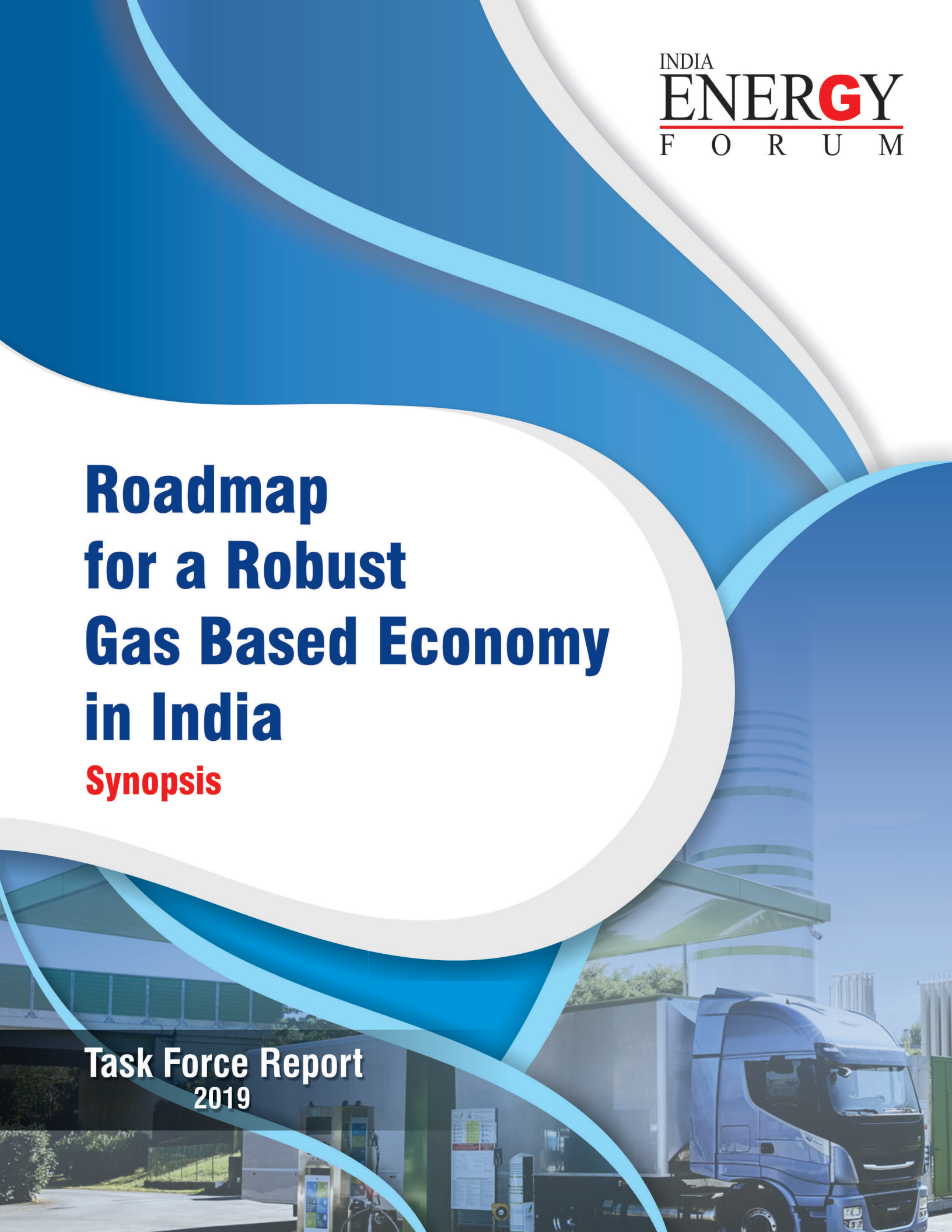


# Roadmap for a Robust Gas Based Economy in India

**Synopsis**

**Task Force Report**  
2019



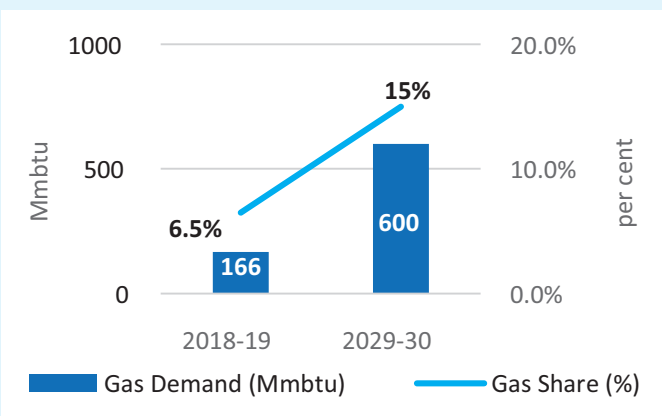
## Objective of the Study

- 1 The share of Natural Gas in India’s primary energy mix was 6.2% in 2018 - far below the world average of 22% in 2017. In 2015, for the first time in the history of energy policy in India, the Government of India under the visionary leadership of the Prime Minister has brought to the fore the blueprint of a gas-based economy, aiming to increase the share of gas in country’s primary commercial energy consumption from 6.5% in 2015 to 15% by 2030. The objective of the Task Force constituted by the India Energy Forum was to (i) estimate the gas demand which would account for the 15% Gas share by 2030 (ii) identify the sectors which have the potential to generate substantial additional Gas demand over and above the level achieved in 2018-19; and (iii) suggest policy measures which may be considered by the Government to achieve the goal.

## Findings

- 2 **Size of the Gas market in India by 2029-30:** Raising the Gas share to 15% of India’s primary energy mix would amount to consumption of around 600 Mmscmd of Gas by 2030 - over three and half times of 166 Mmscmd of gas consumed in 2018-19 (Figure 1) and an average increase of 12.4% per annum up to 2029-30. Assuming an annual average GDP growth rate of 8% during the above period (and GDP elasticity of energy demand of 0.8), a 12.4 % annual growth in gas consumption would mean substantial replacement of petroleum products by gas.

**Figure 1:** Size of Gas Market in India by 2029-30



- 3 **Key Factors driving Gas demand:** Empirical studies have found that in addition to the historical factors like income and urbanisation, the rising global concern for climate changes has been pushing countries towards Gas. In conformity with the above paradigm, USA has already achieved a gas share above 30% by 2018; China is under way to achieve a target of 15% by 2030. These countries hold important lessons for others on how to chart energy pathways.
- 4 **The die has been cast:** The Government of India’s planning for 5-trillion dollar economy and Rs. 100 lakh crore investment by 2024 in Infrastructure are steps in the right direction. The Gas Pipeline logjam has been broken by the Government by extending 40% capital grant to the 3300 km-long Jagdishpur-Haldia-Bokaro-Dhamra gas pipeline project (*viz., Urja Ganga*) and approving a North-Eastern Gas Grid project (*viz., Indradhanush*). The oil and gas companies have gas pipeline projects of around 10,000 Km (Including Urja Ganga and Indradhanush) under various stages of construction. Another 8000 Km of gas pipeline projects have not taken off on account of lack of demand and state-specific ROU problems. PNGRB has awarded 136 geographical areas for city gas distribution (CGD) during 2018-19 (taking the total to 228). By March 2019, CGD has covered more than half of the country’s area and districts. However, many of these newly awarded CGD projects as also planned LNG import terminals of around 33 Mmt are critically dependent on timely completion of the pending pipeline projects.
- 5 **Gujarat: The home-made Success Story:** Gujarat’s gas share in its primary energy mix at around 23% in 2017-18 was at par with the world average of about 22%, and with the average level in West European countries and Japan. While Gujarat is not the state with highest GDP or the highest per capita income, it has been able to establish a gas-based economy in the state because of faster development of infrastructure, well supported by timely policy measures taken by the state government.

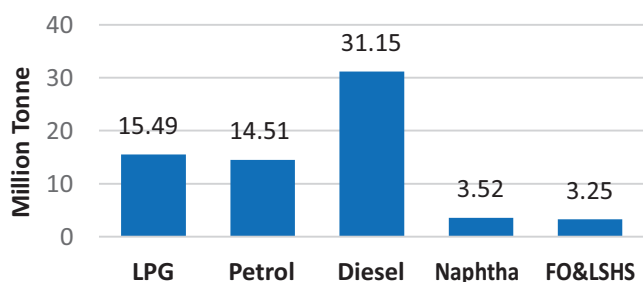
## Proposed roadmap for a robust gas based economy in India

- 6 The strategy for creating a gas-based economy in India is based on three broad pillars: (i) raising GDP

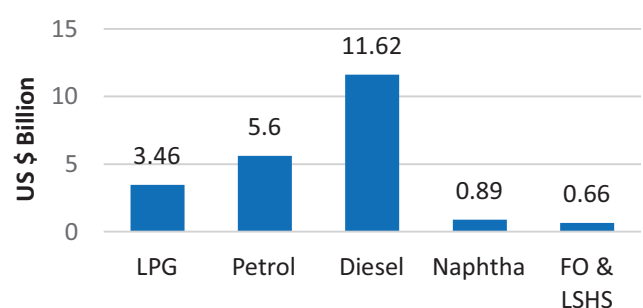
growth rate for a sustained period of ten years or more; (ii) reorienting fiscal instruments such as taxes, subsidies, investments, capital grants etc. to create adequate transmission and distribution infrastructure and to promote fuel switching from Petroleum and Coal to Gas; and (iii) ensuring energy security by maintaining a balance of fuel consumption.

- 7 Replacement of Petroleum Products by Gas can result substantial savings for the economy.** As estimated by the Task Force, at relatively much lower annual growth rates of consumption of LPG, Petrol, Diesel, Naphtha and FO & LSHS during 2019-20 to 2029-30 and at an average 1/3<sup>rd</sup> replacement of these products by Gas (30% of petrol and diesel, and 50% of LPG), around 68 million tonnes of these products could be replaced by Natural Gas by 2029-30 (Figure 2). At Oil price of US\$ 65/bbl and spot LNG price of US \$ 4.50 / Mmbtu, the total savings from price difference alone could reach US \$ 22 billion in 2029-30 (Figure 3) Higher the price difference and greater the replacement ratio, more will be the financial gains from import of LNG.

**Figure 2:** Replacement Potential of Petroleum Products by Gas in 2029-30 : Quantity



**Figure 3:** Savings from Replacement of Petroleum Products in 2029-30 : Value



- 8 National Gas Grid (NGG) holds the key to the growth of LNG import terminals and CGD networks:** Replacement of such a magnitude of petroleum products in the next ten years would require rapid expansion of marketing and distribution infrastructure for a robust Gas market. The issues that need to be addressed include the following: (a) Is there a scientific framework of a Gas Grid in the country particularly its size which can carry more than 600 Mmscmd of Gas by 2030 closest to the user industries such as CGD and power plants and its construction schedule, tariff administration etc.? (b) Need of Transnational Gas pipeline (s) to improve gas supply security. (c) What is the mechanism of financing additional Gas pipelines so that they could be completed in the next 5 years or so? (d) What is the plan of integration of Gas pipelines with other distribution projects and demand locations? These issues and many others can be addressed in an up-to-date scientific report on NGG.
- 9** Two problems have dogged gas pipeline projects for long: (i) Lack of demand and project finance, (ii) ROU problems in states. **The first problem can be solved by creating a Gas infrastructure fund and setting of a Government of India-funded SPV to take over building gas pipelines in the next five years.** The second problem requires close coordination between the Central and the State governments as also possibly bringing out necessary amendments in the Petroleum and Minerals Pipelines (Acquisition of Right of User in Land) Act, 1962.
- 10 Sectors having higher gas absorption potential:** The additional gas requirement which can raise the gas share to 15% in India's primary energy mix by 2029-30 is estimated to be in excess of 400 Mmscmd. The Task Force studied five sectors, power, fertilisers, CGD, refineries and petrochemicals and found the following:
- (a) **CGD at the Top:** Scientific estimates of additional gas demand can be generated in two ways: (i) Based on the PNG and CNG targets of CGD companies approved by PNGRB, and (ii) based on assumptions of replacement of LPG, petrol and diesel consumed in residential,

transport, and Non-transport ( DG sets, Mobile towers, Farm pumps and Tractors). The first method generates an estimate of additional gas demand potential of 107 Mmscmd by March 2029. But the first method is limited by partial targets and lack of uniformity in targets for PNG and CNG between the CGD entities which came up prior to the 9<sup>th</sup> and 10<sup>th</sup> bidding rounds by March 2019 and 136 entities, post-March 2019 and absence of data on gas sales to the commercial and industrial consumers in the CGD areas. The second method tries to plug these gaps to some extent, leading to an estimate of **215 Mmscmd by 2029-30**. CGD sector can achieve its true potential provided residential PNG is made cost competitive against domestic LPG. For maximising potential of CNG/LNG, the misleading notion of CNG/LNG stations being legally part of CGD areas should be resolved and transparent policy is made on CNG stations to be built freely alongside roads within and beyond CGD jurisdictions. The Report spells out certain measures to achieve the full CGD potential.

(b) **Next in priority is the Power sector.** Even without any net addition of Electricity generation capacity, the existing idle capacity of power plants at 85% PLF can generate

an additional gas demand in excess of **100 Mmscmd**.

(c) The **industrial sector** comprising Refineries, Fertilisers and SS industries can generate additional gas demand of around **68 Mmscmd**.

(d) Among the new areas of gas demand, shipping industry holds better prospects as the International Maritime Organisation (IMO) has ruled for replacement of high sulphur FO as Bunker fuel by high quality fuels such as LNG. India's "Sagarmala" Project can open up large scale use of natural gas. LNG-fuelled trucks for long distance has proved to be another area for substantial Gas demand.

(e) A Bio Energy Corporation of India may be set up to provide an exclusive focus to the development of biomethane which can improve the domestic availability of green fuels and strengthen energy security of the country.

11 In order to achieve the above programme in a planned manner, it will be necessary to set up the ecosystem consisting, inter alia, of finalisation of National Energy Policy, of a blueprint on National Gas Grid, and of the National Master Plan for Development of Natural Gas Infrastructure.



Note: The full Report can be obtained from the **web**: [www.indiaenergyforum.org](http://www.indiaenergyforum.org)

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