

Energy Outlook- FY20

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Coal

- We expect coal production to remain steady with total production expected to grow by 6-7% during FY20. Coal production would improve on account of miners focusing on surface mining of coal instead of underground mining which would also help them in containing costs and improve productivity.

- Coal imports (includes both steam and coking coal) are expected to grow by 8-10% during the year as demand from power sector as well as power intensive industries like cement and metals is expected to sustain during FY20.

Power

• We expect total power production in India to grow by 5-6% during FY20. We expect the benefits of improved demand from newly connected households to kick-in during FY20.

Oil & Gas

Crude Oil

• We expect domestic production of crude oil will further fall by 2.5% and be around 244.5 million barrels during FY20. Domestic crude oil production during FY19 was 251 million barrels.

• Processing of crude oil is to rise by 3.7% to 1956 million barrels which will lead to crude oil imports increasing by 3% to 1711 million barrels during FY20.

Natural Gas

• Domestic natural gas production (gross) has picked up by 2.4% and 0.7% during FY18 and FY19 after a continuous decline in its production since FY11. In the new fiscal year, we believe the gross production of domestic natural gas is to pick up by 3.1% and reach the level of 33.9 BCM during FY20. Gross Production during FY19 was 32.9 BCM.

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Coal

Production: Domestic coal production grew by 7.3% to 739.4 million tonne (MMT) during FY19 vs 2.6% growth in FY18. Coal imports stood at 240.2 MMT grew at a much sharper pace of 12.9% in FY19 vs 8.9% recorded in FY18. Higher imports of coal was triggered by shortage in supply of domestic coal to captive and non-power coal consumers like cement, metals and other power intensive industries.

Table 1 Coal Production and Imports

(in million tonnes)	2017-18	Growth (YOY)	2018-19	Growth (YOY)
Total Coal Production	688.8	2.6%	739.4	7.3%
CIL & SCCL	629.4	2.3%	671.3	6.7%
- Overall Offtake	644.9	6.8%	675.8	4.8%
- Dispatch to Power	507.7	6.4%	543.4	7.0%
Coal Import	213	8.9%	240.2	12.9%

Source: Ministry of Coal, CMIE

- The overall coal offtake from the state-run miners continued to be higher than the annual production, second year in a row. Offtake in FY18 was 2.5% more than production and in FY19 it is marginally higher (0.7%).
- State miners namely Coal India Limited and Singareni Collieries Limited continued to account for ~91% of the coal produced in the country. Rest of the coal is produced by captive coal mines of power plants.
- Dispatch to power sector has grown at 7% in FY19 vs 6.4% in FY18. The supply of coal to thermal power plants in the country has improved in FY19 vs FY18 but supply-chain constraints persist.

E-Auctions:

- E-auctions continued to fall which in turn was substituted by imported coal by power intensive industries like steel, cement, chemicals etc.

Table 2 E-Auctions

(in million tonnes)	2017-18	Growth (YOY)	2018-19	Growth (YOY)
Spot- E auction	55.2	2.8%	34.3	-37.7%
E-Auction for Power	28.9	-38.7%	27.1	-6.2%
E-Auction for Non-Power	11.1	76.2%	11.4	2.7%

Source: Ministry of Coal

- Spot E-auctions recorded the highest drop of 38.7% during FY19 and e-auction for the power sector too dropped by 6.2%. E-auction for non-power consumers increased marginally to 2.7%.

Import of coal continued to grow at a healthy pace during the year. Power and manufacturing industries like cement and metals were major importers of thermal coal. Cement production clocked a multi-year high of 13.3% volume growth in FY19.

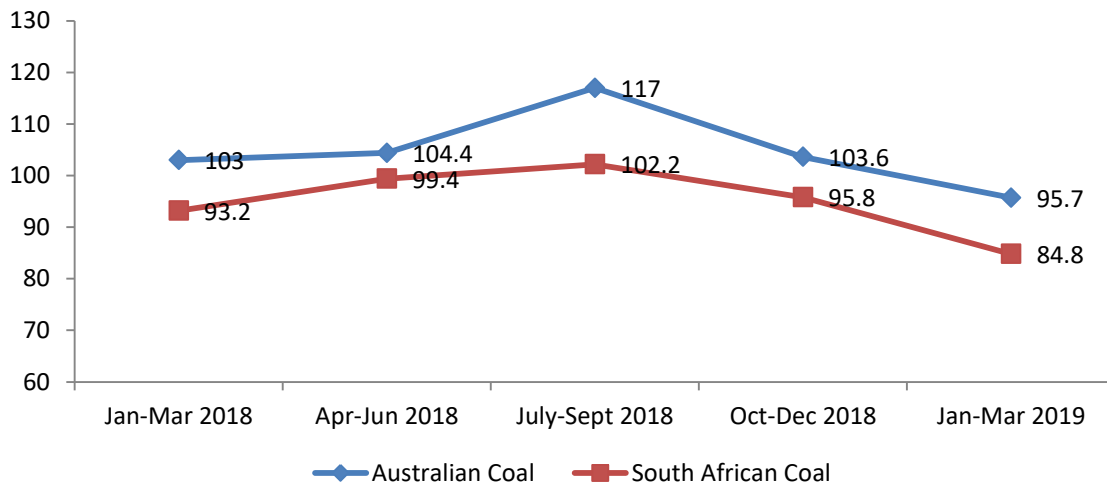
Steam Coal which is used by both captive and non-captive thermal power plants grew by 14.4% during April-Feb 2019 vs 6.2% in the corresponding period of the previous year.

Coking coal which is key raw material for manufacturing steel is imported due to limited availability of good quality coking coal in India. Coking coal imports grew by 12.3% during April-Feb 2019 vs 10.8% in the corresponding period of the previous year.

Coal prices:

Global coal prices have declined during H2FY19 after having peaking in the first half of the financial year. A host of factors including global decline in coal-power projects and increase in production of coal in China- which is the largest coal consumer globally has led to steady decline in coal prices across key coal producing markets.

Chart 1 Global Coal Prices (in US\$/tonne)



Source: World Bank

The fall in global coal prices augurs well for the power sector as well as other power intensive industries like cement.

CARE Ratings Outlook for Coal Sector in FY20:

- We expect the coal production to remain steady with total production expected to grow by 6-7% during FY20. Coal production would improve on account of miners focusing on surface mining of coal over underground mining which would also help them in containing costs and improve productivity.
- Coal imports are expected to grow by 8-10% during the year as demand from power sector as well as power intensive industries like cement and metals is expected to sustain during FY20. This also takes into account steady demand for coking coal from steel industry,

Power

Production: Total power production grew by 5.1% to 1375 billion units in FY19 vs 5.3% growth in FY18. Power produced by renewable sources grew by 25% during FY19, vs 21% growth in FY18.

Table 3 Power Production (By source and Total)

<i>(in billion units)</i>	FY18		FY19	
	Production (BU)	Growth YOY	Production(BU)	Growth YOY
Thermal Power	1037	4.3%	1072	3.4%
Others	169	1.9%	177	4.7%
Renewable	102	21%	126	25%
Total	1308	5.3	1375	5.1

Source: CEA

The key improvement in fundamentals for the sector has been achievement of 100% electrification of households across India, in FY19. Target of electrifying over 24.8 million households under “SAUBHAGYA Scheme” was announced in September 2017. The scheme was successfully completed in early-January 2019 by providing metered electricity connections to willing households across rural and urban areas. This has addressed the supply-side constraint for generation and distribution companies.

Plant Load Factor (PLF)

For thermal power (both coal and gas) plants across India, PLF improved from 59.9% in FY18 to 61.1% in FY19. Growth of power produced by thermal plants to the slowed down to 3.4% in FY19 vs 4.3% in FY18. This was slower than the overall power production growth of 5.1% during FY19.

- PLF of coal-fired plants was 66% and remained stable during FY18 & FY19.
- PLF of Gas based plants remained stable at 22.9% for FY18 & FY19.

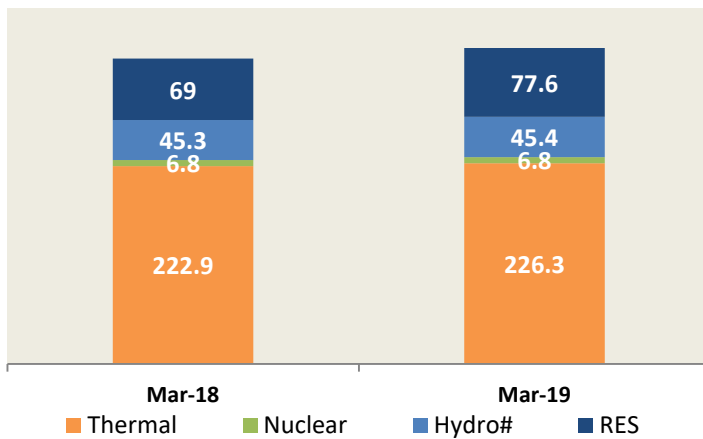
Coal shortage and constrained gas-supply to respective thermal power segments limited the potential of improvement in PLF.

Capacity and addition:

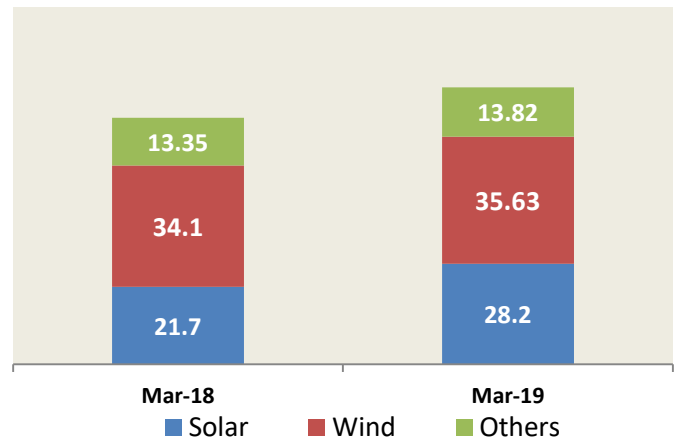
Total capacity addition during the year was 12.1 GW.

- Thermal energy (coal-fired plants) accounted for a net addition of 3.4 GW of capacity in FY19 (vs 4.6GW in FY18).
- Installed solar power capacity increased by 6.5GW and wind power capacity increased by ~1.5 GW in FY19. The overall renewable energy capacity addition slowed down in FY19 at 8.5 GW vs 11.8 in FY18.
- Other sources namely hydro-power and small-hydro projects accounted for ~ 225 MW of capacity additions. Biomass and waste to energy too witnessed an addition of ~400MW capacity during FY19.

Chart 1- Installed Capacity (a) By Source



(b) Renewable Energy



Source: CEA, Capacity in Gigawatt= 1,000MW, All data as on end of date

CARE Ratings Outlook for Power Sector in FY20

- **CARE Ratings expects total power production in India to grow by 5-6% during FY20.** We expect the benefits of improved demand from newly connected households to kick-in during FY20.
- We also expect auctions for medium terms PPAs to increase during FY20 in addition to the 5GW capacity already auctioned in FY19. The measure expected to offer respite to some of stressed thermal power capacity.

Oil and Gas

Crude Oil

Domestic Crude Oil production, consumption and imports during 2018-19: Domestic production of crude oil has fallen by 4.2% during FY19. Fall in production can be attributed to lack of output in ageing fields leading to a decline in nearly all the offshore and onshore blocks. Considerable decline in domestic production could also be attributed to fall in production from western offshore fields operated by Oil and Natural Gas Corporation (ONGC); onshore fields operated by Oil India; and from the onshore and offshore fields operated by private players and joint venture (JV) operators.

During the year, ONGC has contributed around 62% of the total domestic output whereas Oil India and Pvt/JV fields have contributed around 9% and 29% respectively.

India has imported 4.6 million barrels a day (mb/d) during FY19. Iraq (21%), Saudi Arabia (18%), Iran (11%) UAE (8%), Venezuela (8%), Nigeria (7%) and the US (3%) have been the major suppliers of crude oil during FY19.

Imports have increased by 2.1% during FY19 as compared with the 2.8% growth during FY18. Despite the sanctions on Iran, the country's crude oil supply to India increased cumulatively by 5.8% during FY19. India managed to import a sizeable amount of Iranian crude primarily due to waivers and winding down period provided by US. Imports from Venezuela, Nigeria, Kuwait, Angola and Brazil have fallen during FY19.

Import dependency based on consumption during FY19 has been around 83.7% as compared with being it 82.9% during the previous year.

Crude oil processing by the domestic refiners was rather subdued in FY19, having grown by 2.8% v/s the growth of 3% last year. The lower growth can primarily be attributed to the lower refining by the private refiners owing to low GRMs. The overall growth in crude oil processing witnessed during the year was driven primarily by the major state owned refiners with the exception of Chennai Petroleum. During the year 75.4% high sulphur crude was processed as against 74.8% during FY18.

Table 1: Domestic Production, Consumption and Imports of Crude Oil (million barrels)

	Production	Change (%)	Consumption	Change (%)	Imports	Change (%)
2017-18	262	-0.9%	1,847	2.7%	1,616	3.0%
2018-19	251	-4.2%	1,885	2.1%	1,661	2.8%

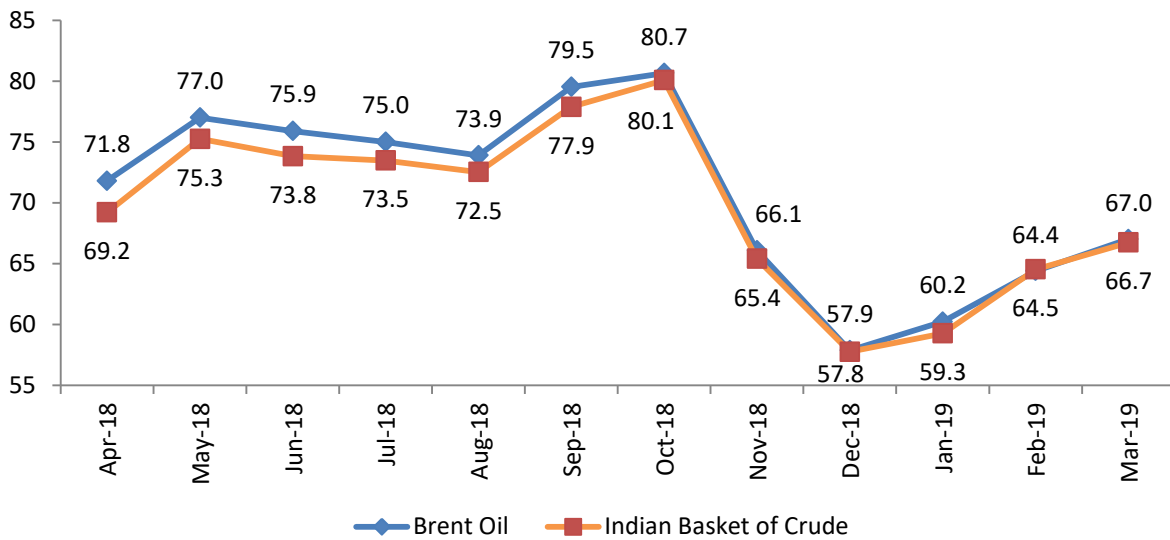
Source: PPAC

Crude Oil Price Trend during 2018-19:

Global prices of crude oil have been volatile throughout FY19. Prices started to rise during the month of May, when the US government pulled out from the Joint Comprehensive Plan of Action (JCPOA), (an international agreement that exchanges Iran's nuclear ambitions for international sanctions relief) and levied economic and oil sanctions on Iran.

In the meanwhile tariff wars between the US and China fears of a global slowdown, supply outages from Libya and Venezuela and the strengthening of the US dollar against the emerging market currencies, led to the gradual increase in oil prices.

Chart: Crude Oil Price during 2018-19 (USD/bbl)



Source: PPAC

Crude oil price rose to its highest (in the past 2 years) during the first week of October 2018 as the deadline of Iran sanctions came close but with US granting a temporary 180-day waiver to 8 countries - India, China, Italy, Greece, Japan, South Korea, Taiwan and Turkey; crude oil prices started falling. Prices also fell sharply with the rise in US crude oil production and with global sentiment hovering towards the slowdown in the global economy due to the on-going trade wars between US and China.

January 2019 onwards oil started recovering as the OPEC+ supply cuts came into play coupled with the sanctions on Venezuela. Approach of the Iran sanctions deadline period also added support to the prices of crude oil.

The Indian basket of crude oil represents a derived basket comprising of sour grade (Oman & Dubai average) and sweet grade (Brent Dated) of crude oil processed in Indian. During FY18 the ratio used to determine the Indian basket of crude prices was 74.77:25.23.

CARE Ratings Outlook

India’s energy demand is expected to rise as the economy expands and more people have access to power, cooking gas and transport. Currently India is the 3rd largest energy consumer after China and the US its energy demand is expected to grow by three-fold by 2040.

The Government has targeted to reduce imports of oil and gas by 10% by 2022. In order to achieve the aforementioned goal, import reduction can only be attained by either increasing domestic crude oil production or by curtailing consumption.

There has been a continuous decline in crude oil production since the past five years and even though the government wants to elevate the domestic production, it will not be immediately reflected.

- **We believe domestic production of crude oil will further fall by 2.5% and be around 244.5 million barrels during FY20.** Domestic crude oil production during FY19 was 251 million barrels.

Processing of crude oil is to rise by 3.7% to 1956 million barrels which will lead to crude oil imports increasing by 3% to 1711 million barrels during FY20. Import dependency to increase as well from the current 83.7%.

- Given the increase in energy demand India will need to import 4.7mb/d to subsume a consumption of 5.4 mb/d in the coming year.
- Disruption of supply from Iran and Venezuela might prove to be problematic for India but on the other hand there has been an increase in imports from the US and UAE in particular.

We believe the price of Brent crude oil will be **range bound between USD 70-75/bbl** in the coming few months.

- The US has always been able to increase crude oil production to bridge the supply outages in the economy, which will ensure the prices will not rise above the resistance of USD 75/bbl. The sentiment hovering around the US-China trade war translating to an economic slowdown will also aid in suppressing the oil prices.
- The sanctions on Iran and Venezuela, production cuts undertaken by the OPEC+ group will not let the prices fall below the support of USD 70/bbl.

Natural Gas

Domestic Natural Gas production, consumption and imports during 2018-19: Domestic natural gas output has increased marginally by 1% during FY19. Increase in production can be mainly attributed to the increase in production from fields operated by ONGC. During the year, ONGC has contributed around 75% of the total domestic output whereas Oil India and Pvt/JV fields have contributed around 8% and 16% respectively. A major part of the domestic natural gas production is from the offshore fields (78%). The remaining 22% of the production is from the onshore fields (with Assam/Arunachal Pradesh being the leading states followed by Gujarat).

Increase in LNG prices has led to an increase in imports by only 2.6% as compared with an increase in imports by 6.7% the previous fiscal. India has imported LNG mainly from Qatar (49%), Nigeria (12%), Angola (7%), USA (6%), Oman (6%) and Australia (6%).

Import dependency based on consumption during FY19 has been around 45.7% as compared with being 45.3% during the previous year. Consumption of natural gas has remained stable at 1.7% as higher imported gas prices limited demand from the power sector and other industries. Stagnancy in fertilizer production also restricted an incremental increase Natural gas is used as a fuel (energy) and as a feedstock (non-energy) by the respective end user industries. Demand for natural gas in the domestic market is largely dependent on the fertilizer (28%), power (23%), CGD entities (16%), refinery (12%) and petrochemicals (8%) industries.

Table Domestic Production, Consumption and Imports of Natural Gas (BCM)

	Production*	Change (%)	Consumption**	Change (%)	Imports (LNG)	Change (%)
2017-18	31.7	2.9%	58.1	4.5%	26.3	6.7%
2018-19	32.1	1.0%	59.1	1.7%	27.0	2.6%

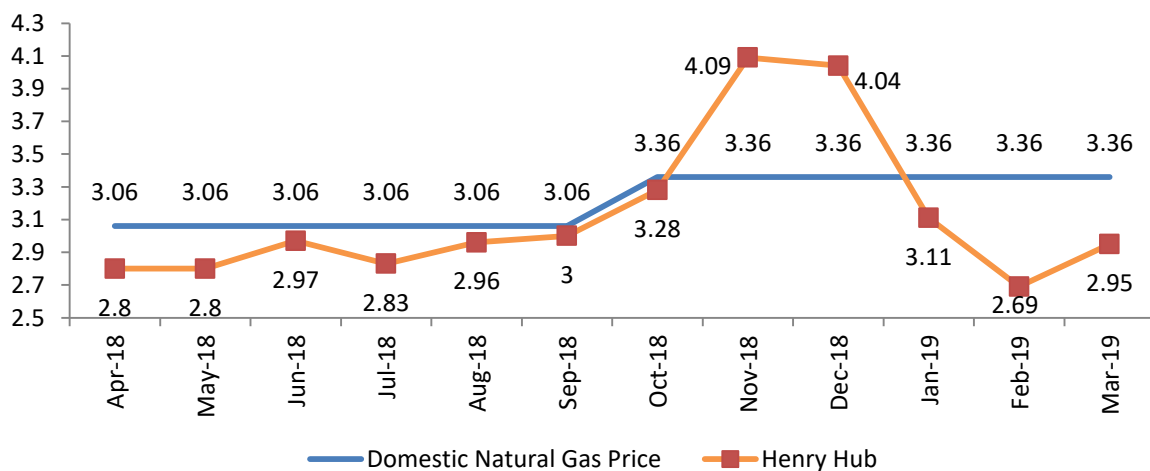
Source: PPAC

*The production numbers are net production figures which is gross production less flare and loss by gas producing companies

**Includes internal consumption

Natural Gas Price Trend during 2018-19

Chart: Global and Domestic Natural Gas Price (USD/mmBtu)



Source: PPAC, EIA

As per the New Domestic Gas Policy, the government revises the domestic natural gas price every six months i.e. April-September and October-March. During H1-FY19 price for gas produced from local fields was USD 3.06/mmBtu and during H2-FY19 it was increased to USD 3.36/mmBtu.

Currently (H1-FY20) the price for gas produced from local fields is USD 3.69/mmBtu a 9.8% increase from USD 3.36/mmBtu.

Henry Hub prices rose sharply during November as natural gas inventories were at their lowest levels for October since 2010. The anticipation of a colder than expected winter contributed to the increase in natural gas price by 24.7% during November 2018 on an m-o-m basis in the US markets.

CARE Ratings Outlook

Domestic natural gas production (gross) has picked up by 2.4% and 0.7% during FY18 and FY19 after a continuous decline in its production since FY11. **In the new fiscal year, we believe the gross production of domestic natural gas is to pick up by 3.1% and reach the level of 33.9 BCM during FY20.** Gross Production during FY19 was 32.9 BCM.

- Increase in natural gas prices by 9.8% to USD 3.69/mmBtu has made it viable for companies to undertake field development activities.
- Favourable reforms such as the policy framework to promote and incentivize enhanced recovery methods, liberalizing exploration and production of oil and gas blocks, simplifying the approval processes and removal of sharing of revenue with the government (In the less prospective Category II and Category III basins unless there is windfall gain) will help prompt exploration in gas fields.

Natural Gas satisfies most of the fuel requirements in a modern day industrial society, being efficient, non-polluting and relatively economical. The periodic uncertainties and volatility in both the price and supply of oil have also helped natural gas emerge as a major fuel in the energy basket across countries. India plans to increase its gas usage in the energy mix to 15% from the current 6.2%. The world average of gas use in the total energy consumption is 24%.

We believe the demand of Natural Gas is to grow by 7.1% and reach the level of 63.3 BCM by the end of FY20. Domestic natural gas consumption during FY19 was 59.1 BCM.

- The demand of natural gas in India is likely to depict a strong growth with major demand expected from the CGD and fertilizers sectors.
- The commissioning of the Ramagundam unit of FCIL by FY20 will necessitate the usage of natural gas (for the production of urea and ammonia).
- The CGD sector is growing at a fast pace and with the development of the CGD network (CNG refueling stations and PNG pipelines) across the country, the usage of natural gas is expected to grow at a faster pace. During FY19, addition in the CNG refueling stations grew by 21.4% and PNG connections grew by 18.2%.
- Development of the green corridor by setting up of CNG stations on National Highways/State Highways will also increase the consumption of natural gas.

Imports of natural gas in the form of LNG are to continue to grow to the extent of plugging in the structural gap between gas demand and domestic production. **We believe LNG imports to be around 29.4 BCM by the end of FY20 registering an 8.8% growth rate from its FY19 level.**

- Most of the pipelines and R-LNG terminals are to start operations in FY20 thus facilitating the circulation and abetting in the improvement of the natural gas infrastructure which should diminish the disparity between the supply of gas to its end users in all parts of the country.
- Commissioning of the Ennore and Mundra terminal will result in an incremental capacity of 10 MMTPA, thus augmenting the country's LNG handling capacity.
- Pipeline infrastructure expansion in East, North-East and Southern regions is in synchronization with expanding and developing of the national gas grid.