

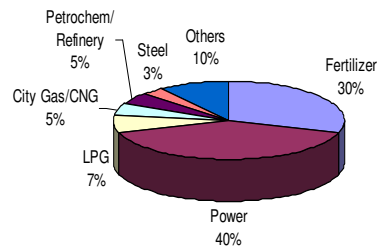
# Natural Gas Pricing & Utilization Policy

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Gas in India: Issues, Opportunities and Challenges  
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## Natural Gas/ RLNG Availability ...

Category	Quantity (MMSCMD)
APM Gas (ONGC+OIL)	~ 57*
Pvt. /JV Gas	~ 20*
RLNG (incl. Spot RLNG)	~ 26
<b>Total</b>	<b>~ 103</b>



\*APM gas is on the declining trend

\*\*Likely to increase substantially with production of 40+40 MMSCMD of RIL gas during 2008-09 & 2009-10

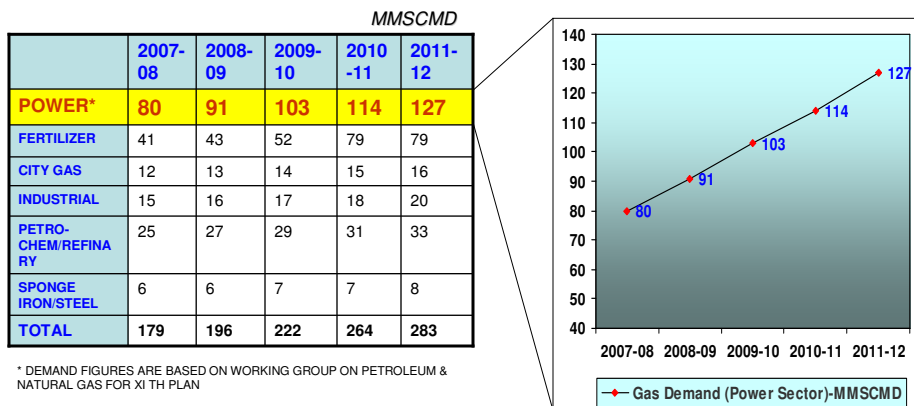
**Around 70% of the gas goes to anchor customers viz. Power & Fertilizer sectors, which are regulated sectors**

## Present Gas Requirement/ Shortage in Power Sector...

	MW	Gas Requirement @ 90% PLF
Gas-based Power Capacity (as on 31.03.08)	13,409 MW	66 MMSCMD
Gas-based Power Capacity Ready, but not able to commission for want of gas	1129 MW	5.43 MMSCMD
Liquid based plants that can run on Gas	1002 MW	~5 MMSCMD
<b>Total</b>		<b>~ 77 MMSCMD</b>
Present Gas/RLNG Availability		~39 MMSCMD
<b>Present Gas shortage</b>		<b>~38 MMSCMD</b>

Ready availability of the current shortfall quantity of gas (~38 MMSCMD) will be able to generate around 6,500 - 7000 MW of additional power without any further investment

## Gas Demand Projections...



**Power Sector will continue to remain as anchor customer of gas**

Source: Report of the Working Group on Power for the XI Plan (2007-2012)

### Gas /RLNG Supply Projections: Demand-Supply Gap...


	07-08	08-09	09-10	10-11	11-12
<b>DOMESTIC GAS AVAILABILITY (MMSCMD)</b>					
ONGC +OIL	57.19	57.06	57.69	51.45	51.65
PVT/JVS(AS PER DGH)	21.2	62.67	82.57	82.03	102.57
Additional RIL (NEC)					2.0
GSPC				3.5	4.5
<b>ADDITIONAL GAS ANTICIPATED</b>				3.5	6.5
<b>TOTAL PROJECTED (OPTIMISTIC) SUPPLY FROM DOMESTIC SOURCES(A)</b>	<b>79.4</b>	<b>119.73</b>	<b>140.26</b>	<b>146.98</b>	<b>170.72</b>
<b>RLNG (MTPA)</b>					
DAHEJ	6.5				12
HAZIRA	2.50				2.50
DABHOL					5.00
KOCHI					2.5
MANAGALORE					1.25*
<b>TOTAL LNG SUPPLY (MMTPA)</b>	<b>9.0</b>				<b>23.25</b>
<b>TOTAL LNG SUPPLY (MMSCMD) (B)</b>	<b>31.5</b>				<b>81.38</b>
<b>TOTAL PROJECTED AVAILABILITY (MMSCMD) (A)+(B)</b>	<b>110.9</b>				<b>252.09</b>
<b>Demand-Supply Gap</b>	<b>(-)68.1</b>				<b>(-)30.91</b>

Source: Draft Gas Utilization Policy

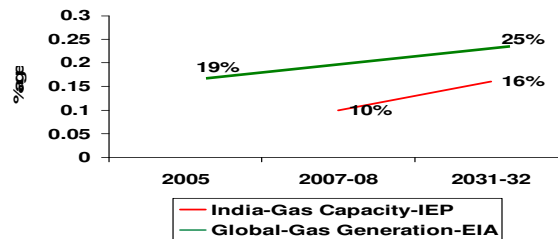
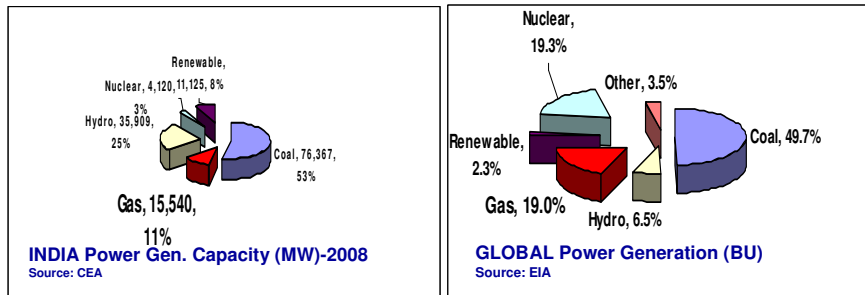
**Domestic Natural Gas, as scarce national resource needs to be optimally utilized across priority sectors**

### Merits of Gas based Power Generation ...

- Environmentally cleaner mode of power generation
- Higher thermal efficiency
- Lower capital cost
- Shorter gestation period
- Less land and water requirement
- Responds faster during peak load requirements of grid

**Worldwide, Gas has been a preferred fuel for power generation. Almost all developing economies where gas is available, promote gas for power generation** 

## Gas for Power Generation...



Power generating capacity by the year 2031-32 would be around 800 GW. Hence, the present %age share of Gas generating capacity needs to be at least maintained and rather increased further

## Is Coal – Answer to meet Total Power Requirements ???


### Issues

- Shortage of Domestic Coal gradually mounting
- Shortfall of Domestic coal could be between 60 MT and 100 MT by end of XI Plan
- Substantial increase in Prices of Imported coal
- Economic & infrastructure challenges to import / transport coal to the hinterland
- Associated Environmental issues and ash utilization challenges
- Techno-commercial viability of Clean Coal technologies viz. IGCC, CCS etc. suiting to Indian needs still a distant dream
- Capital costs higher as compared to Gas based power plants
- Environmental compliance costs form Coal based power plants could gradually increase

Though coal likely to remain as main stay fuel for power generation, Gas based power generation will play key supplementary role

To sustain economic growth rates of 9 – 10 %, power generation will have to be exploited from all available sources viz. Coal, Hydrel, Nuclear, Renewables etc. including Gas.

## Power Sector- The key Economic Driver...

- Availability of affordable power across all sectors will have significant **Multiplier Effect** in a fast growing economy and absence of the same would have serious downslides 
- Presently power can not be imported in to India in large quantities to meet the shortage, where as other commodities like fertilizer, petrochemicals, LPG can be imported to meet shortages
- It may be possible to set up fertilizer plants in gas-rich countries near gas sources and meet import requirement

National Action Plan on Climate Change recommends additional gas based power generation in view of discovery of significant gas reserves in India, thus deriving the environmental benefits of low carbon intensity power generation

Standing Committee on Energy in their 25th Report on Demand for Grants (2008-09) recommended Power sector be accorded priority over all other sectors including the Fertilizer sector in the Gas Utilization Policy

## Priority for Power Sector in Gas Utilization Policy...

Priority for gas allocation should be for Power sector, both for the existing Gas & Liquid-based power plants, and Expansion /Greenfield gas-based power plants

- ✓ *The Policy should cover gas from **NELP & Pre-NELP fields (like PMT, Rava), CBM fields and future Trans-national piped gas imported into India by GoI***
- ✓ ***At least 40% of the Gas should be earmarked for the Power sector** (both for Existing and Expansion/Greenfield Power plants with Priority for the existing Gas & Liquid-based power plants)*

## Gas Pricing : Excerpts from Integrated Energy Policy...

*“As long as there is shortage of gas in the country and two major users of gas , namely Fertilizer and Power work in a regulated cost plus environment, the competitive market determined price would be highly distorted”*

*“For the foreseeable future, domestic gas supplies to both the Fertilizer and the Power sector that together account for about 80% of the current gas usage, would need to be allocated based on availability and charged at regulated price that reflects cost of production and reasonable profit”*

*“Gas must compete with Coal as key alternative for power generation”*

## Gas Pricing - International Practices...

COUNTRY	INPUT SECTOR	END-USE SECTOR
PAKISTAN	GAS TO POWER: REGULATED	POWER TARIFF: REGULATED
CHINA	GAS TO FERTILIZER: REGULATED	FERTILIZER TARIFF: REGULATED
BANGLADESH	GAS TO POWER: REGULATED	POWER TARIFF: REGULATED
EGYPT	GAS TO POWER: REGULATED	POWER TARIFF: REGULATED
UK, USA, AUSTRALIA	GAS TO POWER: MARKET DRIVEN	POWER TARIFF: MARKET DRIVEN

- In most Developing economies, Govt. protects the interests of priority end-use sectors by favourable gas allocation & pricing policy for the gas domestically produced/consumed. Gas meant for export follows international pricing
- In Developed economies, Market driven pricing is on account of existence of true market. LNG competes in the internal gas market. The market has moved from regulated to de-regulated gradually and in a calibrated manner

## Natural Gas Pricing: India ...

- Presently Indian gas market is saddled with huge Demand-Supply Gap, inadequate infrastructure, with the consumers hardly having any choice
- The future domestic gas availability projections from KG basin etc. will still fall short of the projected demand of gas from various sectors. The demand-supply gap is likely to continue in future
- There is no rationale why pricing of domestic natural gas, which is produced and consumed within the country, should have any linkage with any international indexing e.g. crude oil, liquid fuel, LNG etc
- The fundamental tenets for a true market discovered price requires a matured market with multiple sellers and multiple buyers, demand-supply balance, adequate transportation infrastructure with free entry and exit options, complete knowledge of both the buyer and the seller
- The gas market and the gas infrastructure are still evolving in India. In such a situation price of domestic natural gas and its allocation should be independently regulated on a Cost plus basis including reasonable returns



***Thank you***

## Gas Pricing: NELP PSC Provisions...

### PSC Article 21.6.1

**“...THE CONTRACTOR SHALL ENDEAVOUR TO SELL ALL NATURAL GAS PRODUCED AND SAVED FROM THE CONTRACT AREA AT ARMS-LENGTH PRICES TO THE BENEFITS OF PARTIES TO THE CONTRACT”**

### PSC Article 21.7

**“...THE FORMULA OR BASIS ON WHICH THE PRICES SHALL BE DETERMINED SHALL BE APPROVED BY THE GOVERNMENT. FOR GRANTING THIS APPROVAL GOVERNMENT SHALL TAKE INTO ACCOUNT THE PREVAILING POLICY , IF ANY, ON PRICING OF NATURAL GAS, INCLUDING ANY LINKAGES WITH TRADED LIQUID FUELS AND IT MAY DELEGATE OR ASSIGN THIS FUNCTION TO A REGULATORY AUTHORITY AS AN WHEN SUCH AN AUTHORITY IS IN EXISTENCE AND IN PLACE.”**

## Profit Gas of GOI

### PSC ARTICLE 16.4.1

**“...THE GOVERNMENT SHALL HAVE THE OPTION TO TAKE ITS ENTITLEMENT TO PROFIT PETROLUEM IN CASH OR IN KIND AND SUCH OPTION SHALL BE EXERCISED AT INTERVAL OF EVERY FIVE(5) YEARS FROM THE COMMENCEMENT OF FIRST COMMERCIAL PRODUCTION FROM THE CONTRACT AREA.”**

### PSC ARTICLE 16.4.2

**“.....THE GOVERNEMENT SHALL EXERCISE SUCH OPTION BY GIVING A WRITTEN NOTICE TO THE CONTRACTOR NOT LATER THAN 30TH JUNE IN THE PRECEDING YEAR IN WHICH THE ENTITLEMENT IS DUE.....”**

**GOVT. OF INDIA HAS AN OPTION TO TAKE PROFIT GAS IN KIND FOR JUDICIOUS USE – GOVT. CAN INDIRECTLY MODERATE THE GAS MARKET**

## Use of Gas for Power Generation

### Fuel Portfolio for Power generation

	Gas	Coal	Hydro	Oil	Others
Australia	15%	75%	7%	-	3%
NewZealand	16%	9%	64%	-	11%
Indonesia	12%	62%	9%	8%	8%
Malaysia	71%	22%	5%	-	2%
Philippines	19%	57%	14%	3%	7%
Thailand	71%	17%	9%	2%	1%
Vietnam	38%	13%	37%	11%	1%

Source: IGU: Gas to Power- South East Asia and Australasia

### Distribution of Gas across Sectors

	Power	Fertilizer	Residential	Industry	Petroleum	CNG
Turkey	57%	2%	22%	19%	-	-
Egypt	62%	10%	1.7%	17%	7%	1.7%
Pakistan	36%	23%	18%	19%	-	1%

