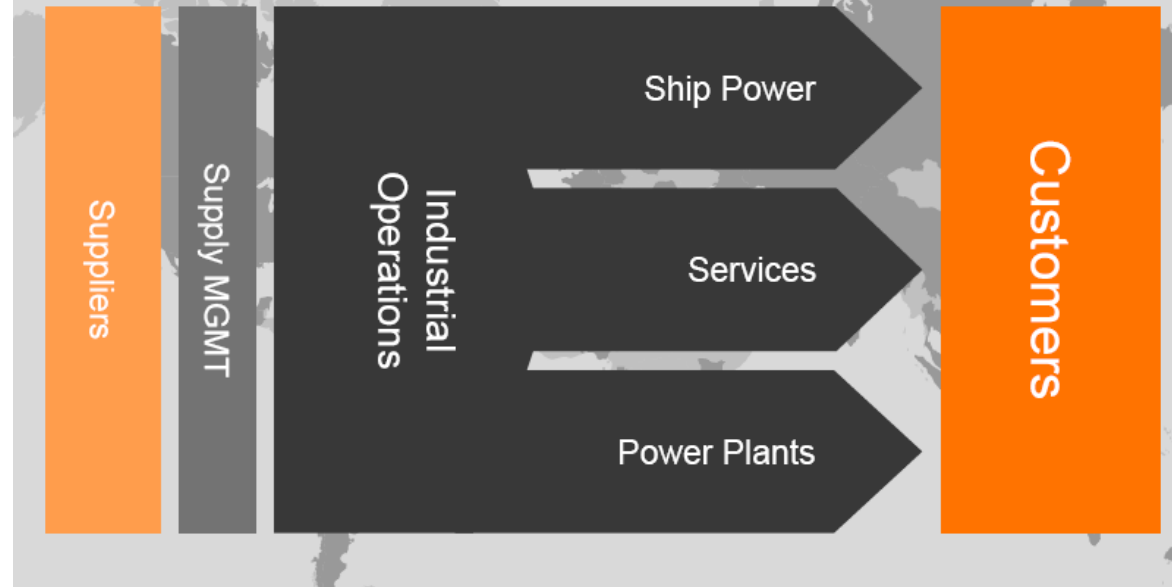
- Energy – Capture opportunities and make things happen
- Excellence – Do things better than anyone else in our industry
- Excitement – Foster openness, respect and trust to create excitement

# Wartsila Milestones in India

- **FIRST ENGINE SUPPLIED BY WÄRTSILÄ DIESEL IN INDIA** 1983
- **INCORPORATION OF THE COMPANY** 1986
- **ASSEMBLY FACTORY SET UP AT KHOPOLI** 1989
- **ISSUE OF SHARES TO PUBLIC** 1989
- **500 MW FROM KHOPOLI** 1999
- **FIRST IPP SIGNED** 1999
- **100 ENGINES UNDER O&M AGREEMENT IN INDIA** 2003
- **EOU UNIT AT KHOPOLI FOR MANUFACTURING GEAR BOXES** 2005
- **LARGEST GAS POWER PLANT 100MW SET UP IN TAMIL NADU** 2005
- **O&M OF STG PLANT** 2005
- **3000 MW DELIVERED IN INDIA** 2006
- **WARTSILA INDIA DELISTED FROM STOCK EXCHANGES** 2007
- **O&M OF WIND PLANTS** 2008
- **DRY DOCKING FACILITY AT PARADIP PORT** 2008
- **WORKSHOPS IN KHOPOLI & VISAKHAPATNAM** 2009



# Wärtsilä in India



**No of Employees: 1187**

**No. of Power Plants: 250**

**No of O&M Plants: 54 Power Plants, 1430MW**

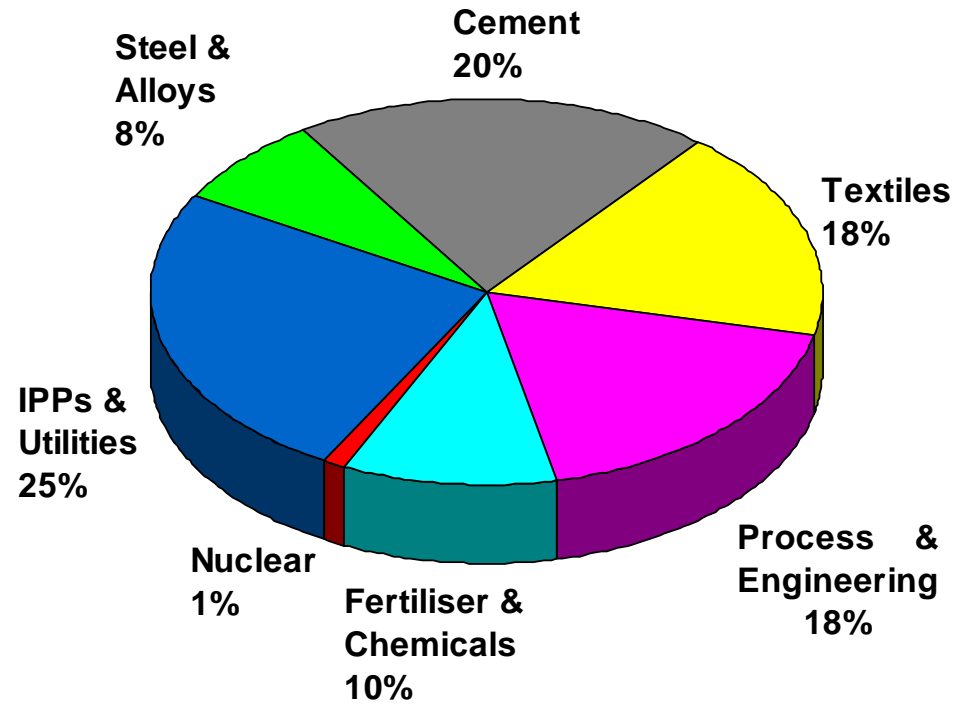
**Total MWs: 3500 Power Plants  
1500 Ship Power**

**WÄRTSILÄ IS A WELL RECOGNISED BRAND IN INDIA**

# Offices in India

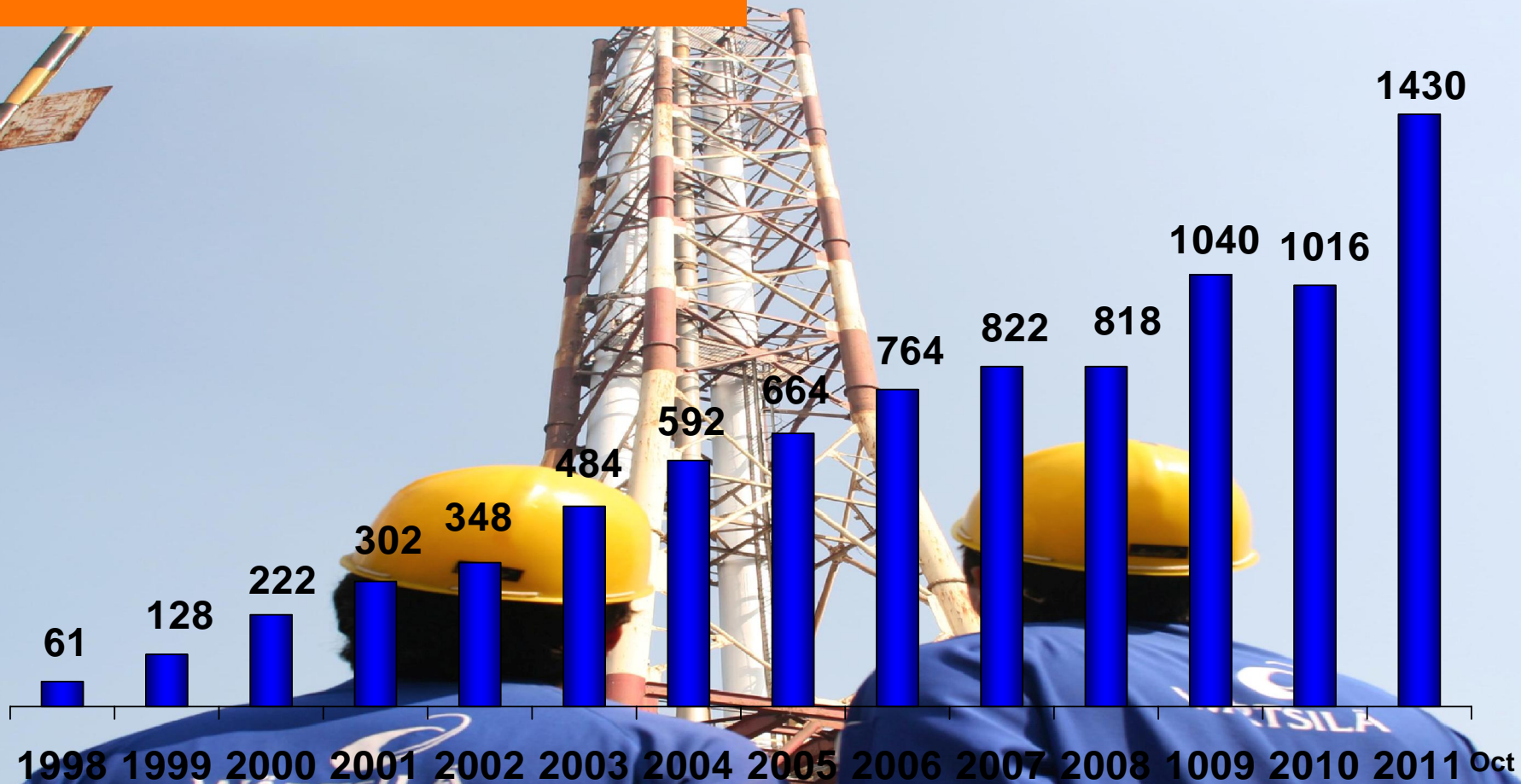


# Power Plants MW in India



**2011(Oct): 3500 MW**

# MWs under O&M in India



# Delivery Centre India - Khopoli

## Manufacturing:

- Auxiliary Manufacturing
- Machine Shop
- Special projects for Navy

## Services Workshop

- Reconditioning Activity
- Ship Repair Unit (SRU)

## Wartsila Land & Sea Academy



# Wartsila Business Opportunities in India

# Wärtsilä Ship Power

Wärtsilä enhances the business of its customers by providing integrated systems, solutions, and products that are efficient, economically sound, and environmentally sustainable.

Being a truly global organisation with an extensive network, we have the ability to create and supply solutions and large systems, supported by a broad product portfolio.

# India : Maritime Sector



13 major ports, 182 minor / intermediately ports spread over 7212 km coastline

4 large and 28 small and medium sized shipbuilding yards



# Indian Ship Building - Overview

- Indian shipbuilding industry accounts for 1.5% of the global shipbuilding industry
- Shipbuilding in India is quite fragmented. Though there are more than 32 shipyards of various sizes, commercial shipbuilding is controlled primarily by 8 shipyards
- The Industry is not known for volume production; Order books of shipyards varies from small interceptor boats to Warships to large vessels like Tankers and Bulkers
- At present, Indian Shipyards have an order book in the region of € 4.3 billion. Approximately, € 3 billion are export orders, while approx. € 1.3 billion is for domestic shipping companies

# Indian Government Maritime Agenda: 2010 - 2020

Total investment USD 36 billion. Major investment areas include:

- Creating port capacity of 3,200 MT to handle traffic of 2,500 MT per year. Improve port performance on par with best in the world.
- Increase India's share in global ship building to 5% and 10% in ship repairing
- Human resource development in shipping
- Introduction of new Shipbuilding Subsidy Scheme
- Grant of Infrastructure sector status and Strategic sector status to shipbuilding industry
- Shipping Policy: Increase Indian tonnage through necessary policy interventions
- Declaration of new coastal policy
- Setting up of a Maritime Finance Corporation
- Setting up ship repair units/ maintenance hubs in all major ports
- Promote use of inland waterways for cargo movement

## POLICY INITIATIVES

**INSA (Indian National ship owners Association)** has approached government to give Owner's Interest Subvention Facility to replace aging ships.

- Reservation of coastal shipping for Indian flagged ships only
- Restoration of the Cargo Support Policy for ships registered in India, under which ships registered in India will be given the first right of refusal for cargo movement of companies
- Possible exemption from Service Tax for coastal shipping following a proposal by Ministry of Shipping to Ministry of Finance



We provide superior value to our customers with our flexible, efficient and environmentally advanced energy solutions, which enable a transition to a more sustainable and modern energy infrastructure.

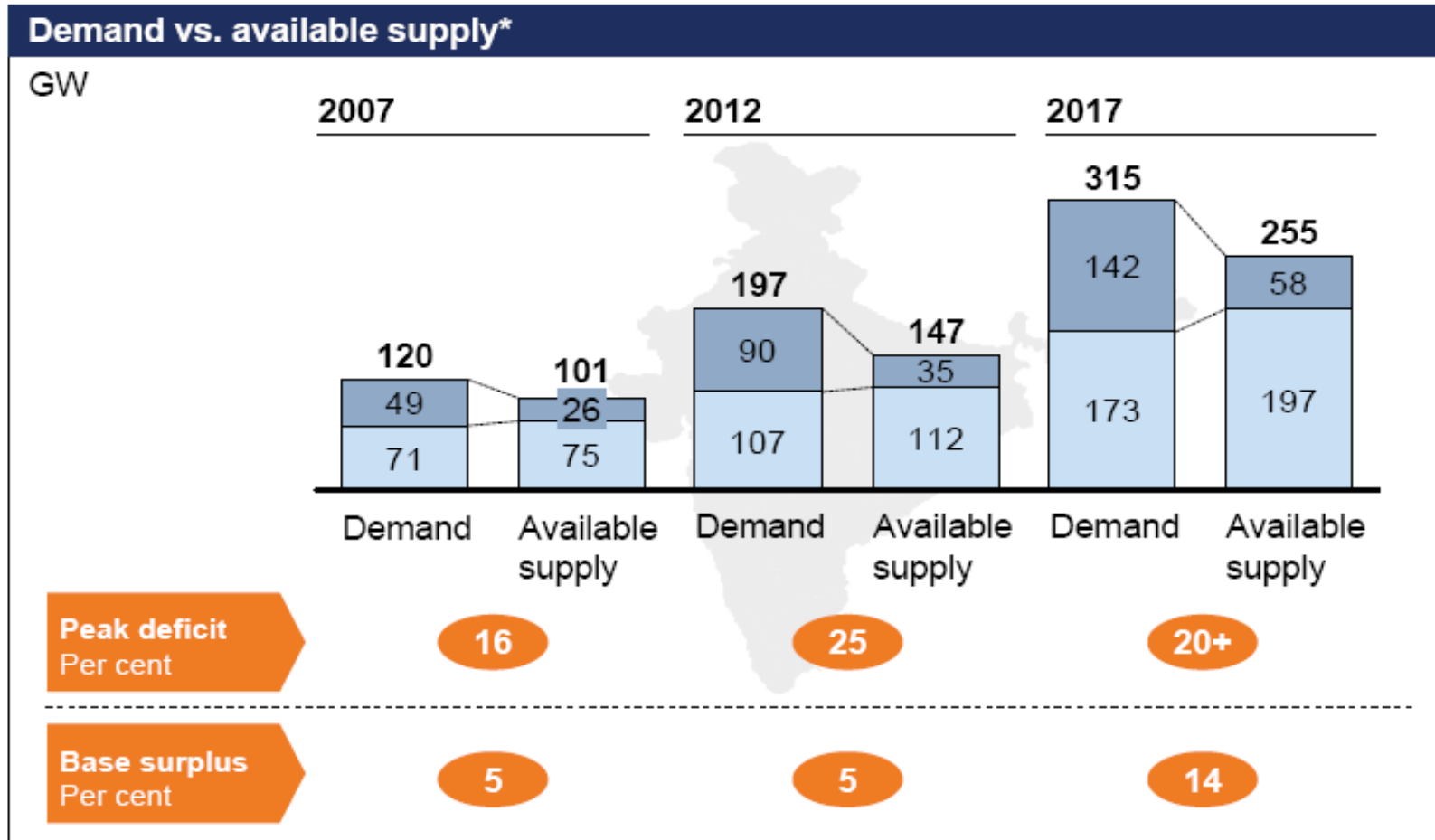
# Power Sector . . . the context

- Energy shortage
- No 24x7 obligation
- Growth aspiration is high!
- Only base load & renewable tariff regime
- Subsidies & poor discom's financial health
- Fuel challenges
- Huge deficit between plan & delivery
- Power sector sliding down

# Peak Demand is an Issue

PEAK DEFICIT OF ABOUT 70 GW LIKELY BY 2017

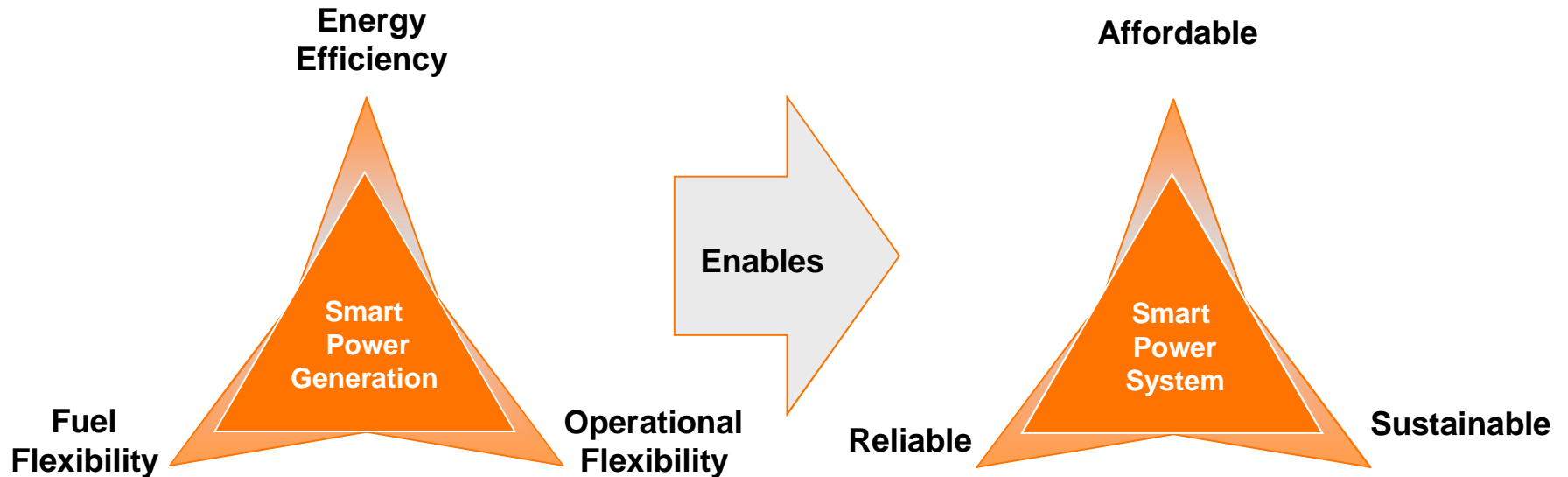
■ Peaking ■ Base



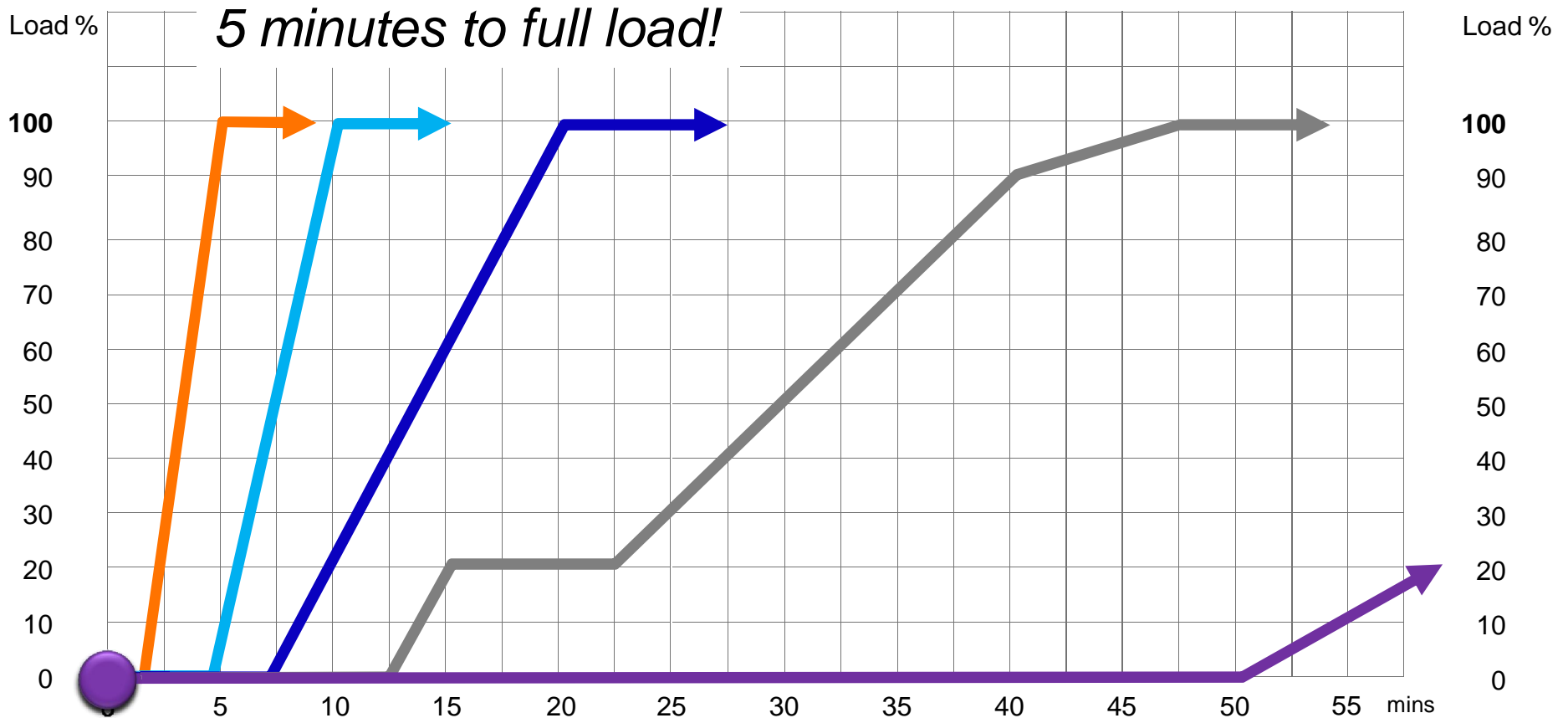
\* Including captive

Source: Planning Commission; McKinsey analysis – Integrated Revenue Model (IRM)

Enables transition to Affordable, Reliable and Sustainable energy infrastructure.



# Fast Flexible Gas Plants – operational flexibility



— Coal Fired power plant

— Combined Cycle power plant (GTCC)

— Industrial GT power plant (GTSC)

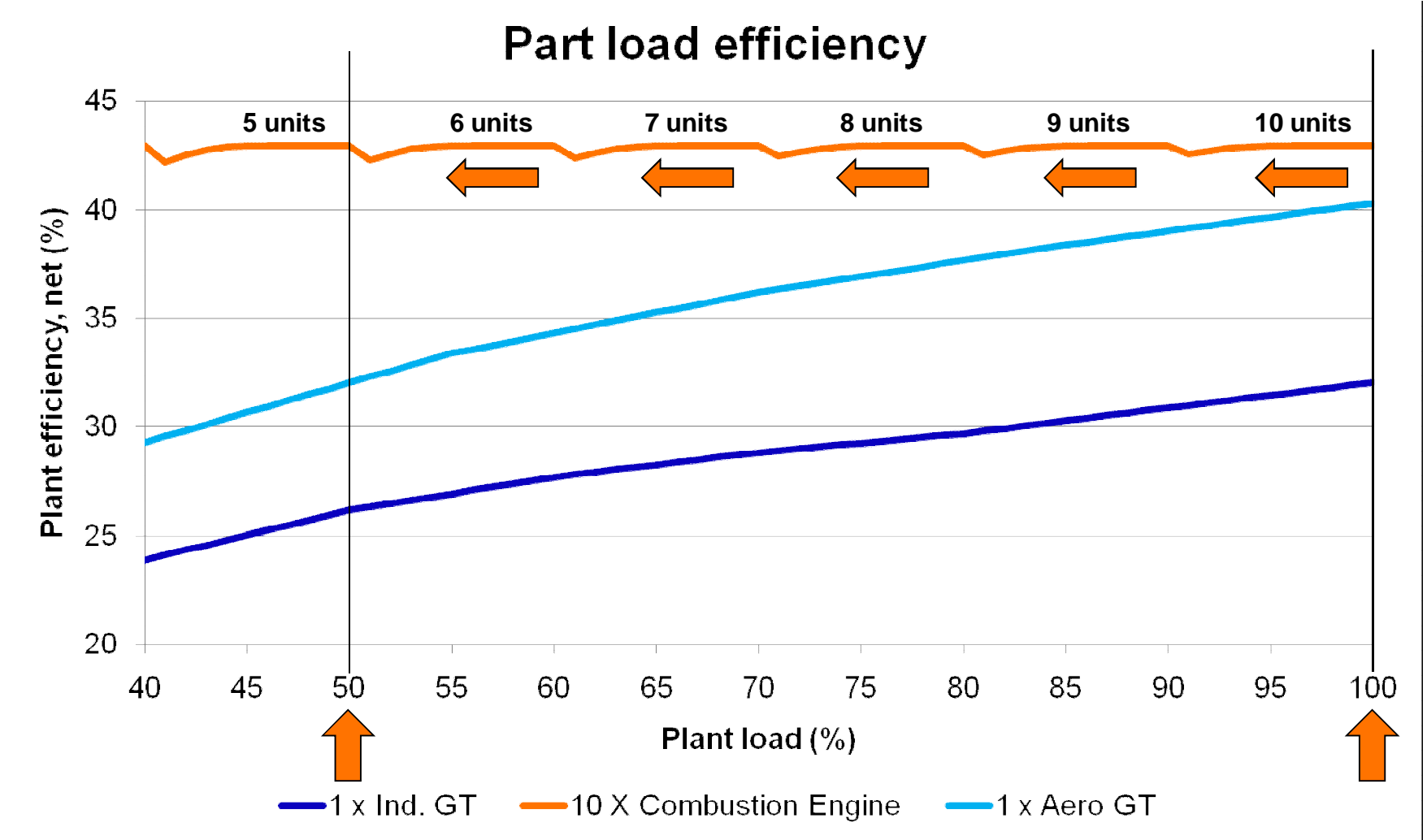
— Aeroderivative GT power plant (GTSC)

— Combustion Engine power plant

Note: Start up times from warm stand-by!

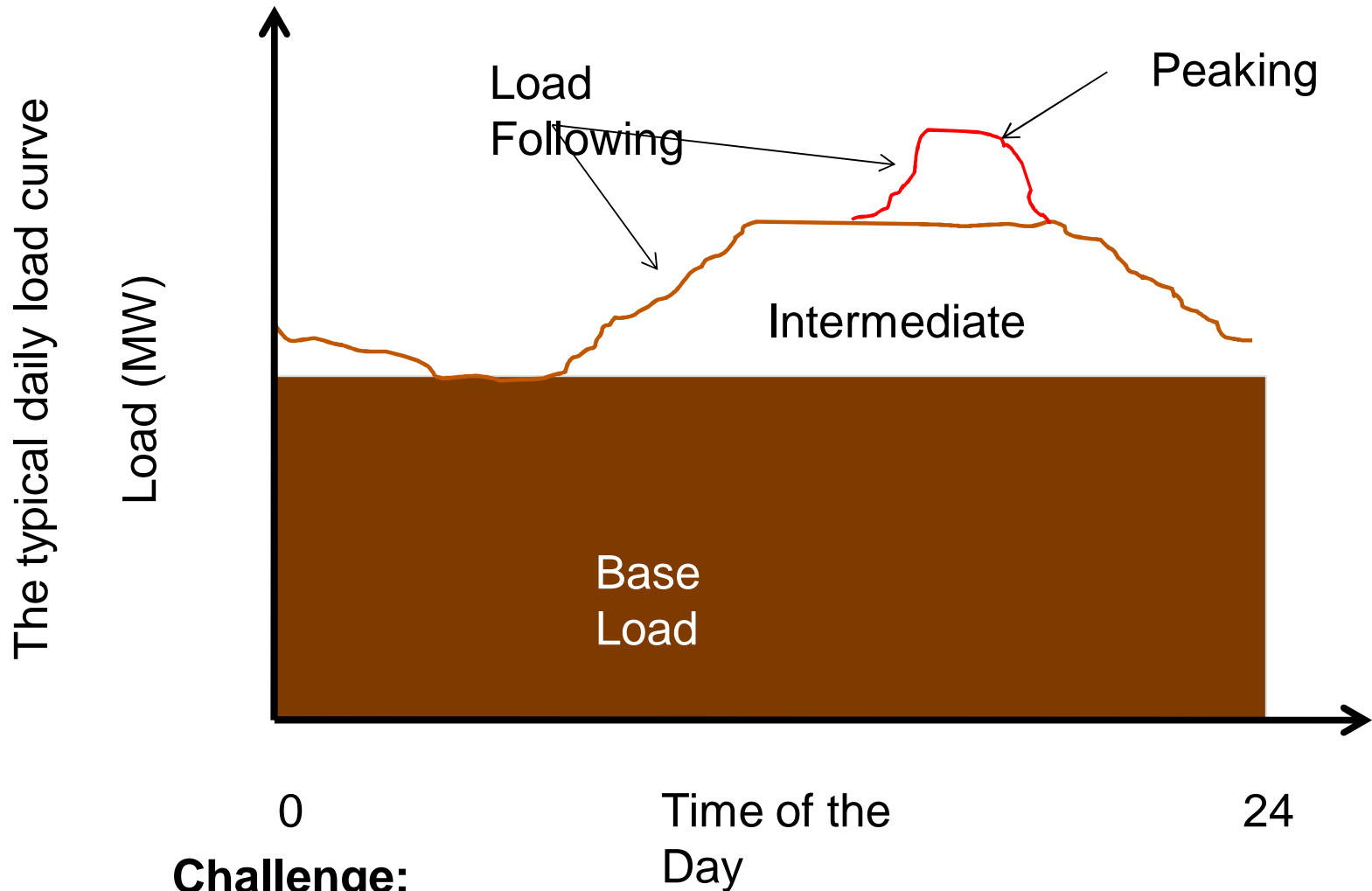


# Smart Power Generation – operational flexibility



GT performances by GTPro  
15 °C, 10 bar NG

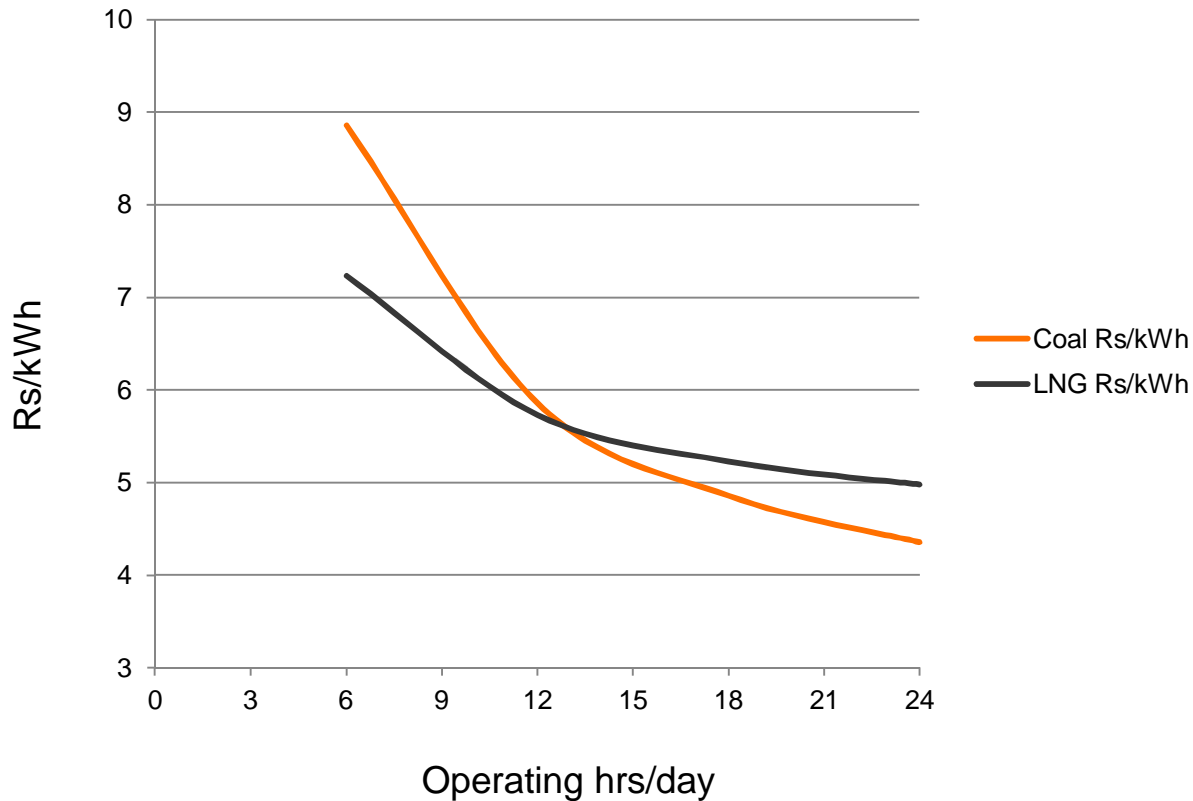
# How to Handle Black-outs Efficiently



## Challenge:

Building adequate generating capacity and the right technology with load following capability to match the demand curve.

# Coal vs. LNG Fast Flexible Plants – the Paradigm Shift



Gas based fast flexible plants would be cheaper than imported coal plants for intermediate and peaking applications.

Coal tariff is calculated at full load. If efficiency loss due to lower load is factored the gap will further widen in favor of fast flexible gas plants

Provides a solution for major issues confronting the Power Sector:

1. Environment
2. Wind & Solar power integration
3. Coal & Natural Gas availability
4. Land acquisition & water crisis
5. T&D Losses
6. Transmission bottleneck
7. Time to the market for capacity addition
8. Load shedding

*Study by IIT Delhi*

Detail study on

# Optimal Power Generation Mix for India

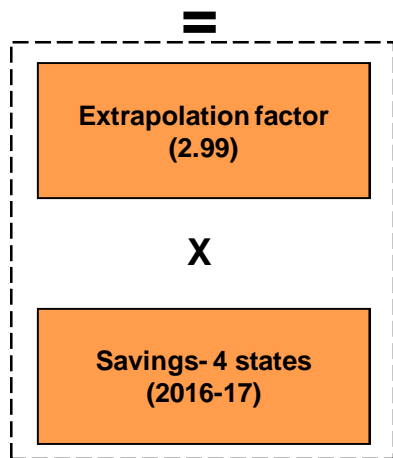
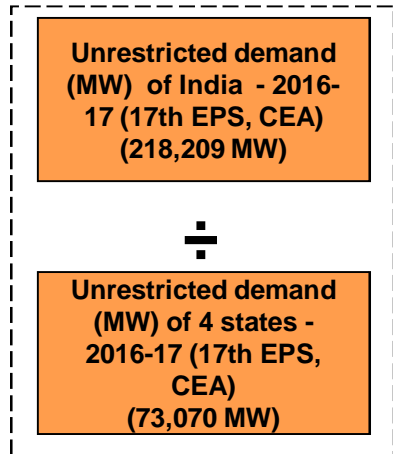


Centre for Energy Studies  
Indian Institute of Technology Delhi  
April, 2011

Prof. R. Balasubramanian  
NTPC Chair Professor

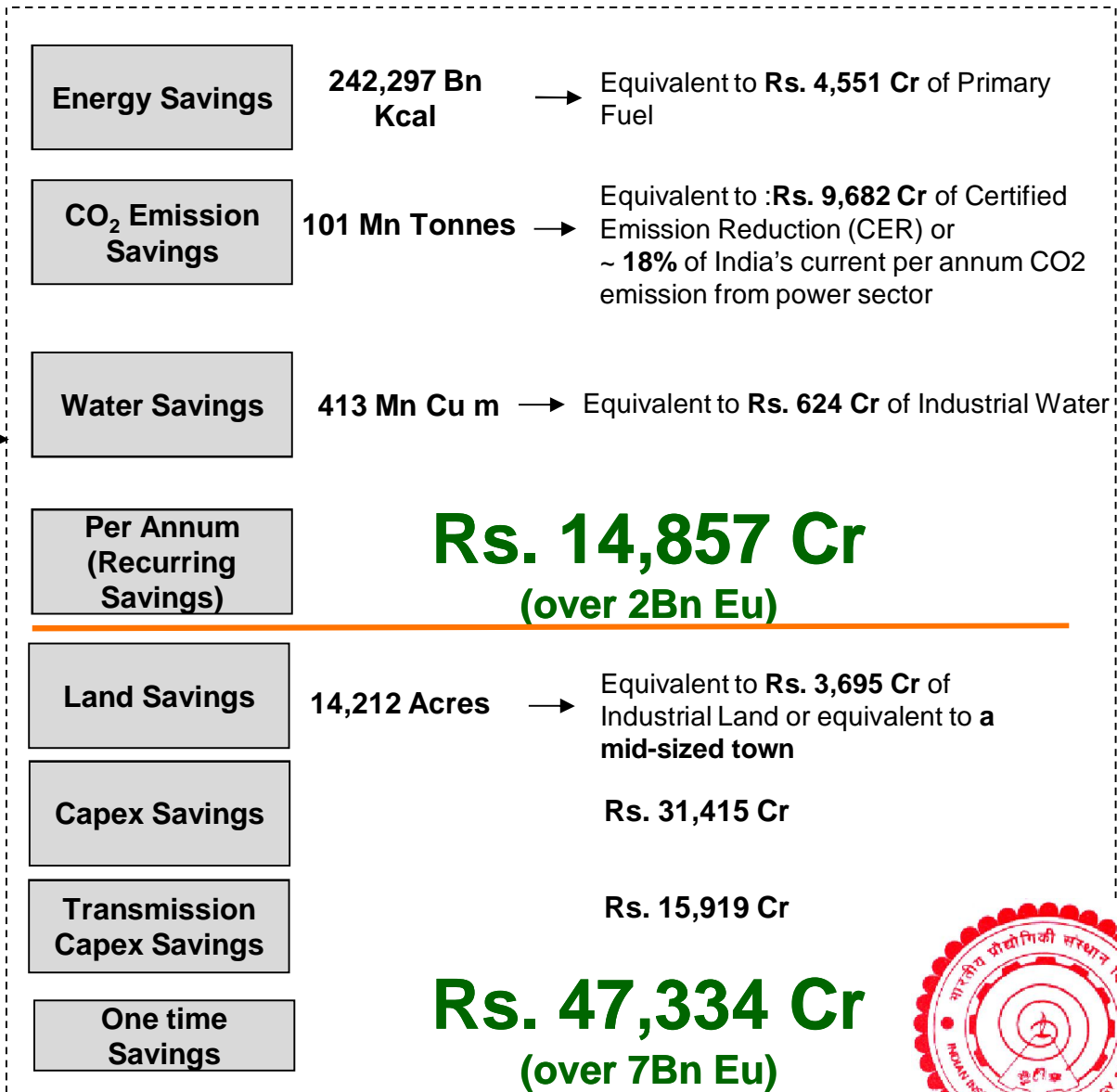


# Economic Value Add: Smart Power Generation



Savings-India (2016-17)

AP, Karnataka, Maharashtra & Punjab



# WHY Smart Power Generation?

## 1. Environment

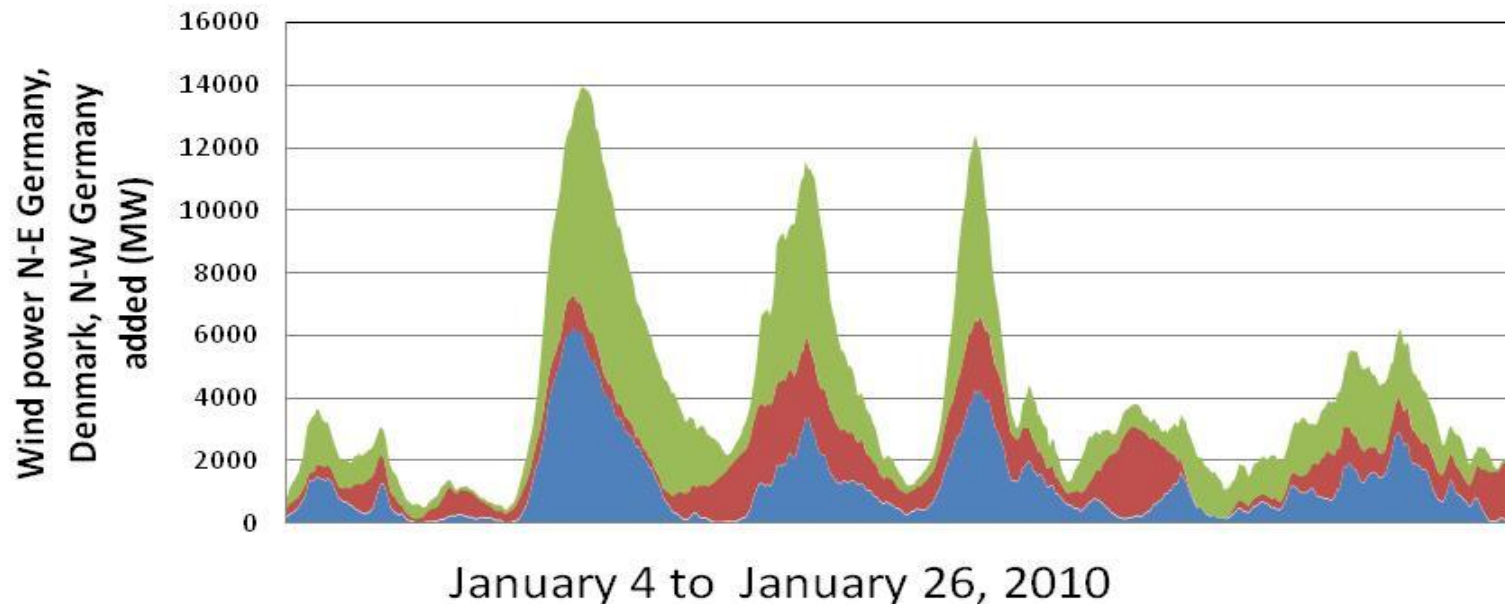
- Optimization of power generation mix with Base Load & Peak Load generation plants (30GW gas based distributed power plants)
- CO<sub>2</sub> savings of ~100MnT/yr by end of 12<sup>th</sup> 5 year plan: Almost 10% reduction, valued at ~ Rs 9,700 Cr
- 100MnT CO<sub>2</sub> savings/yr =
  - > 82,000MW of Solar
  - or,
  - > 20,000MW of Solar +
  - > 37,000MW of Windgeneration capacity, valued at over Rs 500,000Cr capital



# WHY Smart Power Generation?

## 2. Wind & Solar power integration in the Grid

- Large mix of wind & solar brings instability in the grid
- This needs quick response plants to balance





# WHY Smart Power Generation?

## 3. Coal & Natural Gas availability:

- Brings 6,9% efficiency in over all fuel mix of the country = reduces coal availability problem
- Reduce the expensive gas requirement to one fourth by utilizing the same in Peak Load management plants
- Saves Rs 4,500 Cr in primary fuel cost



## 4. Land Acquisition & Water Crisis

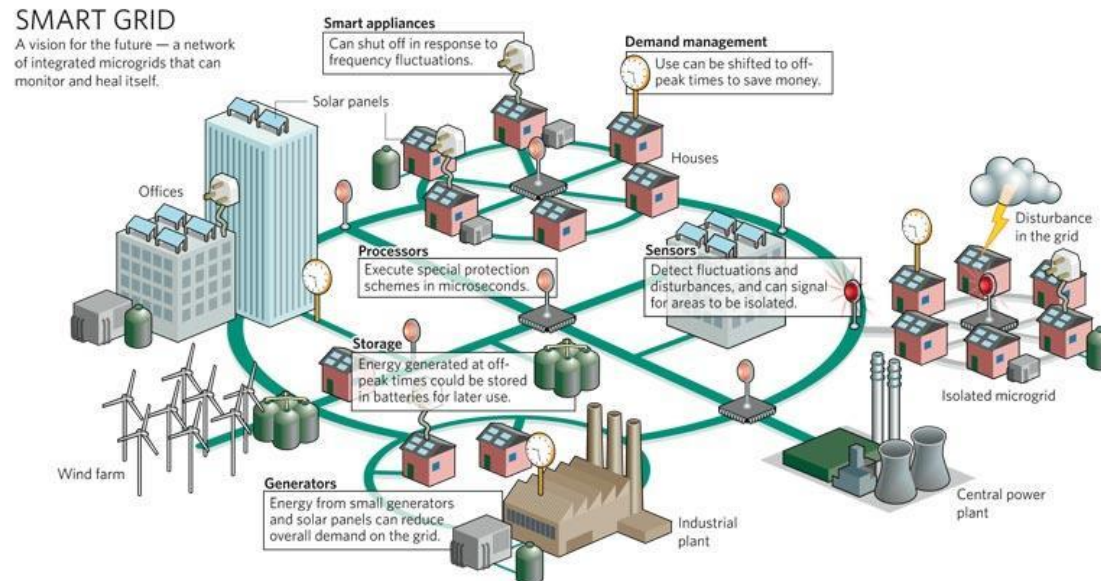
- With smaller foot print, potential to save >24000 acres of land
  - Valued at > Rs 6000 Cr
- Negligible water consumption, saves 410MnCu Mn water (equivalent to the annual need of a city like Mumbai)
  - Valued at > Rs 625Cr



# WHY Smart Power Generation?

## 5. T&D Losses

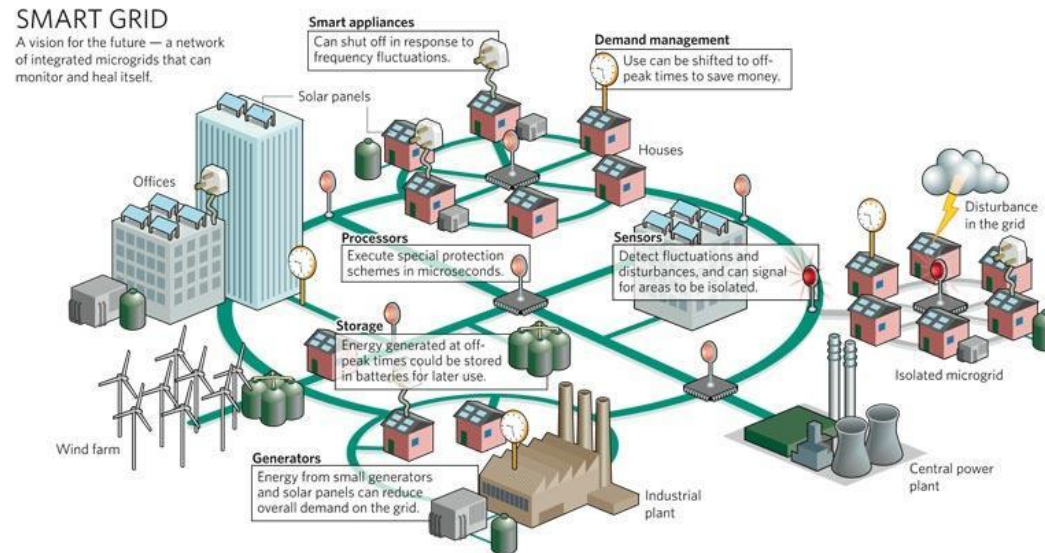
- Local generation for the peak demand at load centers & local consumption
- ~0,25% savings of total energy consumption
- Valued at Rs 675 Cr



# WHY Smart Power Generation?

## 6. Transmission bottleneck

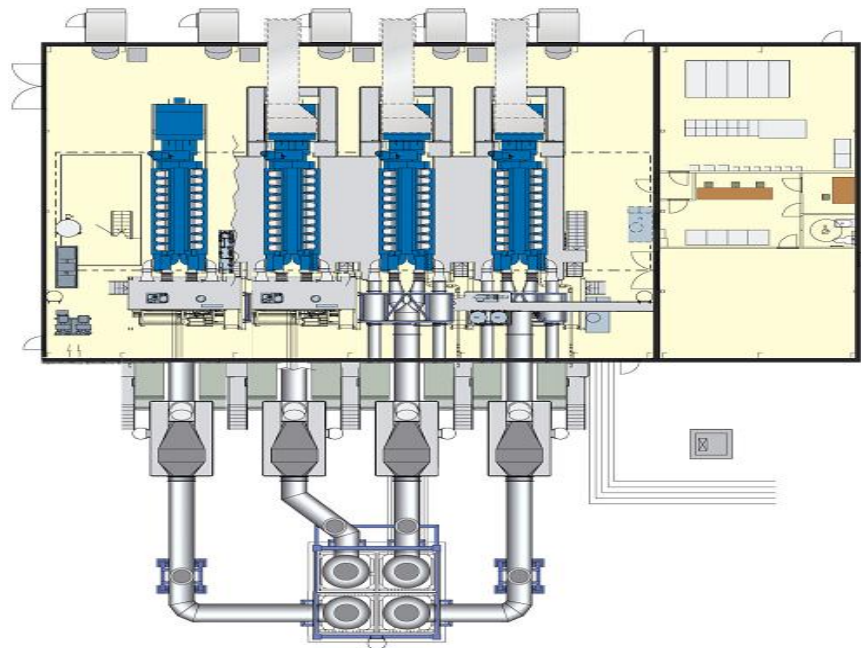
- Local generation for the peak demand at load centers & local consumption
- Releases >20% of the transmission capacity
- Valued at Rs. 15,900Cr



# WHY Smart Power Generation?

## 7. Time to the market for capacity addition

- Modular structure
- 12 – 15mths power out from financial close
- Quicker financial close



# WHY Smart Power Generation?

## 8. Load shedding

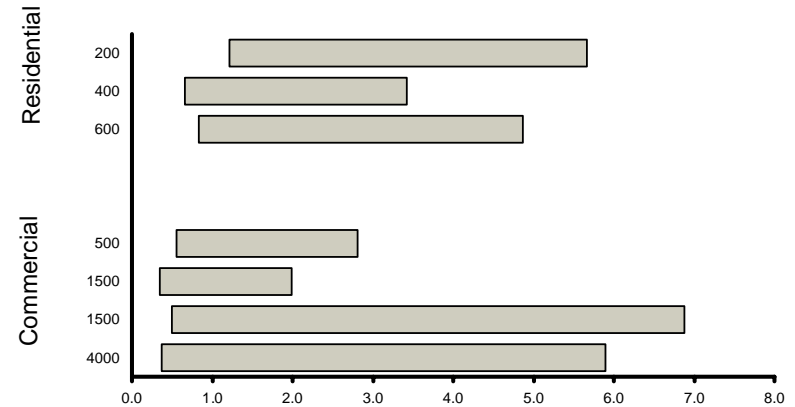
The survey (2009) - How do consumers cope & the price?

21 cities across India & 1500 respondents



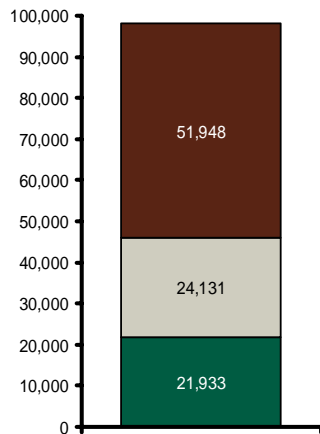
VOLL for the country: 289,000cr  
or 6% of GDP

The “coping” costs for consumers



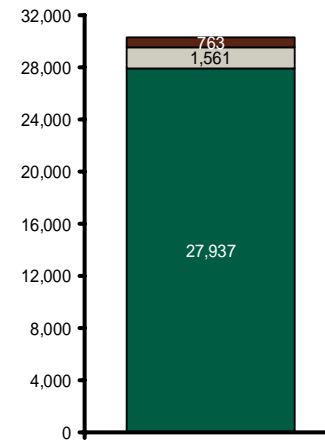
The investment

100,000 cr invested

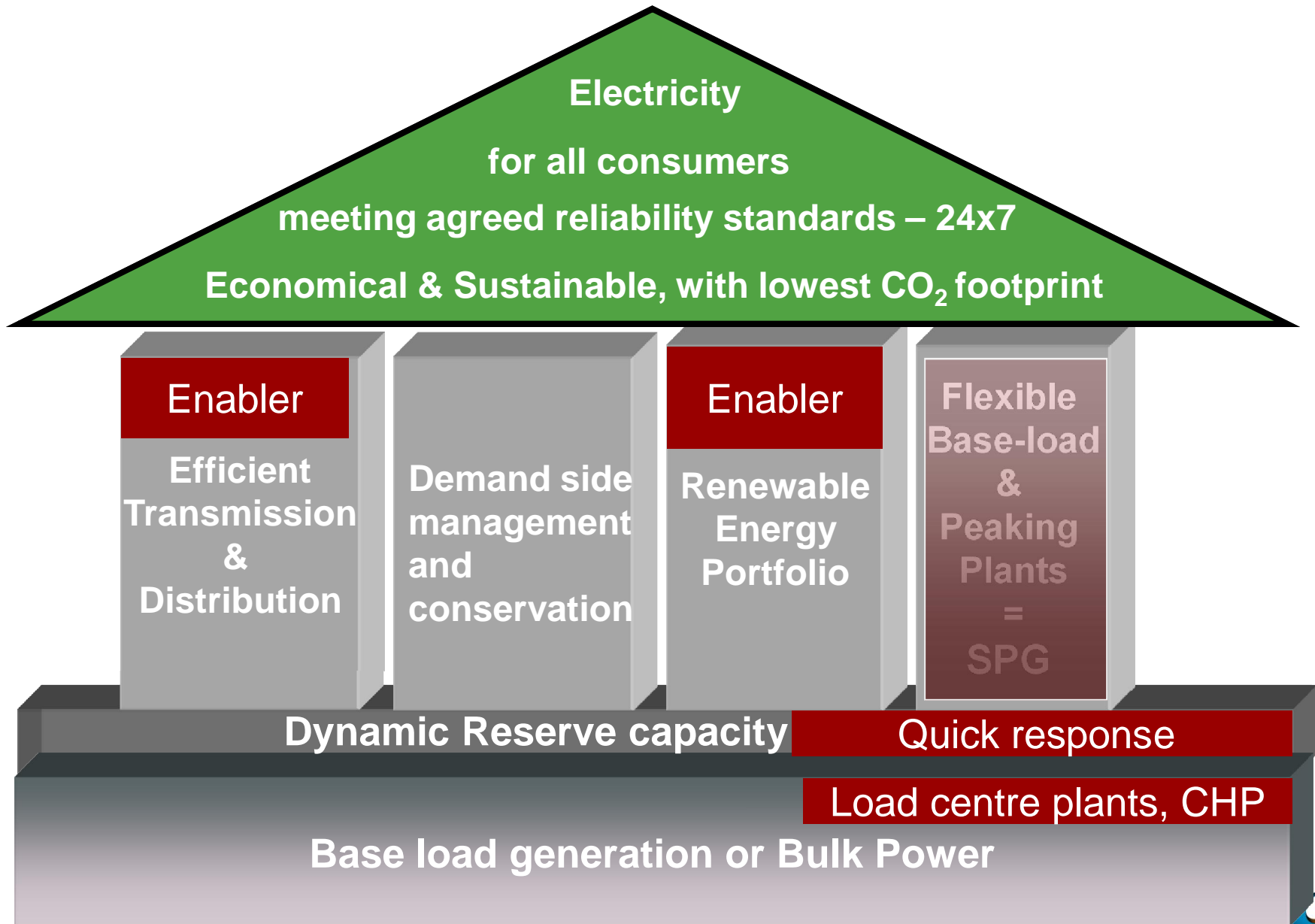


The annual recurring cost

30,000 cr annual cost



# Way forward for Indian Power Sector



## Excerpts from “Grey to Green India – Peaking Power a Game Changer” Conference

(Well attended by over 50 Policy makers, Regulators, Discoms, Developers, Financiers & Lawyers)

- **Peaking power capacity to be treated differently – a must!**
  - Bid for long term supply for peaking power
  - Competitive bidding with technology specific to Peaking requirements
- **Dichotomy expressed by Discoms . . .**
  - Consumer do not want load shedding at peak hours
  - I am in trouble to dispose energy during off peak hour
  - Wind/Solar integration
- **Uncertainty on Gas – Viability on LNG & tariff model support**
- **Need for integration & optimization of generation mix approach for 12<sup>th</sup> five year plan**



# Need for Smart Power Generation to meet Peak Shortages

## Deficit in Peak Power Portfolio 2012: Top 10

Sr. No.	STATE	Demand (MW)	Availability (MW)	DEFICIT(MW)	(%)
1	PUNJAB	11000	5488	-5512	-50
2	TAMIL NADU	14224	9575	-4649	-33
3	MAHARASHTRA	21954	18322	-3632	-17
4	UTTAR PRADESH	13947	10630	-3317	-24
5	BIHAR	3607	1225	-2382	-66
6	ANDHRA PRADESH	14721	12357	-2364	-16
7	RAJASTHAN	8482	6644	-1839	-22
8	HARYANA	6839	5192	-1647	-24
9	JHARKHAND	2332	987	-1345	-58
10	MADHYA PRADESH	8462	7555	-907	-11

**- 27594**

Source : CEA (in CAC meeting by POSOCO)

## The Electricity Act, 2003

Section 61: Encouraging efficiency, economical use of resources, good performance and optimum investments -

- *Optimise Generation Mix for future capacity addition*

## National Electricity Policy 2005: Para 2.0:

Demand to be fully met by 2012 -

- *12<sup>th</sup> Plan to mandate 24x7 Power to all in phased manner by '17*

Energy and peaking shortages to be overcome -

- *Differentiate capacity addition target under specific heads*
  - *Base load*
  - *Peak load, and*
  - *Renewable*

*and, create enabling mechanism for such capacity to come up*

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# POWER PLANTS UP TO 500 MW

# Thank You

