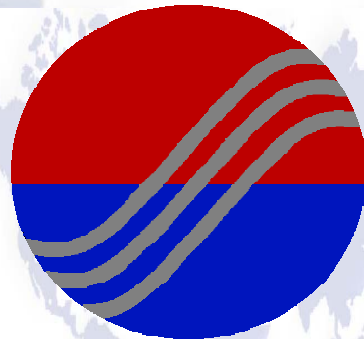


# INDIA-AN EMERGING LNG BUYER

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**PETRONET  
LNG  
LIMITED**

**AMITAVA SENGUPTA  
DIRECTOR (FINANCE & COMMERCIAL)  
PETRONET LNG LIMITED  
NEW DELHI-INDIA  
1<sup>st</sup> September, 2006**

# OVERVIEW

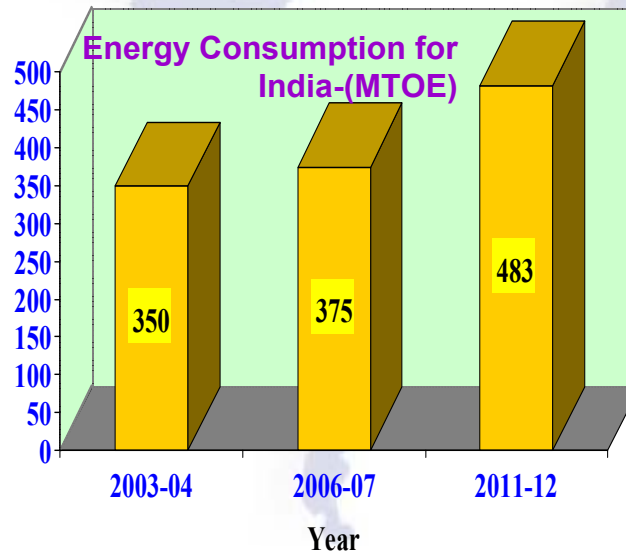
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- **INDIAN ENERGY INDUSTRY**
- **GAS & LNG DEMAND SUPPLY OF INDIA**
- **DRIVERS FOR LNG MARKET GROWTH**
- **DEVELOPING NEW MARKET**
- **REGULATORY FRAMEWORK**
- **CONCLUSION**

# GROWING ENERGY CONSUMPTION IN INDIA



- 8.5 GDP growth projected for 2006-07
- 5% growth in energy consumption
- 3.5% global share of energy consumption
- Share to increase to 6.5% by 2026
- Imported/domestic energy supplies
- LNG to meet industry/power demand
- Enhancing share of gas in energy



	World	Asia Pacific	India
Energy Consumption (MTOE)	10224	3199	376 5 <sup>th</sup> Largest Consumer
<b>Energy Mix (%)</b>			
Coal	27%	47%	54%
Oil	37%	34%	32%
gas	24%	10%	8%
Nuclear	6%	4%	1%
Hydro	6%	5%	%
Oil & Gas Imports (MTOE)	2467	836	98 (US\$ 38 billion)
<b>Growth in Energy (10 yrs)</b>			
Total Primary Energy	2.1%	4.2%	4.8%
Gas	2.6%	6.0%	6.8%

# NATURAL GAS SUPPLY DEMAND GAP

- ★ Gas demand growth of 7%
- ★ Large demand supply gap
- ★ Enhancing domestic production
- ★ Imports of LNG to reduce gap
- ★ Industry using liquid fuels
- ★ LNG replacing liquid fuels

## Demand of Natural Gas in MMSCMD

Year	Power	Fertiliser	Other	Total Demand
2001-02	67	54	30	151
2006-07	119	66	46	231
2011-12	168	83	63	313
2024-25	208	105	79	391

Demand Supply Gap (MMSCMD)				
Years / Demand Supply	2002	2007	2012	
<b>Demand</b>	<b>151</b>	<b>231</b>	<b>313</b>	
Offshore Gas Supply	62.76	61	82	
Onshore Gas Supply	27.37	29	21	
Total Gas Production	90.13	90	103	
LNG Terminals	Dahej	0	21	17.5
	Dahej (Exp)	0	0	24.5
	Hazira	0	8.75	8.75
	Kochi	0	0	17.5
	Dabhol	0	0	17.5
Total LNG Imports	0	28.75	85.75	
Total LNG + Domestic Gas	90.13	115	188.75	
<b>GAP</b>	<b>60.87</b>	<b>116</b>	<b>124</b>	

## THRUST AREAS-REPLACING LIQUID FUELS BY GAS

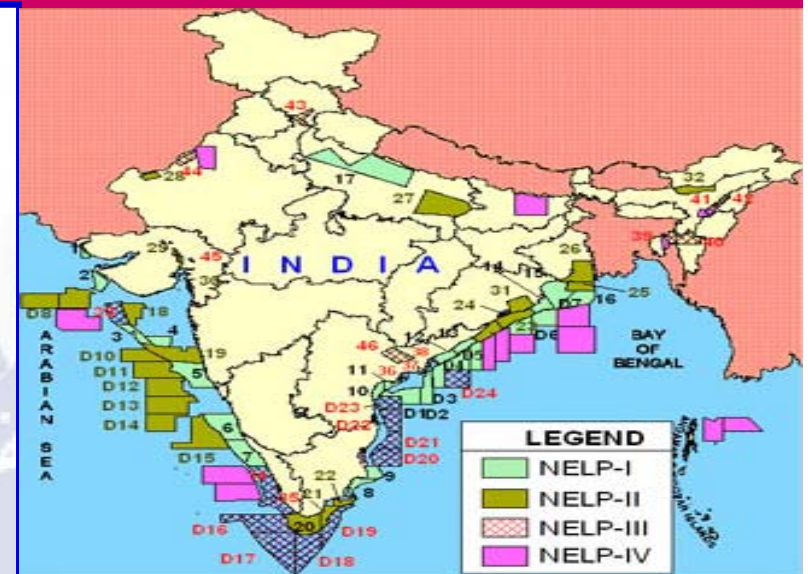
- ★ Replacing liquid fuel in power sector
- ★ Maximizing capacity use of existing power units
- ★ Existing fertilizer units using Naphtha/FO
- ★ 20% Potential for replacing LPG in domestic/Commercial/Industries
- ★ 20% potential for replacing Kerosene in household
- ★ 10% replacement potential in transport sector by CNG
- ★ Envisaging 85 MMSCMD (25 MMTPA) of gas through LNG imports

Sectors	Capacity/Current Use (MMTPA)	Replacement potential/ Requirement of LNG (MMTPA)	Equivalent LNG Requirement (MMTPA)
Power(MW)	4,000	4	4.00
Fertiliser	5	20%	3.00
FO	12	10%	1.00
LPG	10	20%	1.90
Kerosene	10	20%	1.80
MS/Diesel	55	10%	4.50
New Power Projects (MW)	8,000	8	8.00

# OPTIONS – BRIDGING DEMAND SUPPLY GAP

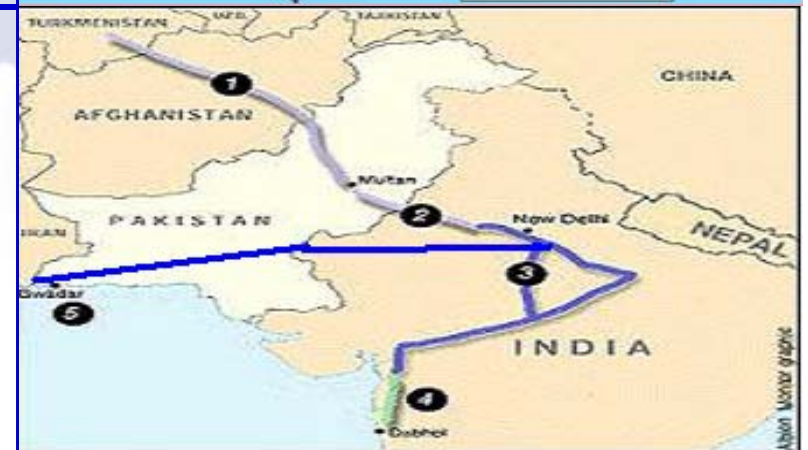
## • New Exploration Licensing Policy

- 5 rounds of bids
- 110 Exploration Blocks
- Many deep water blocks
- Gas discoveries made:
  - KG basin by Reliance, ONGC & GSPC
  - Discoveries in Mahanadi
- Coal bed Methane
- 25 BCM (70 MMSCMD) additional production



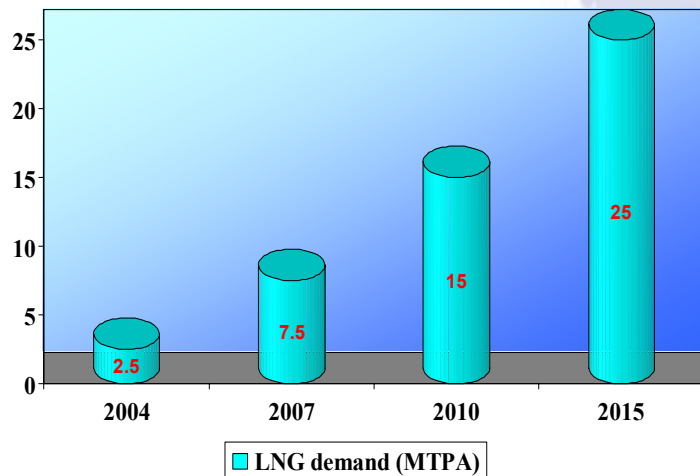
## • Pipeline Imports

- Bangladesh- India
- Iran –India
- Myanmar – India
- Turkmenistan-India
- 20-35 BCM (50-100 MMCMD) of gas



# INDIA-KEY DESTINATION FOR LNG

LNG Terminalz	Capacity (MMTPA)
Dahej (Petronet)	5
Dahej Exp (Petronet)	7.5
Kochi (Petronet)	5
Hazira (Shell)	2.5
Dabhol (?)	5.0
<b>Total</b>	<b>25</b>




- Large demand of natural gas
- Regas capacity increasing to 25 MMTPA
- Strong appetite for spot cargo during summer
- Developing LNG Demand
  - Core demand- Power & Fertiliser
  - Refineries - Fuel & feedstock's
  - Petrochemical - Feed-stocks & fuel
  - Replacing liquid fuels in sectors
    - Household
    - City Gas
    - Industries
    - Transport (CNG)



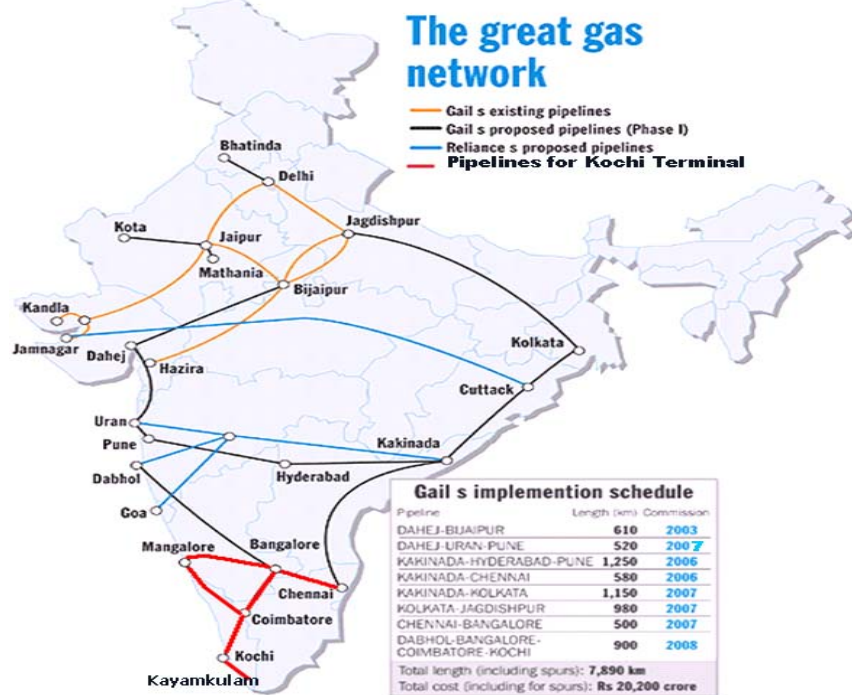
## **DRIVERS FOR INDIAN LNG MARKET GROWTH**

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- **Developing pipeline Infrastructure**
  - **Gas Pricing Reforms**
  - **Regulations in Gas sector**
  - **Developing spot LNG market**
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# DEVELOPING GAS PIPELINE NETWORK

- National Gas Grid being developed connecting LNG terminals, import of piped gas



# GAS PRICING: THE CHANGING PHASES

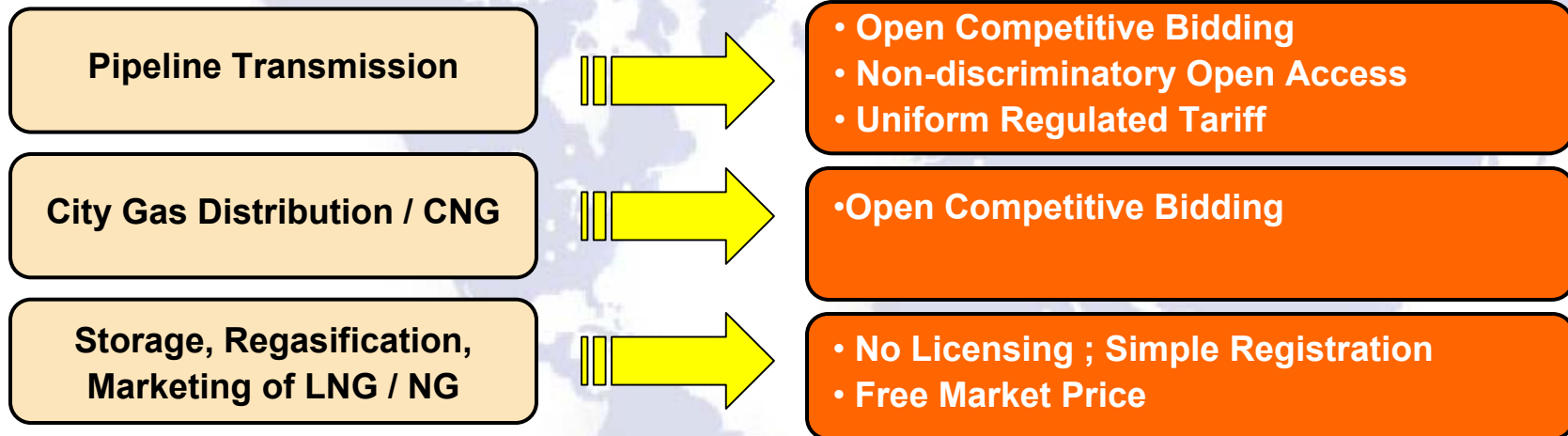
Past (Pre 2004)	Present (2005-2006)	Future
<ul style="list-style-type: none"><li>• 100% Government Controlled</li><li>• Single Price for all users and sources</li><li>• Cost plus basis</li></ul>	<ul style="list-style-type: none"><li>• 60% Government Controlled<ul style="list-style-type: none"><li>- Power, Fertiliser, Small Customers</li></ul></li><li>• Multiple Prices (US\$ 2 – 10 / MMBTU)<ul style="list-style-type: none"><li>- NOC's – Administered</li><li>- Private – Market Related</li><li>- RLNG – Market Related</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Free Market Pricing</li><li>• Competitive to alternatives</li><li>• Alignment with global trends</li></ul>

**PRICING – MOVING TOWARDS DEREGULATION**

# GAS SECTOR REGULATION IN INDIA

## ■ Petroleum and Natural Gas Regulatory Board Act, 2006 enacted

INDEPENDENT REGULATORY BOARD FOR DOWNSTREAM SECTOR



## ■ Regulations to be guided by Govt. Policies

- 100 % FDI Permitted in
  - Pipelines/ LNG/ Marketing & Trading
- Fiscal Incentives Under Consideration
  - Infrastructure Status for Gas Pipeline

REGULATIONS AND POLICIES TO PROMOTE INVESTMENTS AND COMPETITION

# LNG SOURCING – SPOT CARGOES

- Large unmet demand of gas
- Meeting peak demand for power in summer
- Petronet designated to source spot cargoes by the offtakers
- Dahej terminal to regasify 1.25 MTPA additional LNG

## ■ Current Shortfall

Power	- 1.00 MTPA (Peak Load)
Fertiliser	- 2.50 MTPA
Other Industries	- 1.00 MTPA

- Spot LNG cargoes imported by GAIL/PLL and Shell
- Spot Cargo Sold to Power/Fertiliser & Industries
- 8-10 spot LNG cargoes envisaged in 2006
- Petronet identified 18 slots for spot cargoes in 2007



# PETRONET LNG LIMITED

- **Share Holders**
  - ONGC, BPCL, GAIL, IOC
  - GDF, ADB
  - FII and Public
- **Robust Business Model**
  - LNG SPA with RasGas 7.5 MTPA
  - GSPA with GAIL, IOCL and BPCL
  - Back to back with SPA
  - Supplier – secured creditor status through hypothecation of LNG receivables backed by direct agreement with major offtakers
  - Trust and retention account with cash waterfall
  - Time Charter Agreement with Mitsui OSK
- **Dahej LNG terminal**
  - Dahej terminal operating at full 5 MTPA
  - Receiving additional spot cargoes
  - Proximity to Customers
  - Connected to pipeline network covering seven states
  - Expansion to 12.5 MTPA
- **Kochi terminal planned for development**



# PETRONET – NEW PROJECTS

## Expansion – Dahej

- Expansion to 12.5 MMTPA
- Large consumer base
- Completion by end 2008
- 2.5 MTPA of LNG from RasGas in 2009
- Discussing for additional supplies

## Kochi LNG Terminal

- Located South West India
- Capacity of 2.5 MMTPA expandable to 5.0 MMTPA
- Consumers identified
- Completion by first quarter, 2010
- 2.5 MTPA LNG sourcing
- Supplies from Gorgon under discussion

# POTENTIAL LNG SUPPLY SOURCES

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- **Qatar** - Existing 7.5 MMTPA Contract
- **Qatar** – Discussing additional supplies
- **Australia** – New LNG projects
- **Oman** – Qalhat, Train 1 & 2
- **Algeria** – Expansion of Skikda, Gassi Touili
- **Malaysia** - Existing capacity
- **Iran** - Contract signed for 5 MMTPA
  
- **Discussions underway to source LNG from multiple supply sources.**

# CONCLUSION

Natural Gas growing at 7% annually

Regulatory Act in place

LNG - Major source of gas to meet the growing demand in India

Fast paced Gas infrastructure Development

India : One of the fastest growing global economies

consumers shifting to market price of gas

**INDIA - A KEY DESTINATION FOR LNG**

