Gas in Power Generation Sector, the story as told by Jodi-Gas database.

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Agenda

• Why Power Sector?
• Drivers of gas consumption in power sector?
• USA : Shale gas and Coal-to-Gas switching.
• Brazil : Gas & Hydro in power generation.
• Data Integration : gas & Renewables
• Asia : Top consuming countries
• Africa : Egypt power sector
• Europe: Solar power in Italy
Why Power Sector?

• Power generation was the main area of growth in natural gas consumption and expected to continue to lead the growth in the future.
Drivers of gas consumption in power sector?

- Economic growth
- Competition from Coal, Renewables, …
- Environmental policies and market regulations
- Energy Prices
- Supply Availability
- Efficiency Gains
- Others
In United States, gas-fired generation shot up by almost 20% in 2015 (IEA MTGMR 2016)
United States

• Shale gas revolution, cheap gas, switching from coal to gas in power sector.

• Planned Retirement of coal-fired power plants, increase the share of gas.

• Deployment of renewables: solar and wind. Gas consumption will stagnate in the future.

• Coal is very important in power generation in many countries, including China, India, Indonesia.

• Jodi potential expansion to coal, Jodi-Coal.
The chart shows Electricity Generation (GWh), not the Installed Capacity (Mw).

In 2011, 428 TWh of electricity from hydro compared to 373 TWh in 2014 (decline)

A multi-year drought, lowered the electricity generated from hydro and increased gas-fired generation.
Brazil : Gas Consumption in Power Generation – Jodi-Gas

- In March 2011, 347 MMcm of Gas Consumed in Power Generation compared to 1580 MMcm in March 2015
- Brazil imports gas from Bolivia, a GECF member country.
- More complete data will help to better understand the behaviour of gas imports and consumption in Brazil.
Data Integration

- Integrate data from different sources is a must to see the full picture.
- On monthly basis, Jodi-Gas data is being processed and loaded to GE CF Data Exchange Center (DEC). So DEC users can benefit from the built-in data analysis and dashboards.
- **Integrate** Jodi-Gas data with other data available in DEC, (IRENA power data)
- Macroeconomic Indicators & forecast from IMF
- others
Asia: Gas in Power Sector

Gas Consumption in Power Generation - Asia Top 5 Countries (As per 2015 Annual)
Japan

• Before Fukushima, 26% of the electricity came from Nuclear power.

• After nuclear power plants shutdown, the LNG imports increased by 20% for consumption in gas-fired power plants.

• The largest LNG importer in the world, with share 35% of the global trade.


• Increased deployment in renewables

• Will lead to lower gas consumption in power sector and lower LNG imports.
Asia : Gas in Power Sector

• **China:**
  - Gas consumption data in power sector is not available in Jodi-Gas database yet.
  - 60% of electricity comes from coal-fired plants.
  - For air pollution reasons china will accelerate switching from coal-fired to gas-fired power generation. As per IEA MTGMR, Beijing aims to close down all coal-fired power plants by 2017, and to build four major gas-fired co-generation units.

• **Iran:** data gaps, for example no data available for the period from Aug 2011 to May 2014.
India

Gas Consumption in Power Generation - Asia Top 5 Countries (As per 2015 Annual)
Asia : Gas in Power Sector

• India :
  • Because of low utilization rate of its installed gas-fired power generation capacity (was 20% in 2014), it consumes around 1 bcm per month.
  • Price-driven increase in gas consumption in power sector?
  • IEA : the fertilizer sector - which accounts for around one-third of total Indian gas consumption – will drive robust growth in industrial gas usage.
  • Should Jodi-Gas questionnaire expand to cover consumption in sectors like industry, petrochemicals, transportation, … ?

• Indonesia: the cheap domestic coal is dominating the power sector, gas consumption is around 0.75 Bcm a month.
Africa Top Consumers

Egypt, Algeria and Nigeria are the three biggest gas producers & consumers in Africa. The three countries are GECF members.
• 70% of the electricity generated in Egypt and almost all electricity in Algeria is from gas-fired power plants.

• Egypt: Supply shortages, LNG Imports: 2 FSRU, New discovery: Zohr offshore filed (30 tcf), switch to coal in power generation and industries like cement?

• MENA: Gas subsidy reforms, raise gas and electricity prices. (gulf states & Egypt for example)
Egypt: the increase in power sector consumption came at the expense of industrial sector.
Europe: Gas in Power Sector

- Italy: imports pipeline gas from Algeria and Libya
- Germany: a major importer of Russian gas.
- Netherlands is a gas producing country.
Germany, Italy and Spain are leaders in renewables. In 2011, there was a big increase in installed solar capacity in Italy.
Italy electricity generated from **Solar PV** increased dramatically since 2011.
Gas Consumption in Power Generation - North America (not including USA) Top 10 Countries (As per 2015 Annual)
Mexico

• Switch from the expensive oil-fired power plants to gas-fired power plants.
• Plans to build pipelines to import gas from US.
• Mexico’s energy market reforms:
  • End the monopoly in NG transportation and marketing in Mexico.
  • Attract foreign investment.
Thank You
Russia

• Economic contraction, mild weather
• Decline in gas consumption for power generation:
  • More efficient gas units
  • More nuclear capacity