Evolving Role of Gas in the Energy Mix in India

Singapore Interanational Energy Week 2017

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Definitions & cautionary note

Reserves: Our use of the term "reserves" in this presentation means SEC proved oil and gas reserves.

Resources: Our use of the term "resources" in this presentation includes quantities of oil and gas not yet classified as SEC proved oil and gas reserves. Resources are consistent with the Society of Petroleum Engineers (SPE) 2P + 2C definitions.

Discovered and prospective resources: Our use of the term "discovered and prospective resources" are consistent with SPE 2P + 2C + 2U definitions.

Organic: Our use of the term Organic includes SEC proved oil and gas reserves excluding changes resulting from acquisitions, divestments and year-average pricing impact.

Shales: Our use of the term 'shales' refers to tight, shale and coal bed methane oil and gas acreage.

Underlying operating cost is defined as operating cost less identified items. A reconciliation can be found in the quarterly results announcement.

The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate legal entities. In this release "Shell", "Shell group" and "Royal Dutch Shell" are sometimes used for convenience where references are made to Royal Dutch Shell plc and its subsidiaries in general. Likewise, the words "we", "us" and "our" are also used to refer to subsidiaries in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies. ''Subsidiaries'', "Shell subsidiaries" and "Shell companies" as used in this release refer to companies over which Royal Dutch Shell plc either directly or indirectly has control. Entities and unincorporated arrangements over which Shell has joint control are generally referred to as "joint ventures" and "joint operations" respectively. Entities over which Shell has significant influence but neither control nor joint control are referred to as "associates". The term "Shell interest" is used for convenience to indicate the direct and/or indirect ownership interest held by Shell in a venture, partnership or company, after exclusion of all third-party interest.

This release contains forward-looking statements concerning the financial condition, results of operations and businesses of Royal Dutch Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management's current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Royal Dutch Shell to market risks and statements expressing management's expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as ''anticipate'', ''believe'', ''could'', ''estimate'', ''expect'', ''goals'', ''intend'', ''may'', ''objectives'', ''outlook'', ''plan'', ''probably'', ''project'', ''risks'', "schedule", ''seek'', ''should'', ''target'', ''will'' and similar terms and phrases. There are a number of factors that could affect the future operations of Royal Dutch Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this release, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell's products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; and (m) changes in trading conditions. There can be no assurance that future dividend payments will match or exceed previous dividend payments. All forward-looking statements contained in this release are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Royal Dutch Shell's 20-F for the year ended December 31, 2015 (available at www.shell.com/investor and www.sec.gov). These risk factors also expressly qualify all forward looking statements contained in this release and should be considered by the reader. Each forward-looking statement speaks only as of the date of this release, October 26, 2017. Neither Royal Dutch Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this release.

With respect to operating costs synergies indicated, such savings and efficiencies in procurement spend include economies of scale, specification standardisation and operating efficiencies across operating, capital and raw material cost areas.

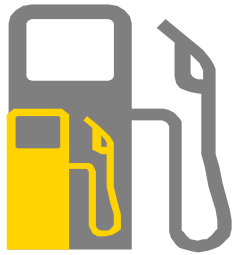
We may have used certain terms, such as resources, in this release that United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website www.sec.gov.

The energy challenge – more energy, fewer emissions

There is more demand for energy globally as the world's population and living standards increase

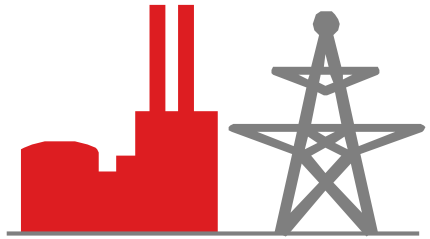
Growing population

Global population is expected to increase from around 7 billion today to nearly 10 billion by 2050, with 67% living in cities.



Rising demand

Global energy demand will likely be almost 60% higher in 2060 than today, with 2 billion vehicles on the road (900 million today).



Ongoing supply

Renewable energy could triple by 2050, but we will still need large amounts of oil and gas to provide the full range of energy products that the world needs.

Mitigating climate change

Net-zero emissions is a potentially achievable societal ambition.

Different sectors, different challenges, different paces of decarbonisation

Power generation
13.6Gt CO_2

Industry
13Gt CO_2

Built environment
9.3Gt CO_2

Transport
8.5Gt CO_2

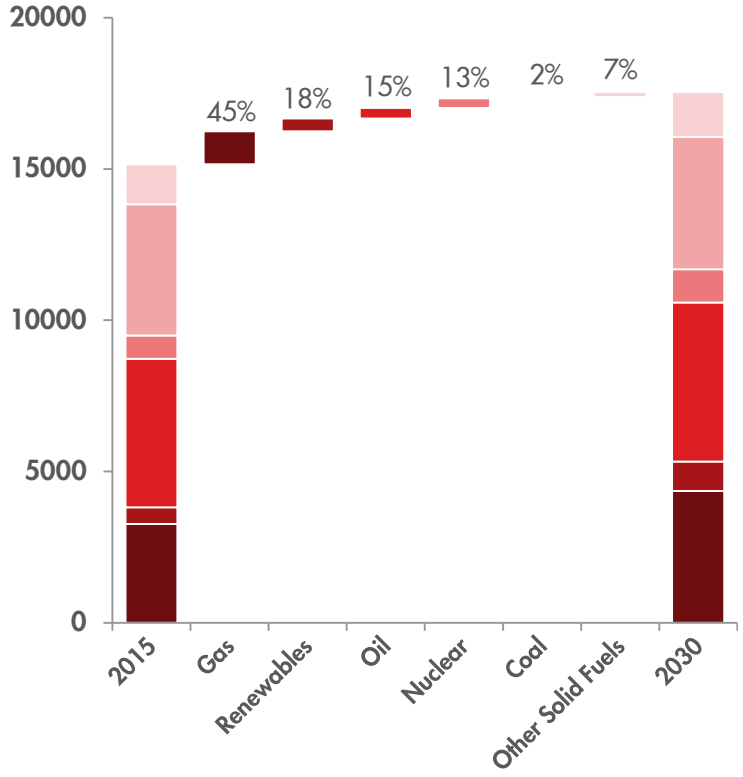
Current status

- Less difficult to decarbonize
- …
- More difficult to decarbonize

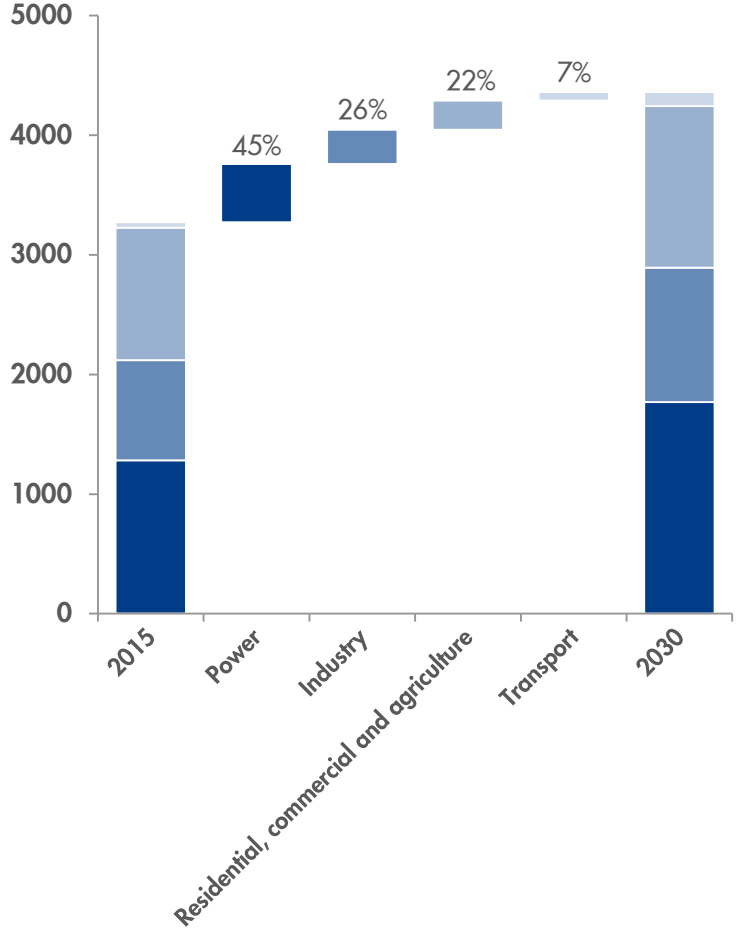
Source: Shell Scenarios

Gas will play a central role in meeting increasing energy demand

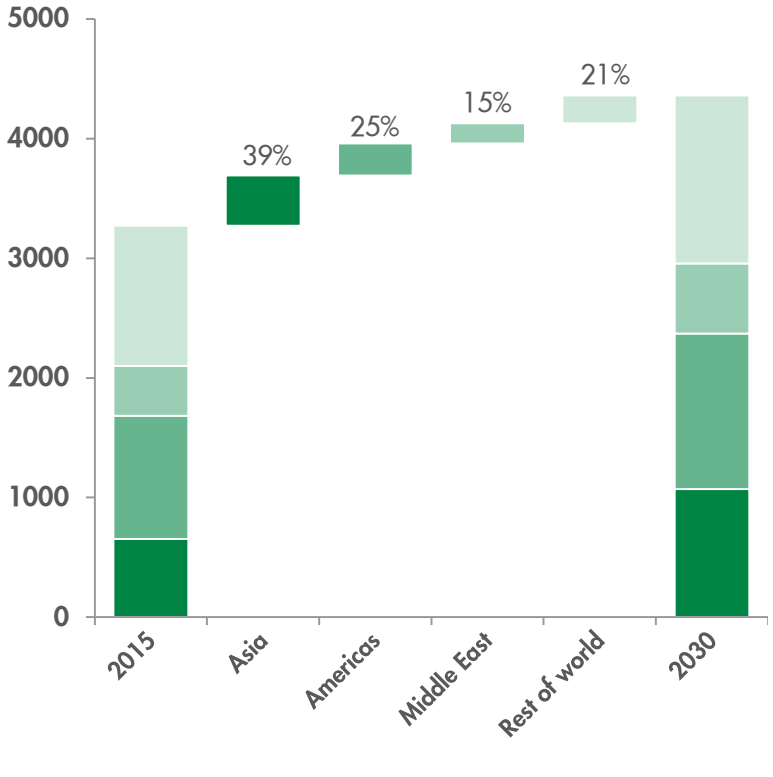
Global energy demand growth by fuel (BCM)



Global gas demand growth by sector (BCM)



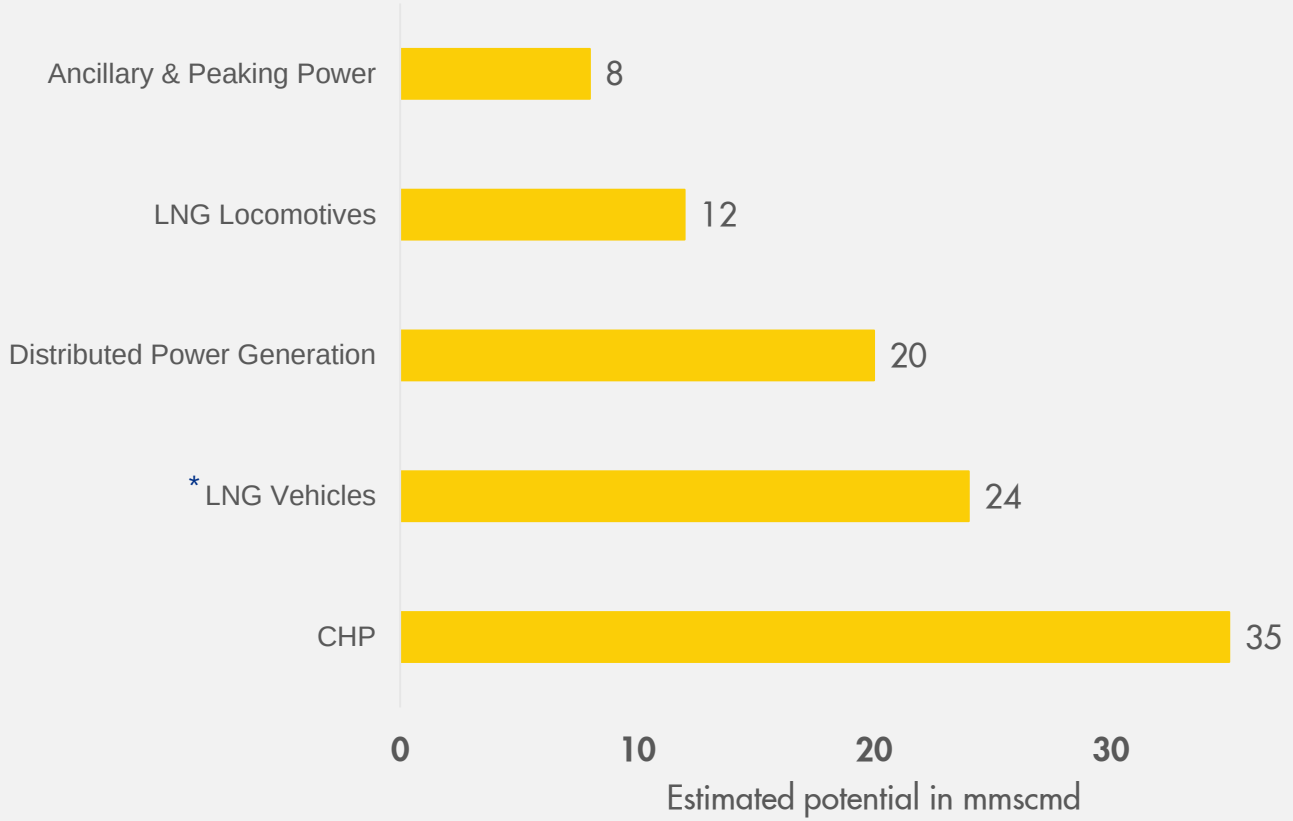
Global gas demand growth by region (BCM)



Source: Shell interpretation of Wood Mackenzie Q4 2016 data

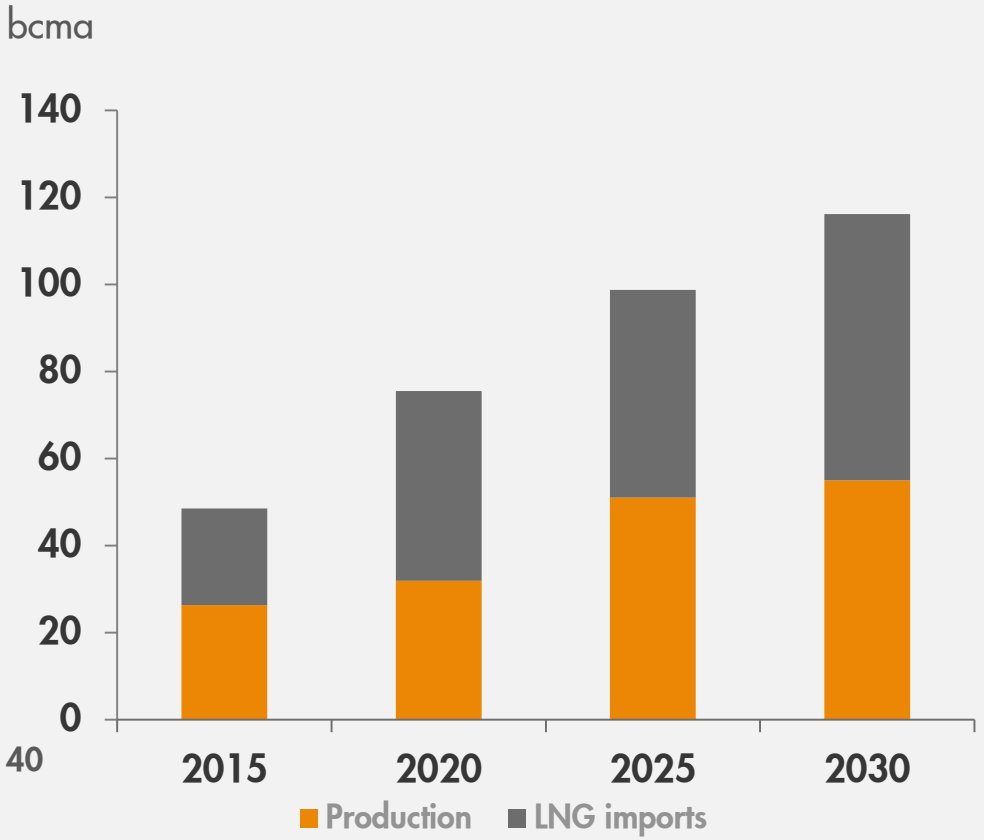
Macroeconomics, urbanization and gas infrastructure build-out underpin demand growth in India; policies will play a key role

India gas market potential*



* **Contingent to conducive policy changes**

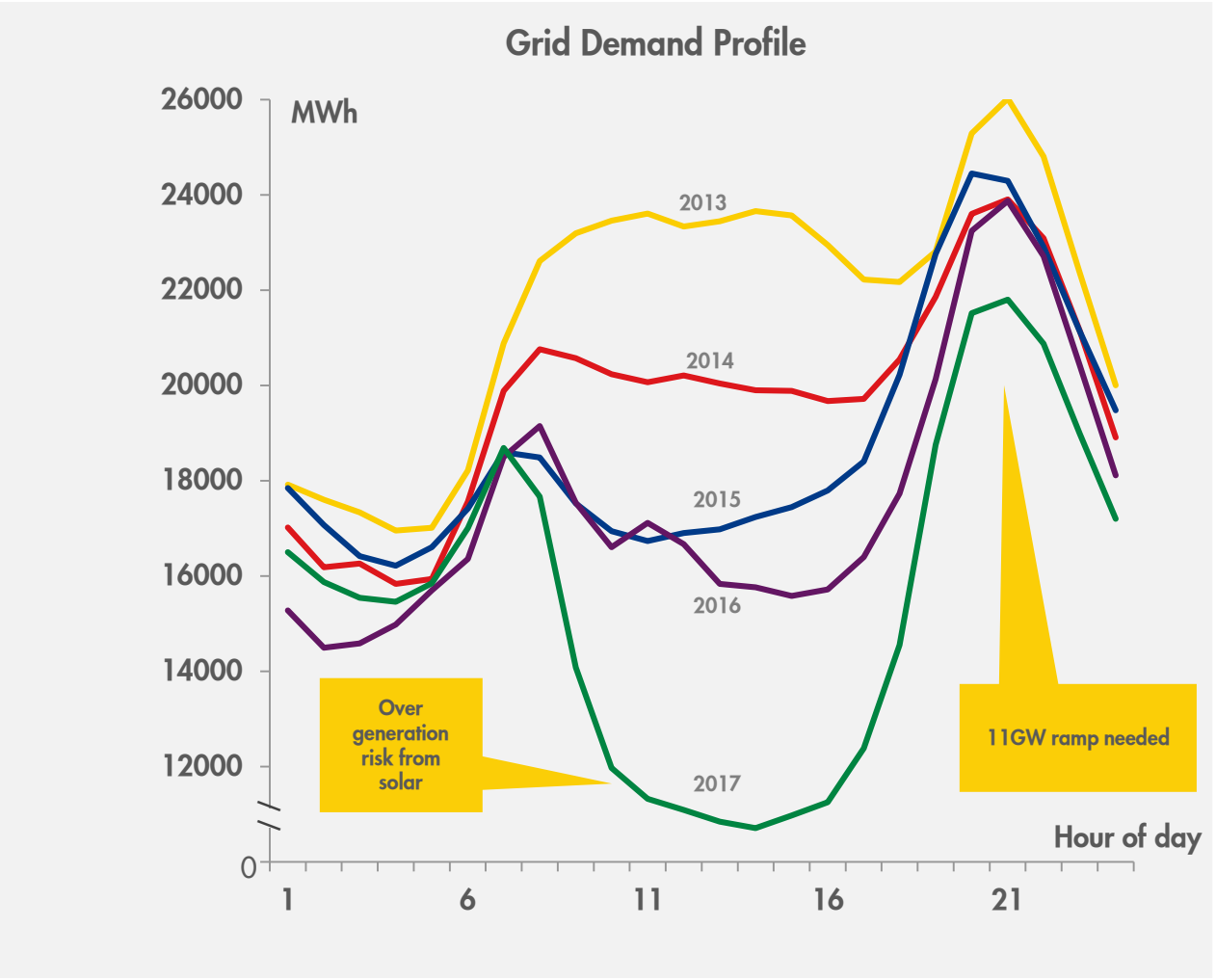
India gas supply

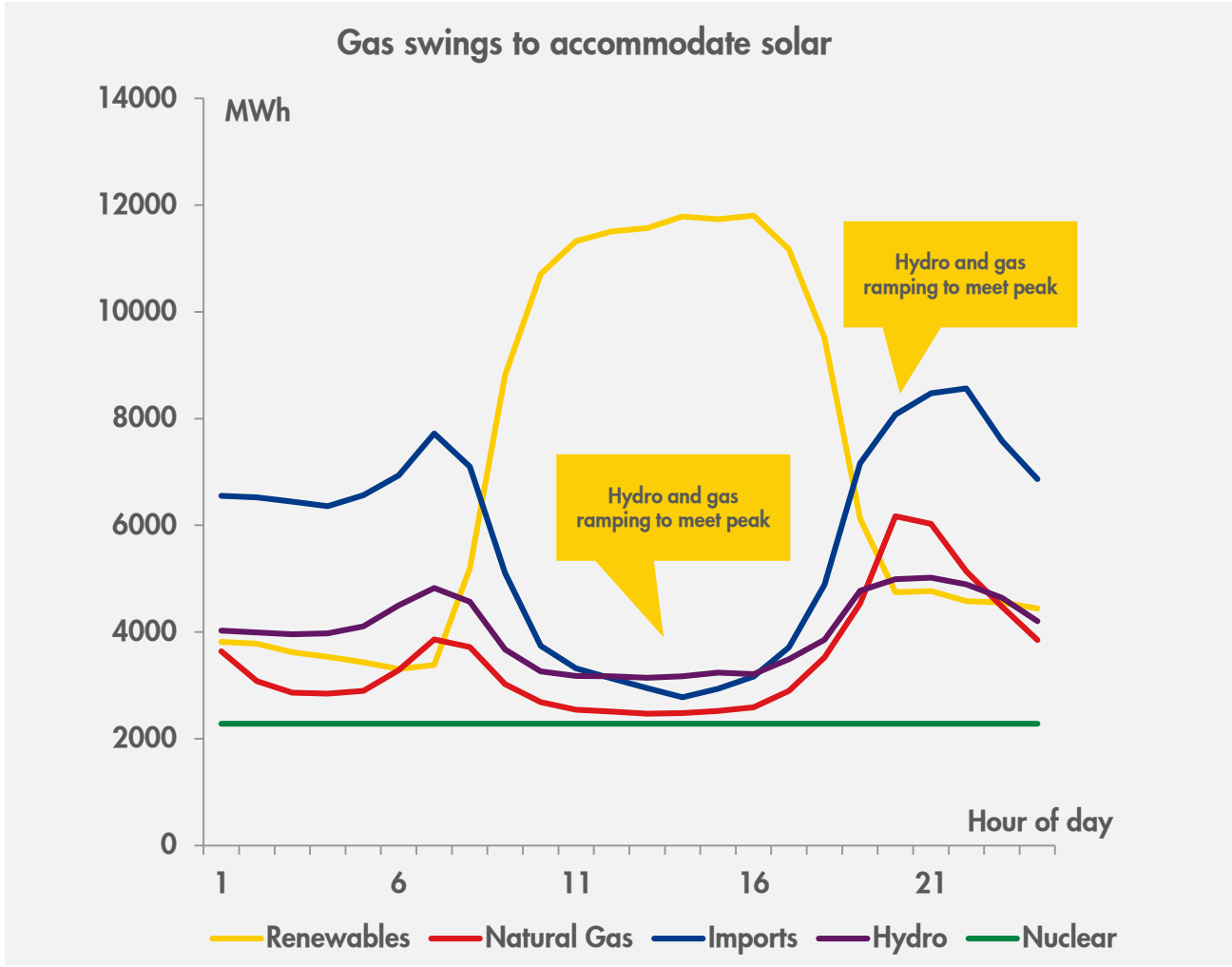


Source: Shell interpretation of Wood Mackenzie Q4 2016 data

Source: KPMG Analysis

Renewable Energy Challenge – How Gas helps

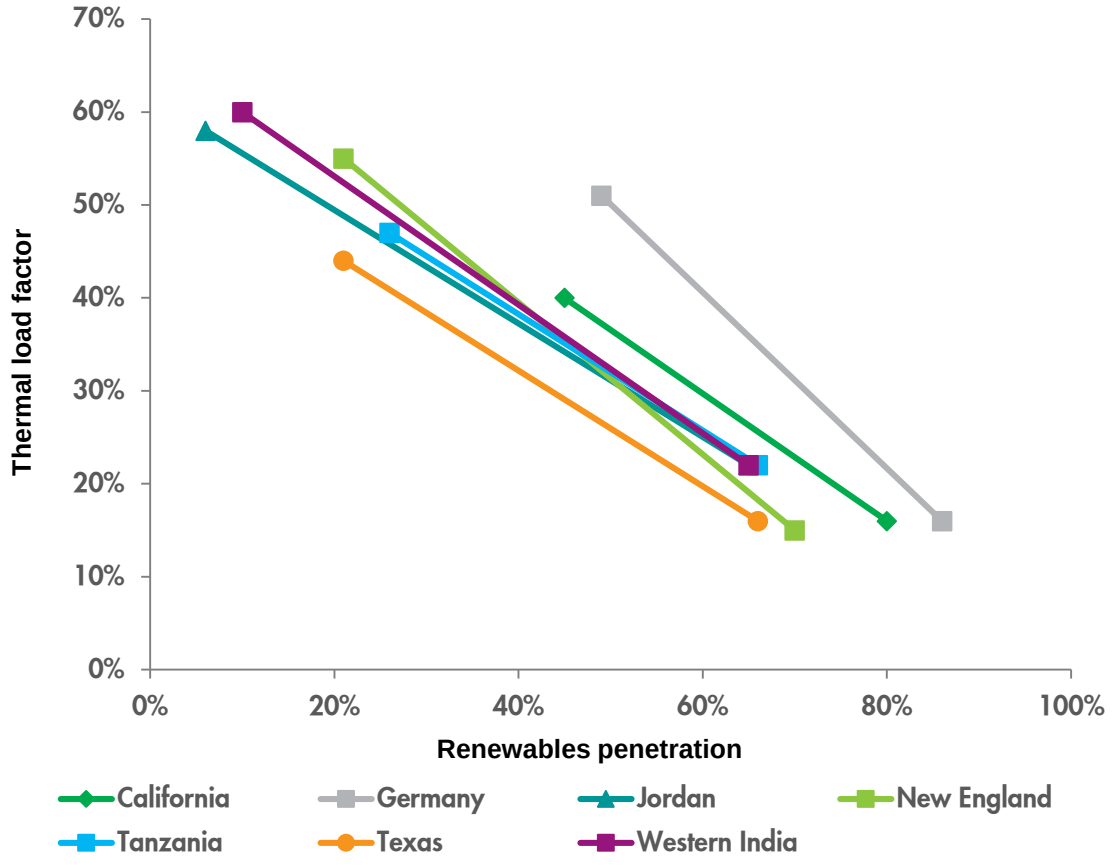




Source: California Independent System Operator

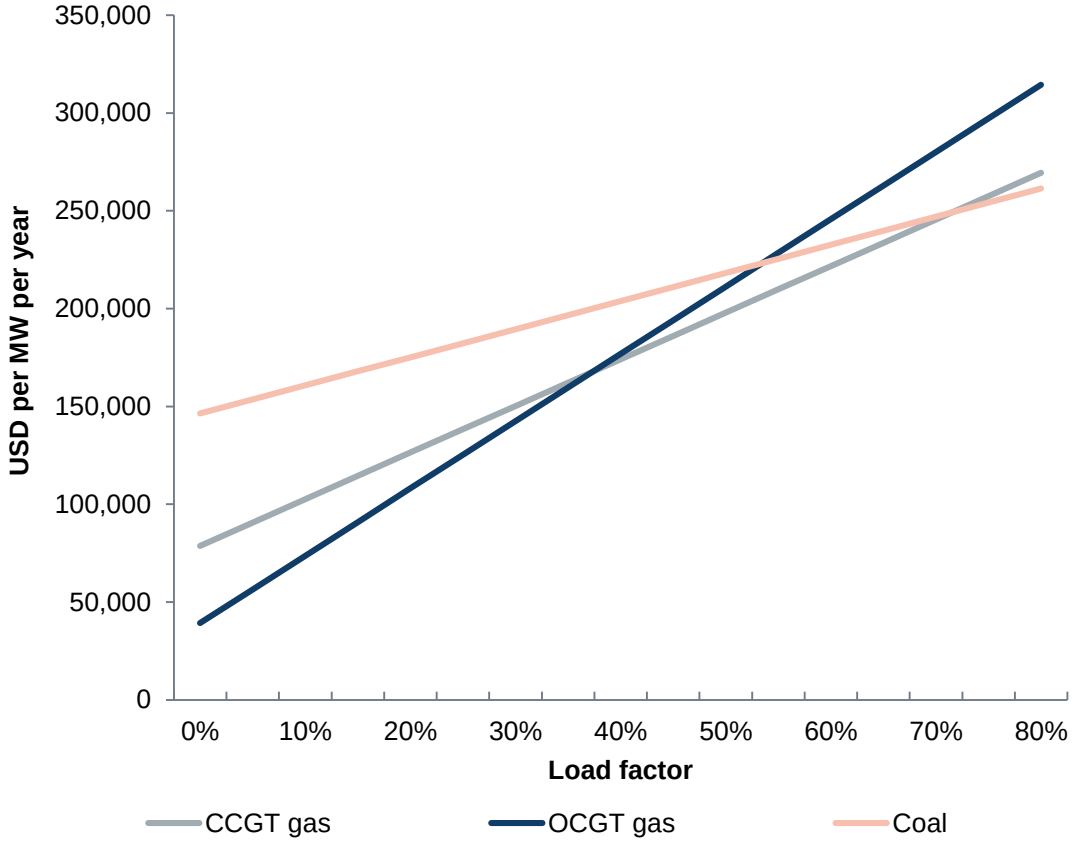
A major cost determinant is the load factor of thermal generation, which tends to diminish as renewable penetration increases

Range of renewable cases analysed (2040)



Source: IHS Markit

Texas total cost (2030)



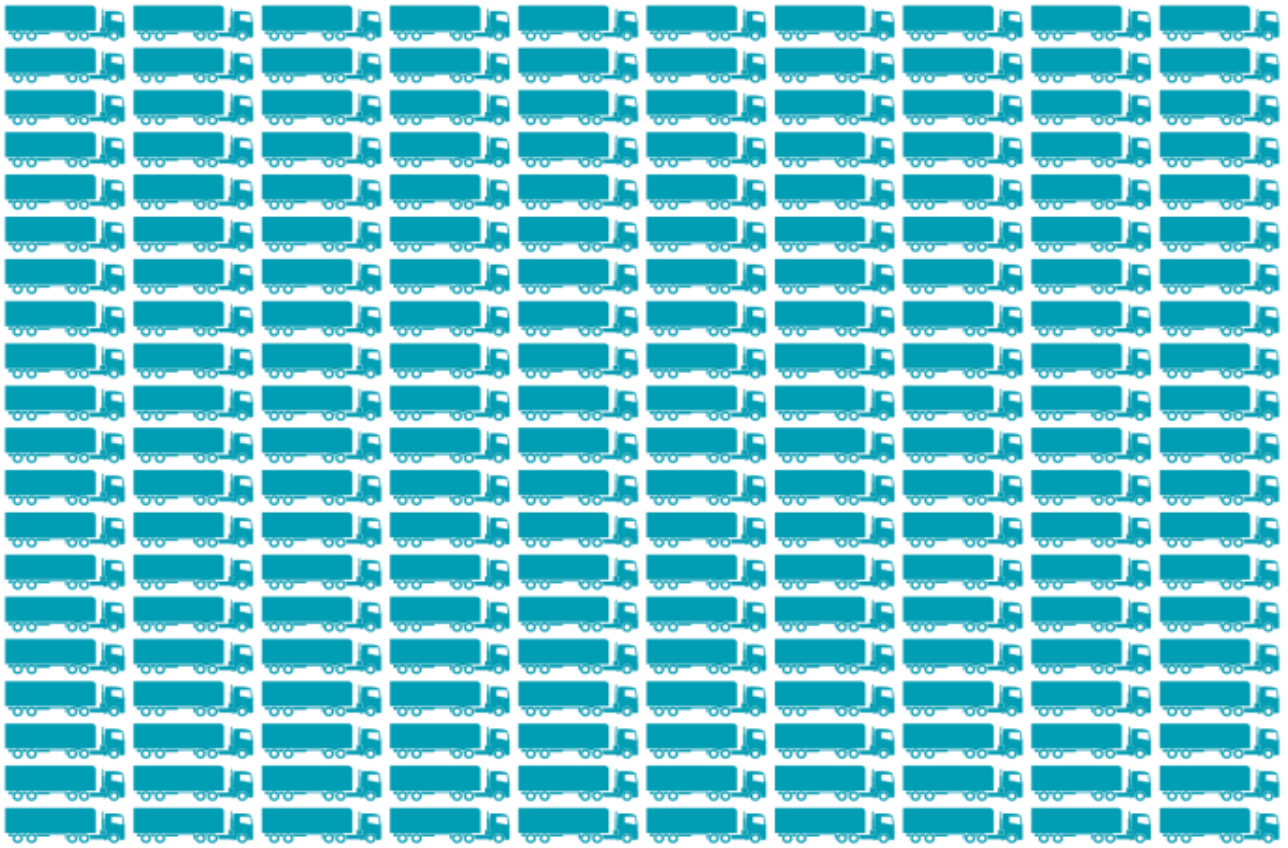
Source: IHS Markit

Natural Gas for Transport

- India is home to the world's sixth largest fleet of natural gas fueled vehicles, including CNG-powered taxis and buses.
- City Gas infrastructure across 200 cities has been proposed, with a few in early stages of development.
- In India road freight constitutes around 63% of the total freight movement consisting of 2.2 million heavy duty trucks and 0.6 million light duty vehicles
- Tata Motor showcased the Prima LNG truck during the 12th Indian Automotive Expo in Mar 2014
- Started trial for India's first LNG fueled bus in Kerala through joint collaboration between Tata Motors, Petronet, Indian Oil.

LNG fuel can reduce GHG emissions in shipping

LNG fuelled marine engines can help reduce well-to-wake greenhouse gas emissions by **up to 23%***



Equivalent to 200 trucks removed from the road for a single ship

*One example of emissions reduction using one supply chain scenario and one medium-large engine, >1 MW. Higher or lower engine efficiency and supply chain emissions impact WtW savings proportionally. Unburned methane in the exhaust (methane slip) has higher GHG impact than fuel completely combusted to CO_2.

Source: Shell SR.13.11731. Truck comparison calculation based on data from EIA for CO2 values for diesel and from information from American Clean Skies, MJ Bradley relating to fuel consumption for trucks and ships.

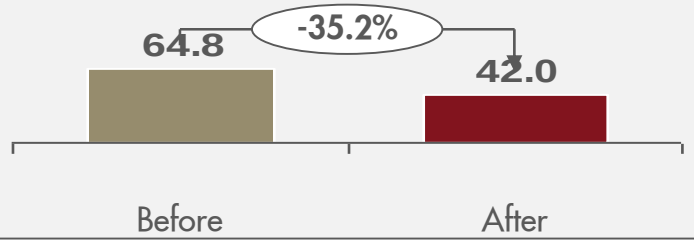
There are often other benefits in addition to air pollution reduction that can help offset fuel cost increase

燕京啤酒 YANJING BEER

Leading beer manufacturer switched 10 coal boilers (6 t/h each) to one 4 t/h, one 6 t/h and five 10 t/h gas boilers

Reduction in Noise Pollution

Noise of Daytime to North Boundary (dB)



Reduction in Land requirement for boilers

Use of Land for the Boilers and Related Activities

before

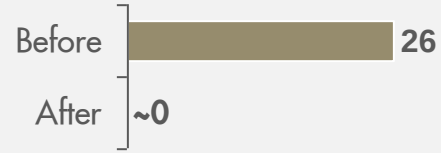
after

常熟协顺纺织制衣有限公司
CHANGSHU XIESHUN TEXTILES & GAMENTS CO.,LTD.

Jiangsu textile company switched their coal boilers to gas boilers and captured benefits below

Reduction of Pollution

SO_2 Emissions, t/a

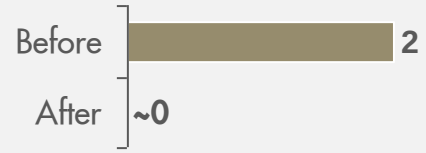


"Each year we burnt about 50 thousand tons coal, causing huge pollutions"

—— Head of Logistics

Decrease of Labour hours

Labor for Fuel Loading, # person



"Pipeline gas is supplied automatically that doesn't need fuel loading workers"

—— Head of Logistics

Mitigation of Future Risks

"Government enforcement of desulfurization and denitration is likely to recur, leading to unpredictable cost"

—— Head of Logistics

"Our products would have gradually lost market shares while competitors are upgrading boiling techniques"

—— Head of Logistics

Distortions: policy and regulation drive up end user prices

Fiscal Distortions

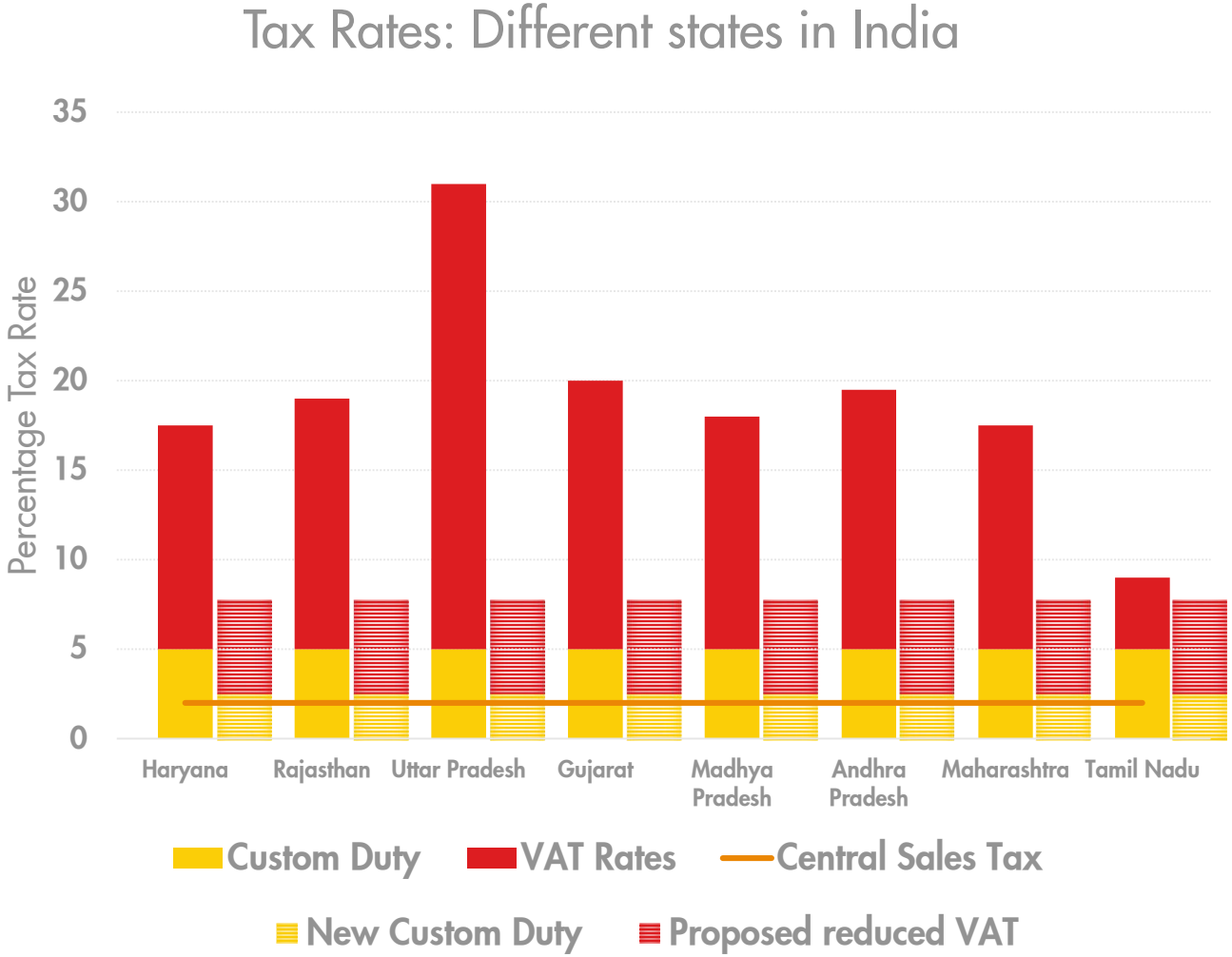
- Varying, complex & High tax rates on gas

- GST regime
- Custom Duty
- Central Sales Tax (CST)
- Value Added Tax (VAT)

Regulatory Challenges

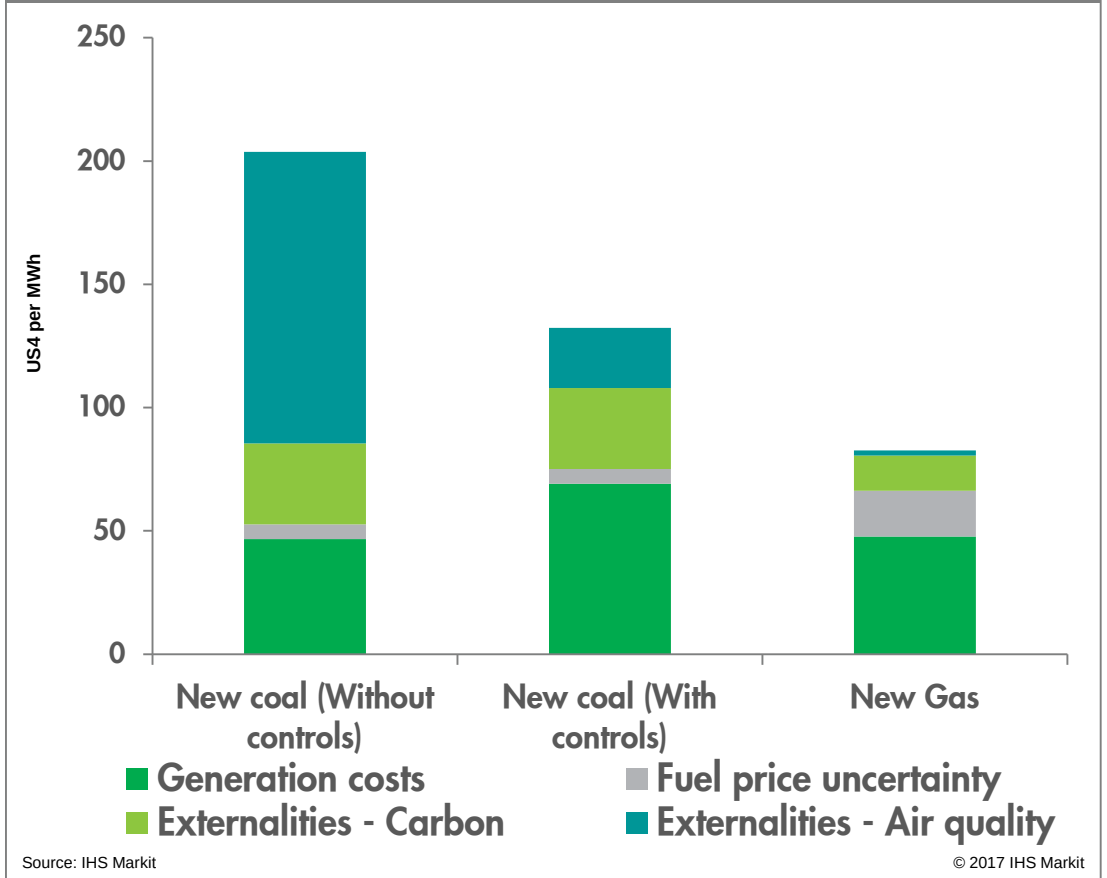
- Pipeline Tariffs

- Low pipeline connectivity
- Tariff based Bidding Mechanism
- Pancaking of Tariffs



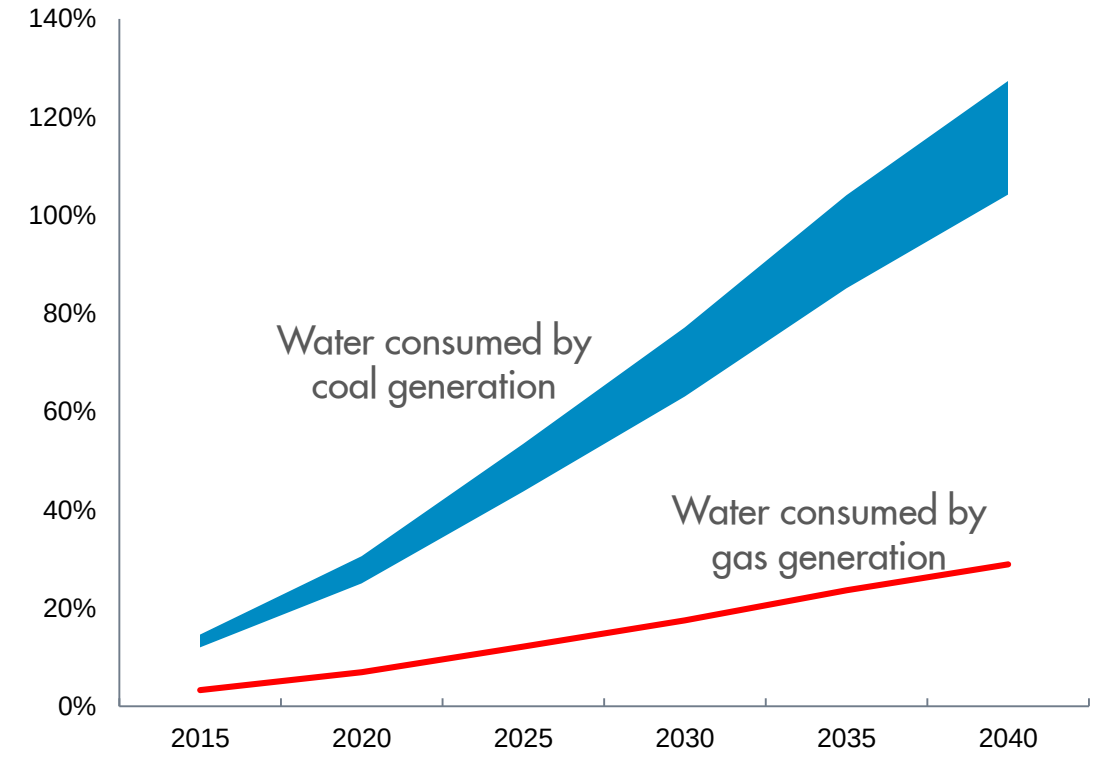
POLICY MAKERS NEED TO CONSIDER THE FULL SYSTEM COSTS

Coastal distributed generation in Western India



Source: IHS Markit

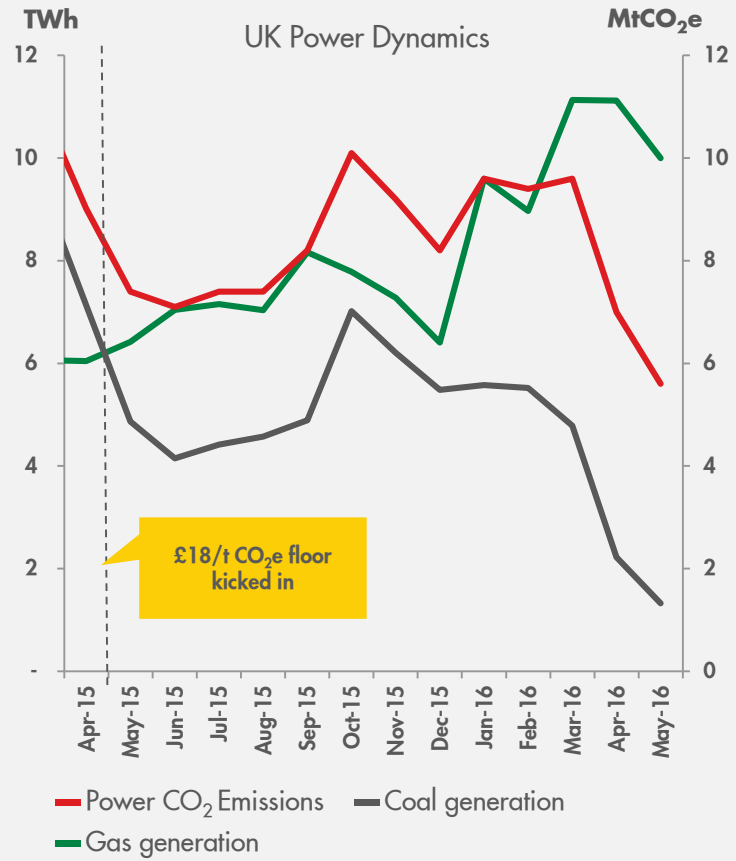
Comparison of river flow percentage needed by coal vs. gas in order to meet planned thermal generation in Chhattisgarth



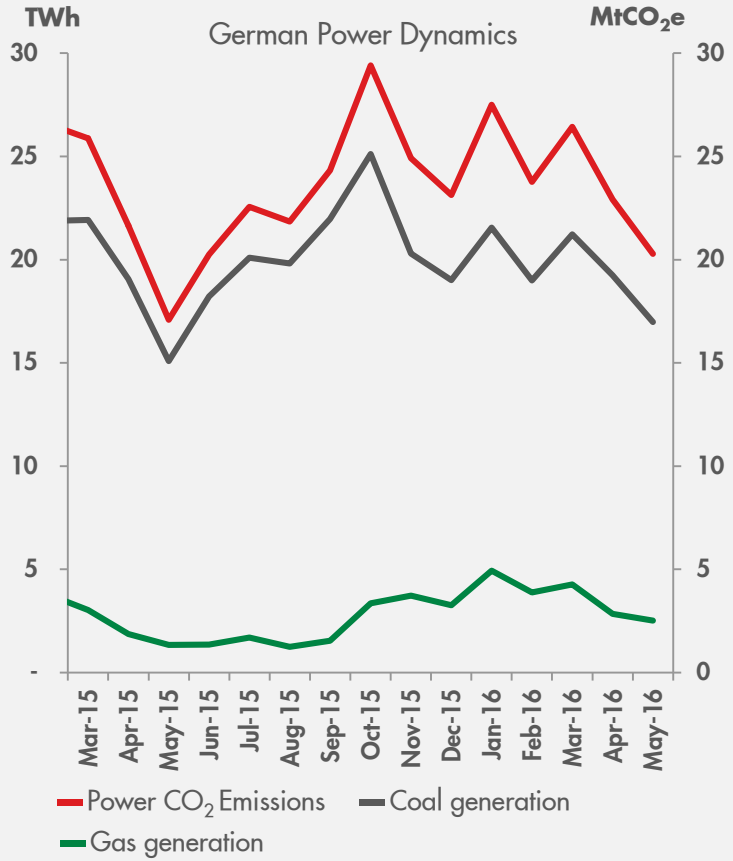
Source: IHS Markit

Emission reduction policies drive increased gas demand

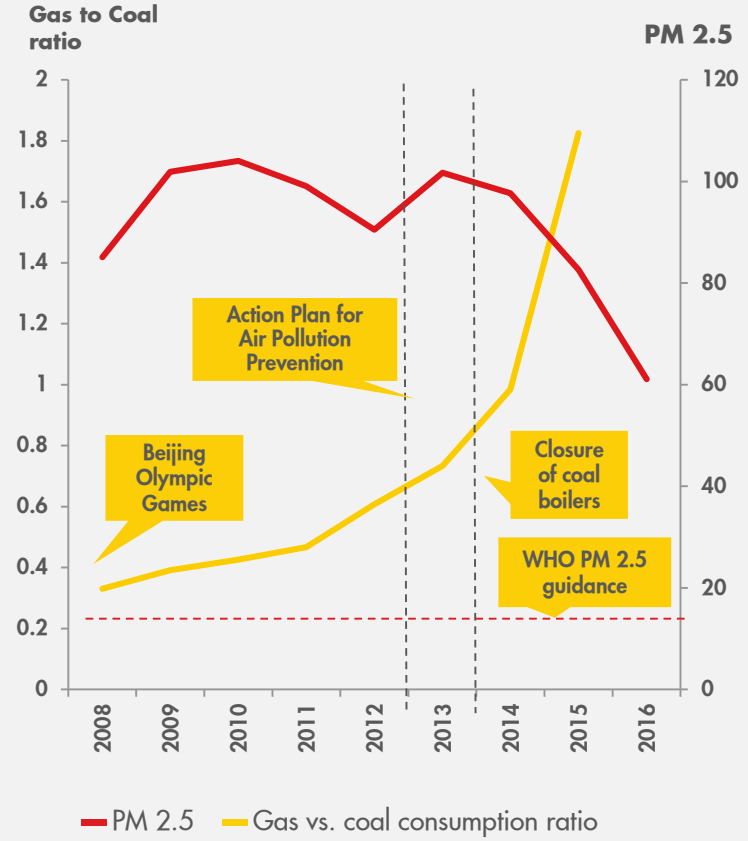
UK: Lower CO_2 emissions



Germany: Static CO_2 emissions



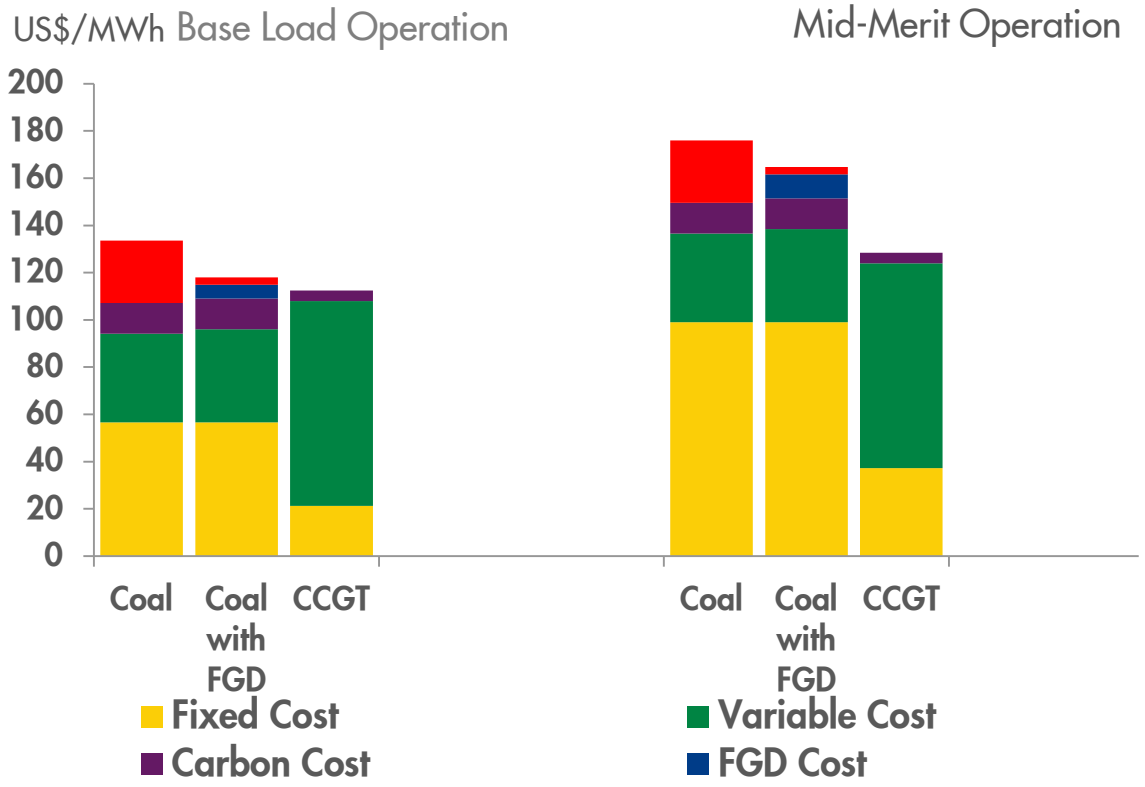
Beijing: Improving air quality



Source: Aurora Energy Research; Embassy of the USA – Beijing, China; National Bureau of Statistics of China

EXTERNALITIES AND FULL COST OF ELECTRICITY IN OTHER MARKETS

PHILLIPPINES ELECRICITY COSTS INCLUDING EXTERNALITIES

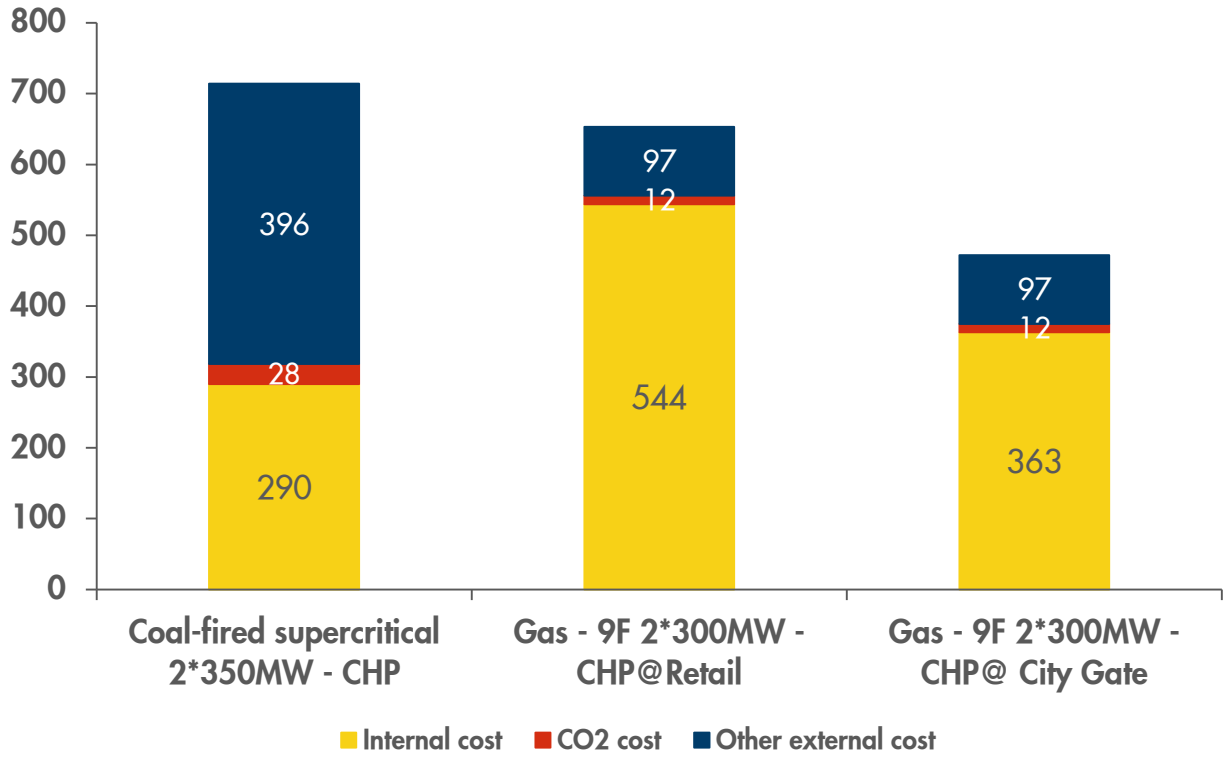


Capacity Factor = 80%
Coal price: US$70/ton
Gas price: US$12/mmbtu
Carbon price: US$10/ton (S.Korean ETS)

Capacity Factor = 40%
Coal price: US$70/ton
Gas price: US$12/mmbtu
Carbon price: US$10/ton (S.Korea

Source: IHS

CHINA ELECRICITY COSTS INCLUDING EXTERNALITIES RMB/MWh)

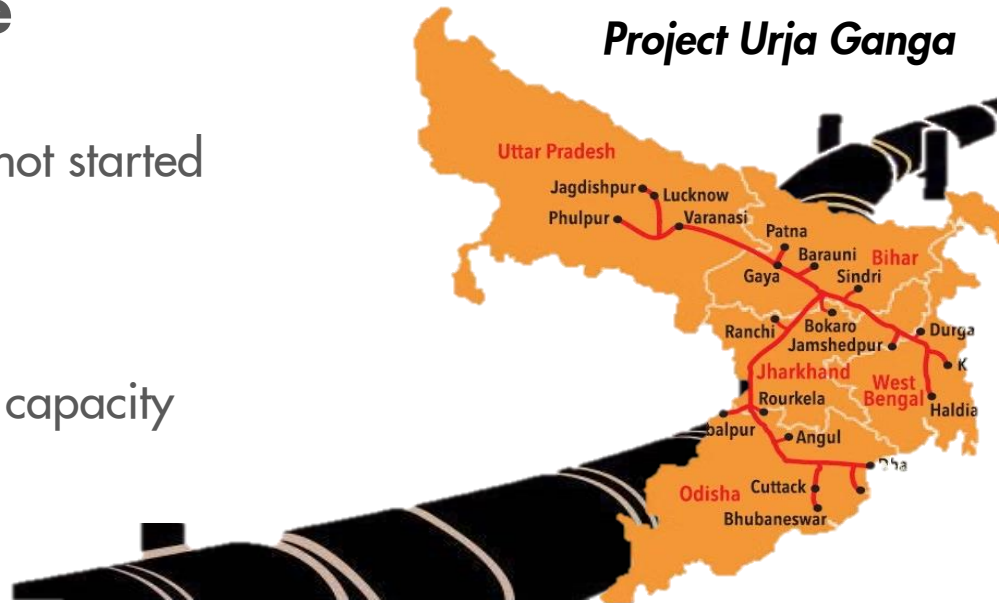


Note: CO2 price: 30 RMB/t; Coal price: 529 RMB/ton; City Gate gas price: 1.8 RMB/m3; Retail gas price: 3.0 RMB/m3 Same load factor applied.

Policies for enabling pipeline infrastructure

- Stagnation on pipelines under construction: 67% planned pipeline had not started due to challenges on demand, securing customers and financing.
- East region almost devoid of gas pipeline connectivity
- 17,421 km with capacity ~186 BCMA with low average utilization; yet capacity booking for third parties remains a challenge

Project Urja Ganga



Policy Interventions

- Aspiration of doubling of gas pipelines expressed in 2016 budget
- 40% viability gap funding provided to GAIL for the development of the **Urja Ganga pipeline**
  - 2540 Km long pipeline from some of the poorest parts of the country.
  - 5 regions to benefit the most – UP, Bihar, Jharkhand, Oddisha and West Bengal including 40 districts and 2600 villages