Competition pipeline gas vs LNG in Europe
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European Natural Gas and LNG markets – Current Situation
European natural gas consumption

**Decreasing** European natural gas demand by 1.4% in 2012 vs 2011 due to challenging economic conditions and competition with coal in power.

**In** 2012, pipeline gas imports to Europe remained stable.

**LNG imports** fell by 23 Bcm.

Source: CERA, GDF SUEZ March 2013
Focus on the European LNG flows 2012 vs. 2011

**European LNG imports dropped by 23 bcm or 17.5 mt (-27%)**
- Asia (+15.5 mt) and Latin America (+3.5 mt) attracted flexible LNG, out of Europe;
- Liquefaction plants faced production issues in Egypt and in Algeria: -3.1 mt.

**Decreasing imports in the UK:** -8.2mt. The country is now the 2nd European LNG importer.

Source: PFC
European Natural Gas and LNG markets – Long-Term Outlook
Europe’s long-term natural gas demand

- European gas demand is expected to grow between 2010 and 2030 at an average annual rate of +0.16%.

- Two distinct periods are expected to shape the European market;
  - 2010-2020: decrease in gas needs (-31 bcm)
  - 2020-2030: demand picking up (+49 bcm)

- Consumption growth is anticipated in transport (+19 bcm), in power generation (+9 bcm) and in industry (+7 bcm).

Source: CERA March 2013
Europe long-term natural gas supply: domestic production

- **Domestic production** is expected to decline by -1.7% per year between 2010 and 2030
  - Current production levels in Norway should remain steady
  - Shale gas in Europe (notably in Poland) is in its very early stages of resources appraisal. Its development is not expected to be as fast as in the US, because of different geological, regulatory, social and environmental issues

![Europe Indigenous Gas Production (in bcm)](chart)

- CAGR -1.7% / y
- CAGR -3.5%
- +11.5%
- -6.6%
- -6%
- Stable

Source: CERA January 2013
The average utilization rate in 2011 of the pipelines was around 60% from Russia (excluding Nord Stream), from Caspian and from North Africa.

- **Russia:**
  - Existing: 268 bcm
  - Project: at least 102bcm

- **Caspian:**
  - Existing: 20 bcm (Azerbaijan, Iran)
  - Projects: at least 141 bcm (Caspian, Azerbaijan, Iran, Turkmenistan…)

- **North Africa:**
  - Existing: 58 bcm (Algeria, Libya)
  - Projects: 15 bcm
Addressing the long term European supply/demand gap – LNG vs Pipeline
European natural gas demand / supply gap outlook – domestic supplies

From 50% in 2010, domestic production is expected to represent slightly above 40% of total European gas demand in 2020, and 35% in 2030.

Source: CERA, GDF SUEZ
European natural gas demand / supply gap outlook – domestic supplies and pipeline imports

- **In 2012, pipeline imports accounted for ~40% of total European gas needs.**

- **Pipeline imports are expected to increase by +1.7% per year on average over 2010 - 2030**
  - Russia will remain the key supplier for Europe, with pipeline projects development (North Stream, South Stream)
  - Additional pipeline gas would require significant financial investments

Source: CERA, GDF SUEZ
European natural gas demand / supply gap outlook – the Russia max case

Russia and the Caspian have the ability to increase their export level to Europe

In this case Russia would export at 85% of the nominal pipeline capacity to Europe

Source: CERA, GDF SUEZ
European natural gas demand / supply gap outlook – the Russia max case

- The additional pipeline imports from Russia would be directly competing with LNG.
- Long term LNG contracts are not renewed due to a strong pipeline competition.
- As a consequence, additional LNG imports are not required in Europe before 2022.

Source: CERA, GDF SUEZ
European natural gas demand / supply gap outlook – the base case

**No additional pipeline imports assumed**

**LNG imports:**
- Until 2015 contracted LNG should cover most of the needs.
- Current LNG contract renewed
- After 2015 Europe may have to import new volumes, especially from flexible LNG
- Which LNG will fill the supply/demand gap?

Source: CERA, GDF SUEZ
Competition between future LNG projects to supply Europe

- New liquefaction projects will be needed on top of flexible volumes, and are expected from the US, Africa (West and East), the Mediterranean basin or Arctic areas.

- Marginal supply cost is not the sole driver of European gas prices:
  - Additional Russian/Caspian volumes would depend on the producers’ willingness to adapt to a strong competition environment.
  - Diversification and security of supply are key for Europe.

Source: IHS CERA.
Notes: Calculated “Break-even” Cost of Supply Delivered to Europe, including Liquids Credits, excluding regas. Russia cost represents the cost of gas from Bovanenkovo to European border.