Energy security: Gas supply security in IEA

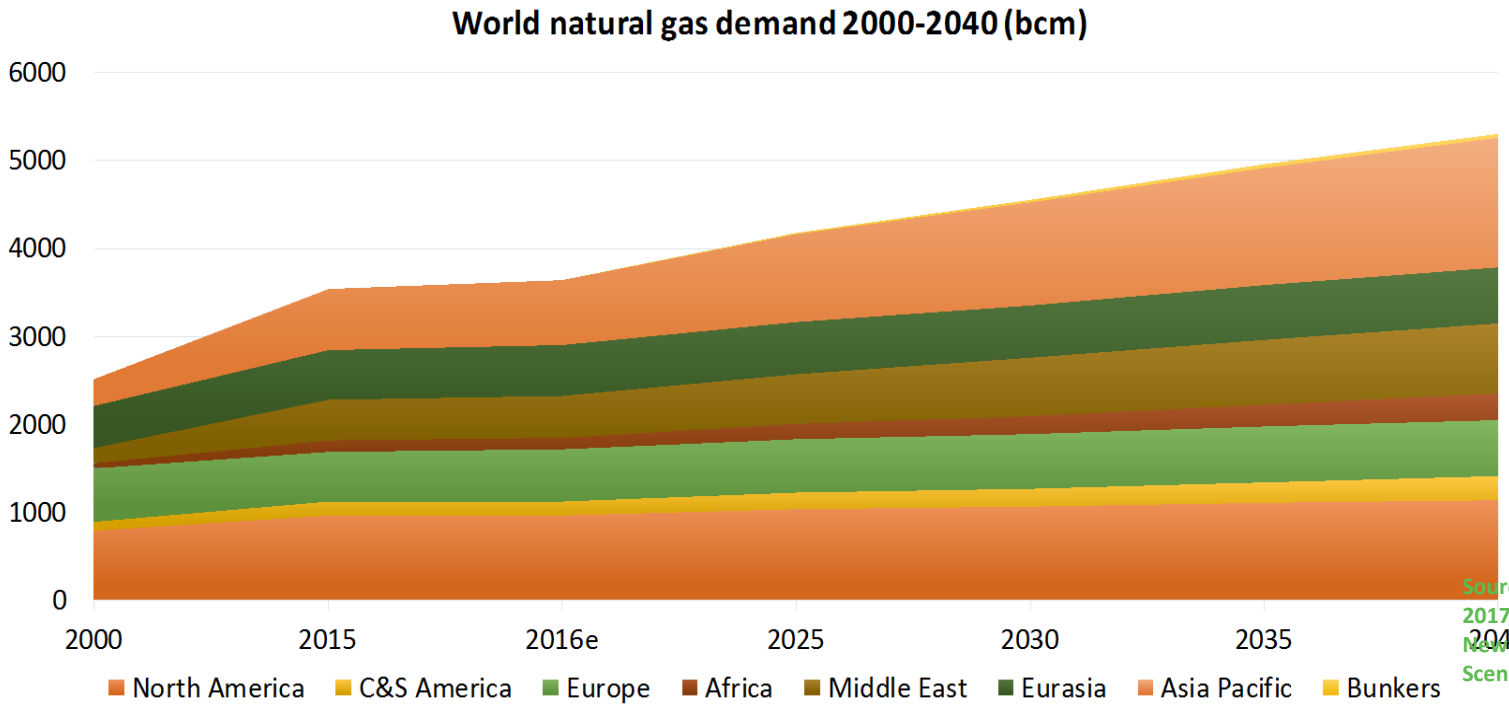
Cuauhtemoc Lopez-Bassols (consultant)

26-28th June 2018 Policy Forum, Issyk-Kul, Kyrgyzstan

Table of content

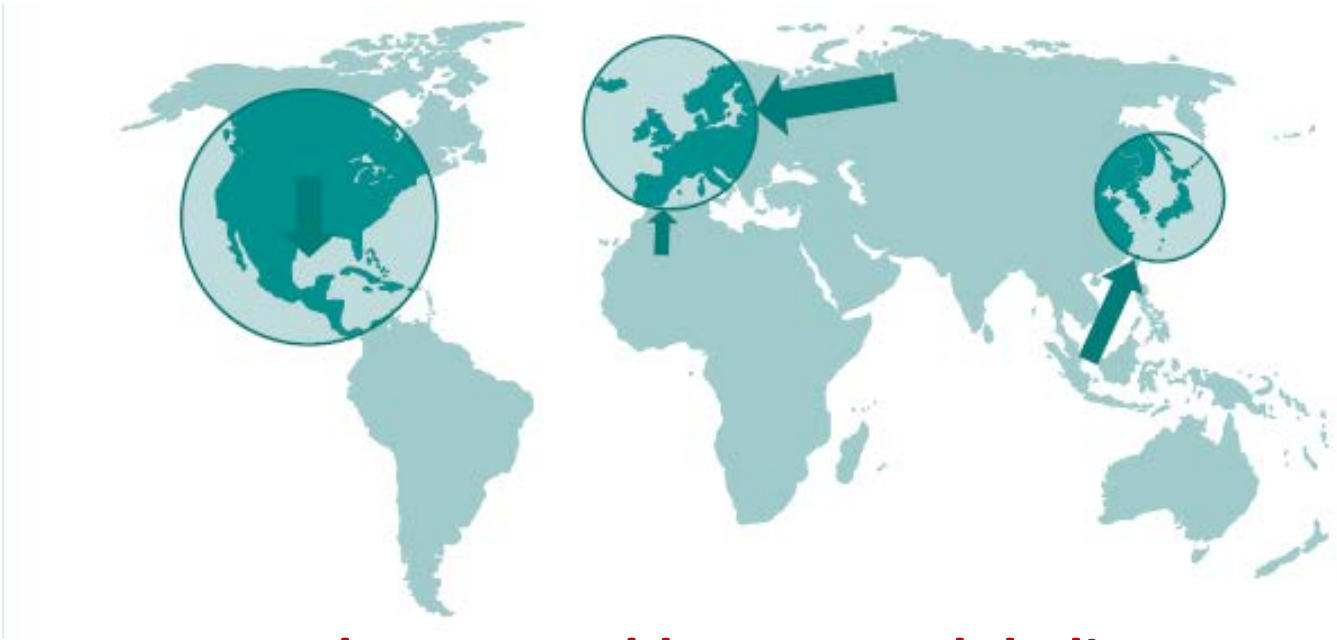
MARKET CONTEXT

MC – Demand worldwide



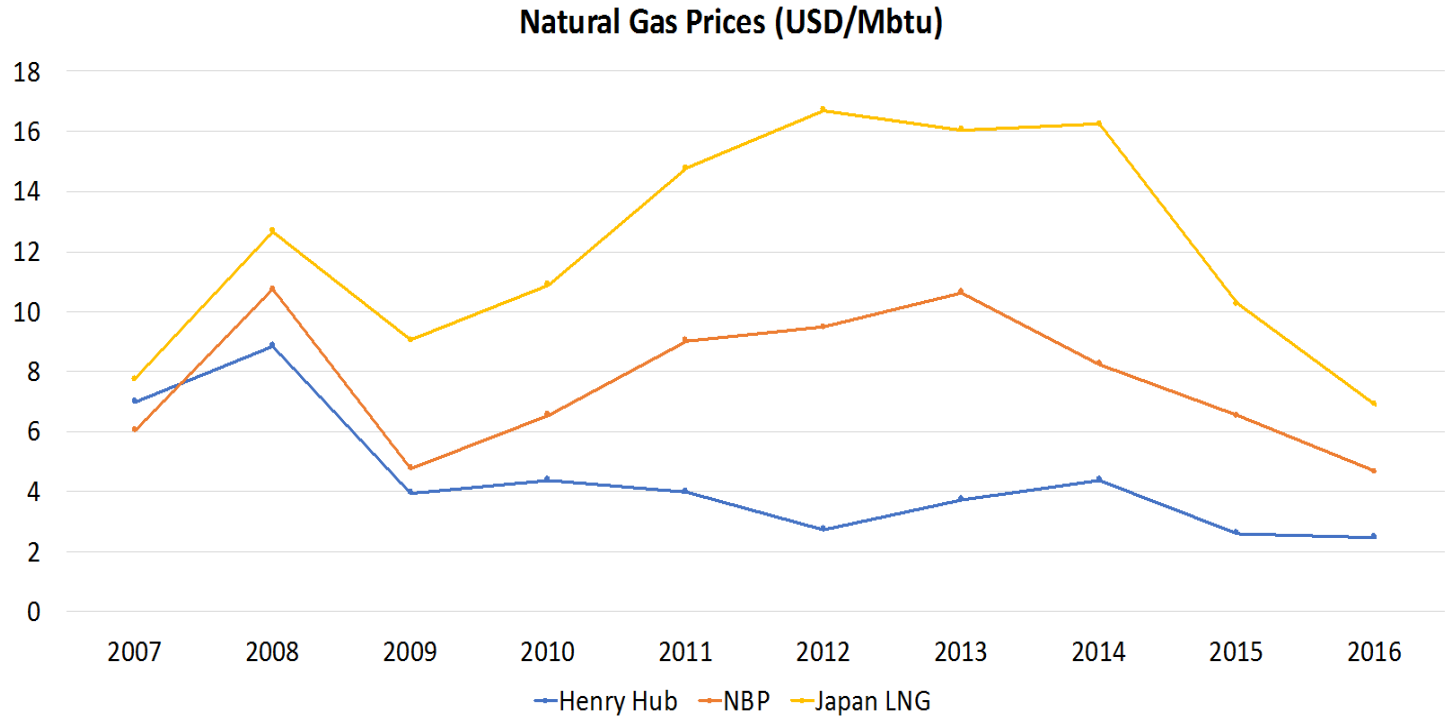
Source: WEO 2017, New Policies Scenario, IEA

MC - Gas market model is evolving



As the gas world starts to globalise…

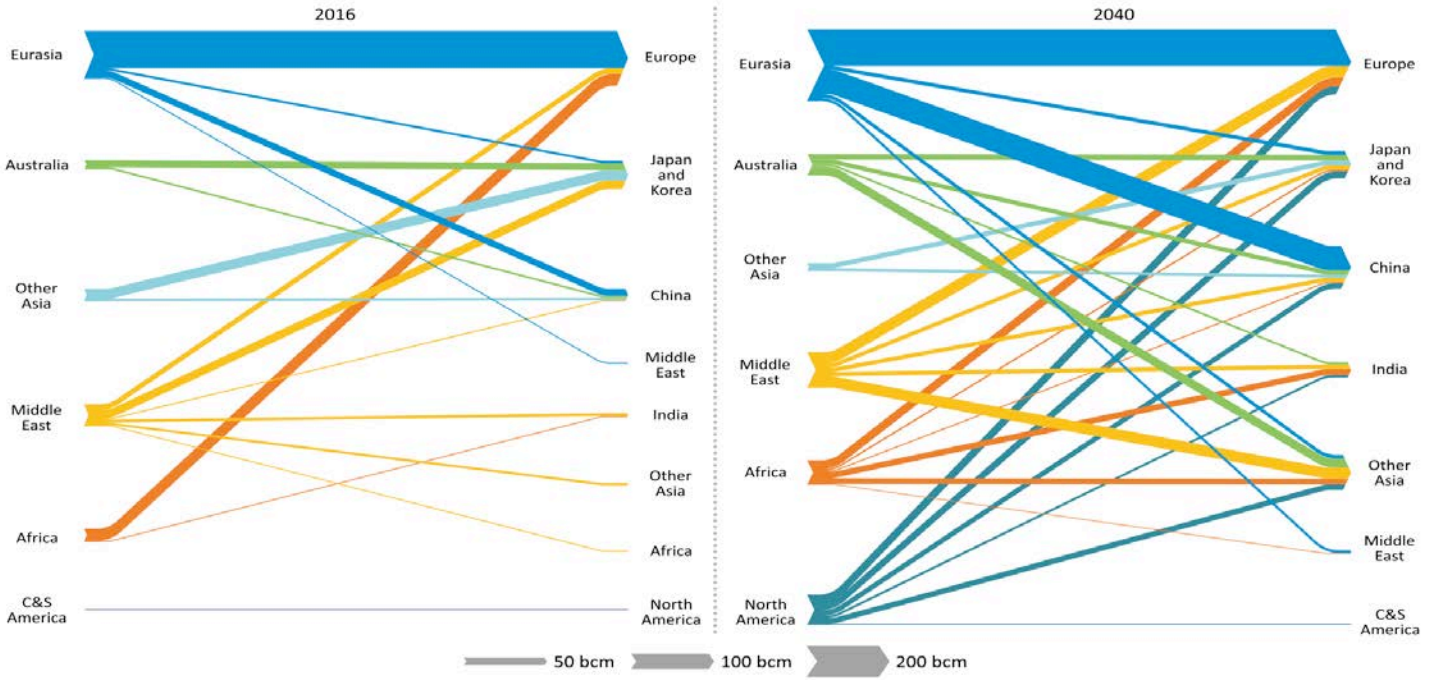
MC- Global Gas Prices 2007-2016



Source: IEA

World inter-regional natural gas trade

Selected global gas trade flows 2016 vs 2040
(bcm)



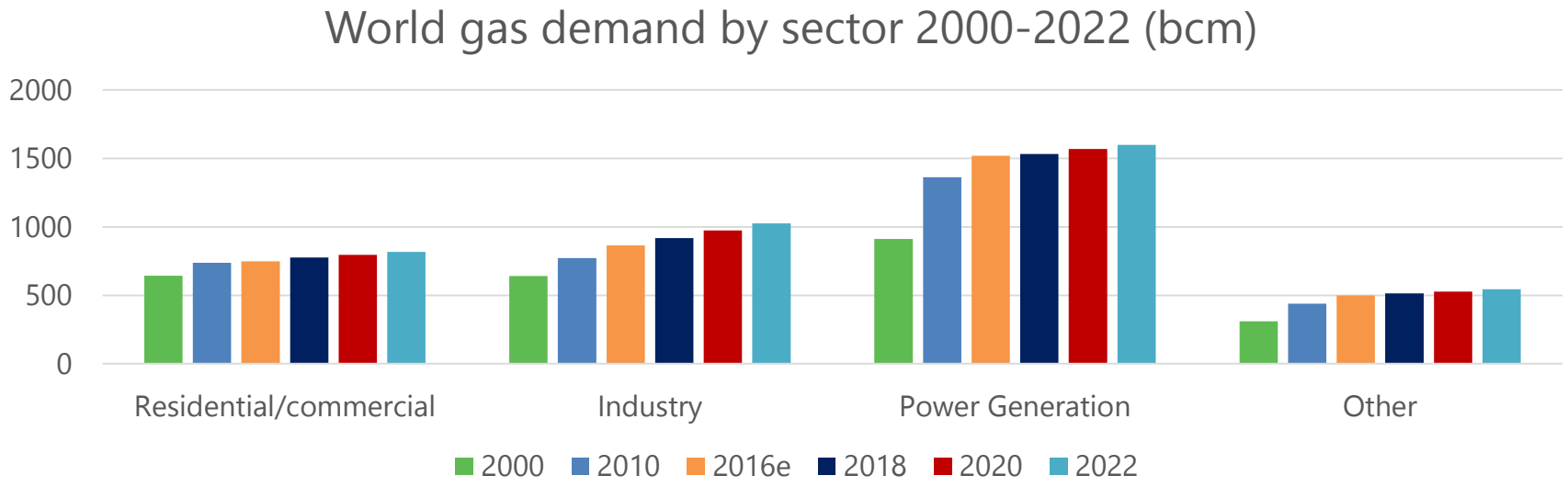
Source: WEO 2017, New Policies Scenario, IEA

WHY GAS SECURITY IS INCREASINGLY IMPORTANT?

Why increasingly important?

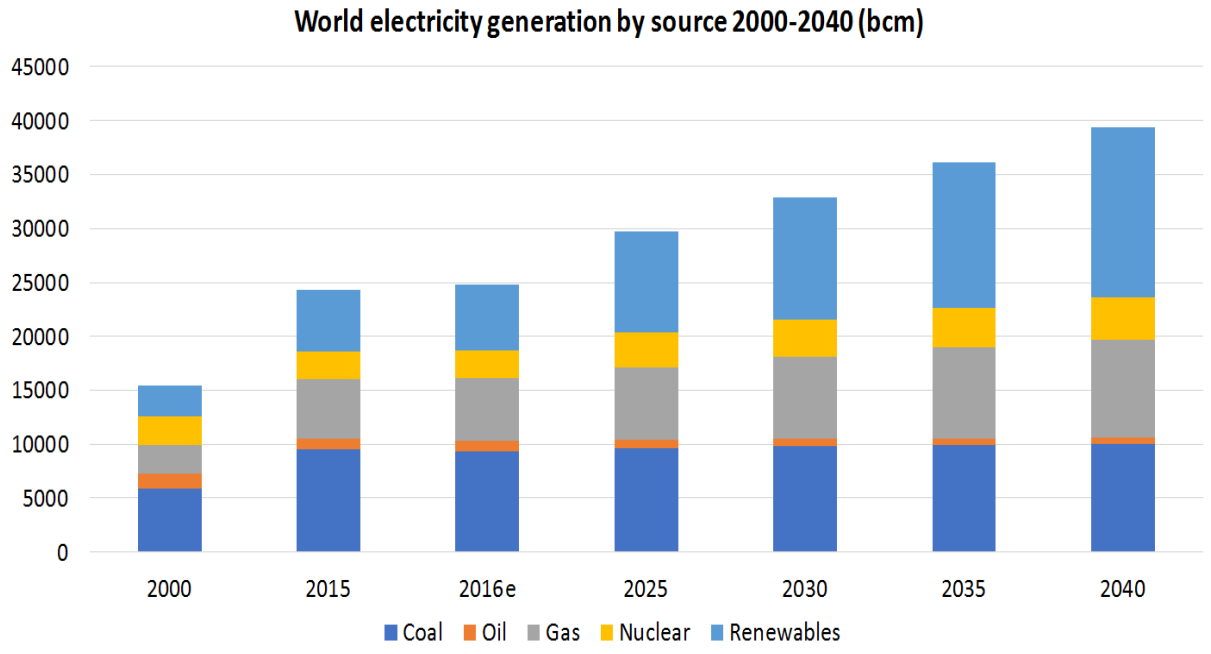
- Increase in gas-fired electricity generation has strengthened linkages between the power and gas sectors
- Convergence between gas and electricity, with power companies investing in gas assets and gas companies building gas-fired plants
- Cleanest and the least carbon-intensive fossil fuel
- Expected to play a key role in the transition to a cleaner and more flexible energy system

Why increasingly important?



Source:
IEA

Why increasingly important?



Source: WEO 2017,
New Policies Scenario, IEA

SIMILARITIES AND DIFFERENCES TO OIL AND OIL RESPONSE

Similarities and differences

- Oil emergency response policies can be a useful reference for gas
- Gas emergency response measures can differ substantially
- Gas is capacity-bound to a highly capital-intensive transportation and distribution infrastructure
- Oil market more liquid, so a actual shortage more difficult than gas, a disruption would translate into price spikes, for gas there are more capacity constraints
- There is little demand-side response in some large consumer sectors, for example in the household and space heating sector

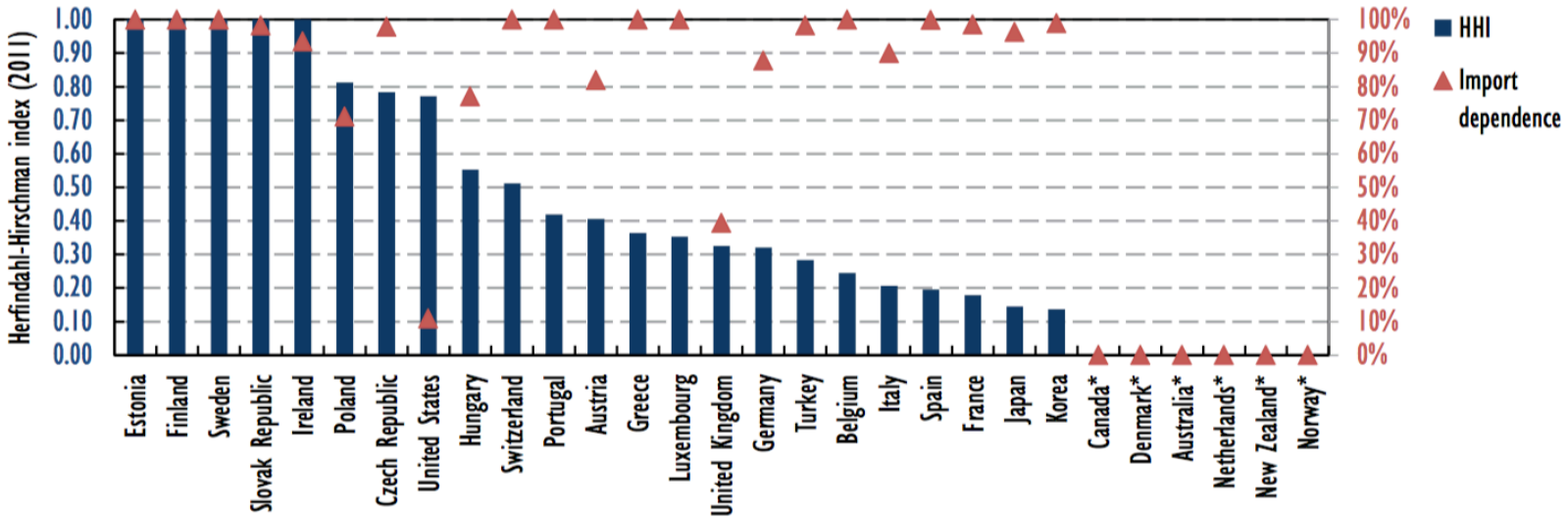
Similarities and differences

- Transportation/storage
  - Gas, unlike oil/coal difficult to transport, pipelines needed from wellhead to the final destination
  - Gas can also be transported as LNG for long distances but liquefaction/regasification facilities are need as well as pipelines to transport the gas to the end-consumer
  - Cost of storage considerably more capital intensive

- Trading/contracts
  - Heavy investment required to develop gas infrastructure. Investors need certainty in demand. Redundancy of supply capacity small, exacerbating the impact of even small disruptions
  - Large proportion of gas traded with fixed customers with long-term contracts. Long-term contract provides assurance for the supplier. For LNG contract terms are for 10 to 20 years
  - A destination clause often included in long-term contracts, forbidding LNG buyer to resell it to third party without authorization from the seller. Difficult to establish a LNG trading

GAS SUPPLY SECURITY MEASURES

GSS - Import dependence



Source:
IEA

GSS - Well functioning markets

- Diversifying supply sources and routes;
- Improving supply flexibility;
- Improving market liquidity;
- International cooperation;
- Managing demand; and
- Government regulations (e.g. Public Service Obligation) – design of market/enforcement

GSS - IEA emergency systems

- 24 able to cope in N-1 situation
- 21 have designed a gas specific NESO (or structure to deal with emergencies).
- 9 have policy promoting interruptible contracts
- 6 have imposed gas stock obligation on industry
- 7 have imposed obligation on gas consuming industry to hold stocks of an alternative fuel.
- 3 government owned emergency stocks (Mexico 2026 - 5 days of demand)

GSS - Gas emergency policy

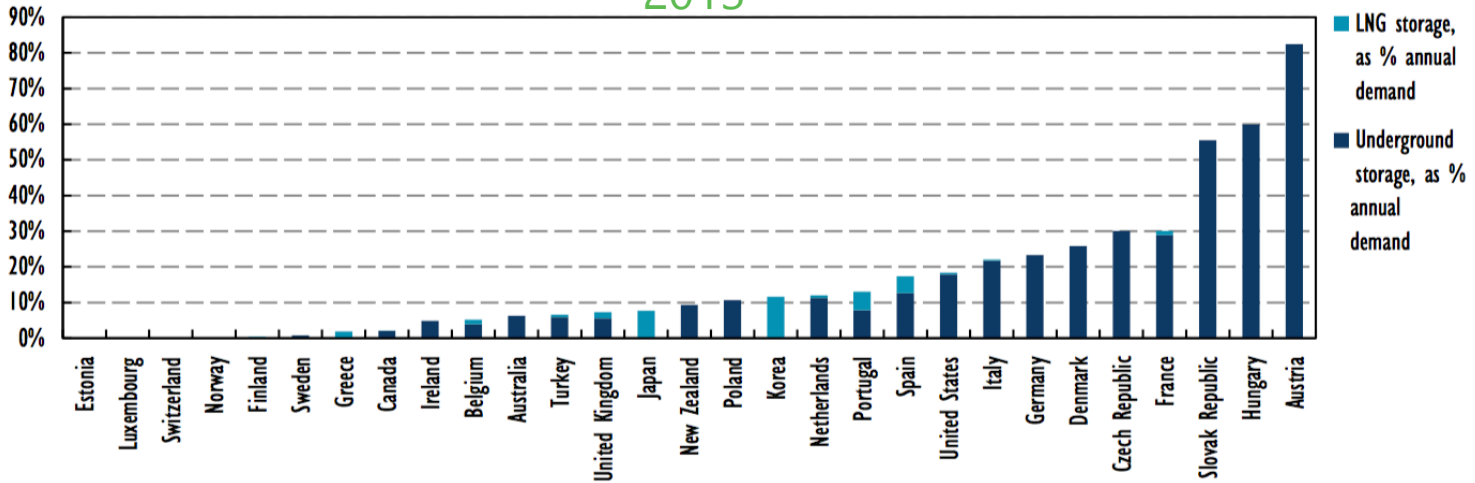
- For defined emergencies only
- Not for seasonal fluctuations
- Designed for specific situations of country / region
- Set out in Code of Operations or equivalent

GSS - Stocks

- Type of Stocks
  - Industry stocks/Public
- Important considerations
  - Location of stocks
  - Speed of withdrawal
- Storage
  - Underground
  - LNG terminals
  - Linepack
  - Storage within the pipeline network

GSS - Stocks

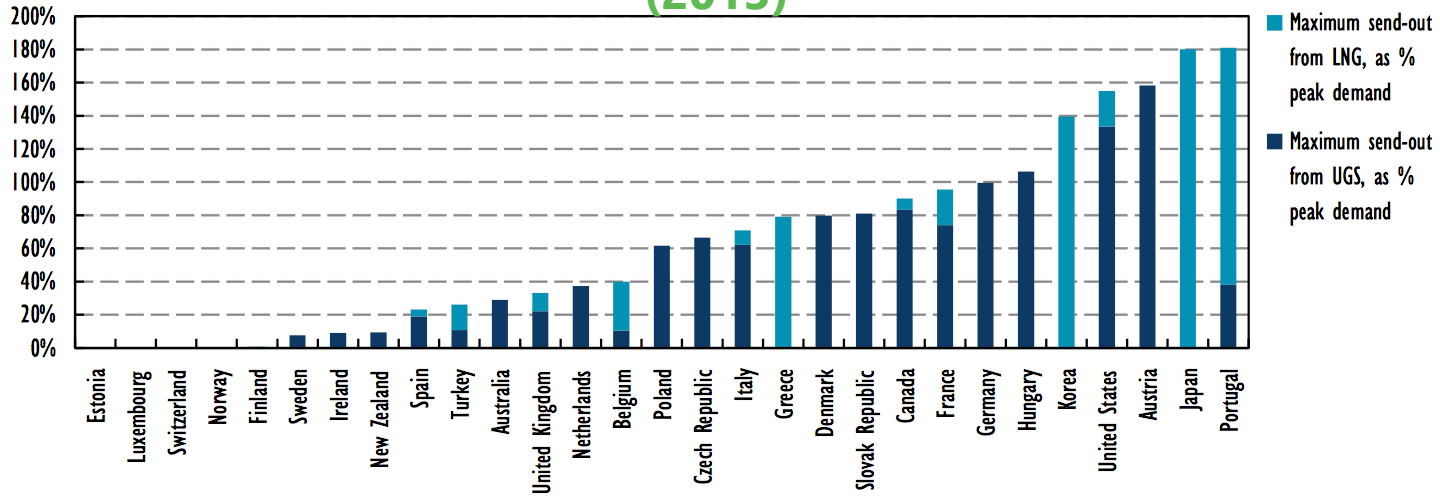
Gas storage as a percentage of demand 2013



Source: IEA

GSS - maximum send-out capacity

Send out capacities from storage as a percentage of demand (2013)



Source: IEA

GSS - Stocks

- Government stocks
  - Spain, Hungary and Italy only

Stockholding obligation on industry

Country	Obligated entities	Volume of stocks	basis
Italy	importers	60 days	imports
Poland	Traders, importers	20-30 days	imports
Portugal	importers	15-20 days	consumption
Slovak Republic	suppliers	30 days	consumption
Spain	Traders, self-supplied consumers	20 days (2days LNG in winter)	consumption
Turkey	Importers, wholesalers	10% of yearly imports	imports

GSS - Spare capacity

- Surge production
  - If available, but in reality this is very limited
  - Shale-gas production in US has shown some potential of flexibility (highly reactive to prices)

GSS - Demand restraint

- Interruptible contracts
  - Pre-negotiated in contracts with key large-users
- Public appeal
  - Government campaign to limit consumption

GSS - Rationing

- More heavy-handed measure…
  - Requires government oversight and control
  - Clear, concise and pre-determined plan: clear to both government actors and consumers
- Pre-determine priority customers
  - Hospitals, schools, etc.
  - Domestic consumers
  - Role of gas in power generation

GSS - Fuel Switching

- From gas to other fuels
  - Notably to diesel / fuel oil
- Breakdown of gas consumption is key
  - More likely to occur for power-generating gas plants
- Ability of power sector to switch
  - Easier for older plants, or plants designed to switch
  - Availability of alternative stocks (stocks on site? Obligation on generators?)

GSS - Fuel Switching

- Stockholding obligation of secondary fuels at power plants in some IEA member countries

Country	Secondary fuel by type	Volume of stocks
Finland	Fuel oil or propane	3 months
Greece	Diesel	5 days
Ireland	Diesel or fuel oil	3-5 days
Portugal	Diesel	5 days
Switzerland	Heating oil	4.5 months

GSS - Regional cooperation (EU)

- EU's new Regulation to improve security of gas supply in the EU (01/11/17)
- New rules go further than EU 994/2010, countries: to:
  - work in regional groups to assess the potential for disruption to their gas supplies and agree on joint actions to prevent or mitigate the consequences
  - stand ready to help neighbouring countries guarantee gas to vulnerable consumers during shortage ('solidarity principle')
- Gas companies will have to officially notify national authorities about major long-term supply contracts that may be relevant to security of supply (transparency)
- ENTSOG to perform EU-wide gas supply and infrastructure disruption simulation

Questions

- Has your country suffered from a severe gas supply disruption?
- How did your country deal with the supply?
- What mechanisms exist in your country to cope with short-term disruptions?
- Do campaigns exist to reduce gas consumption?