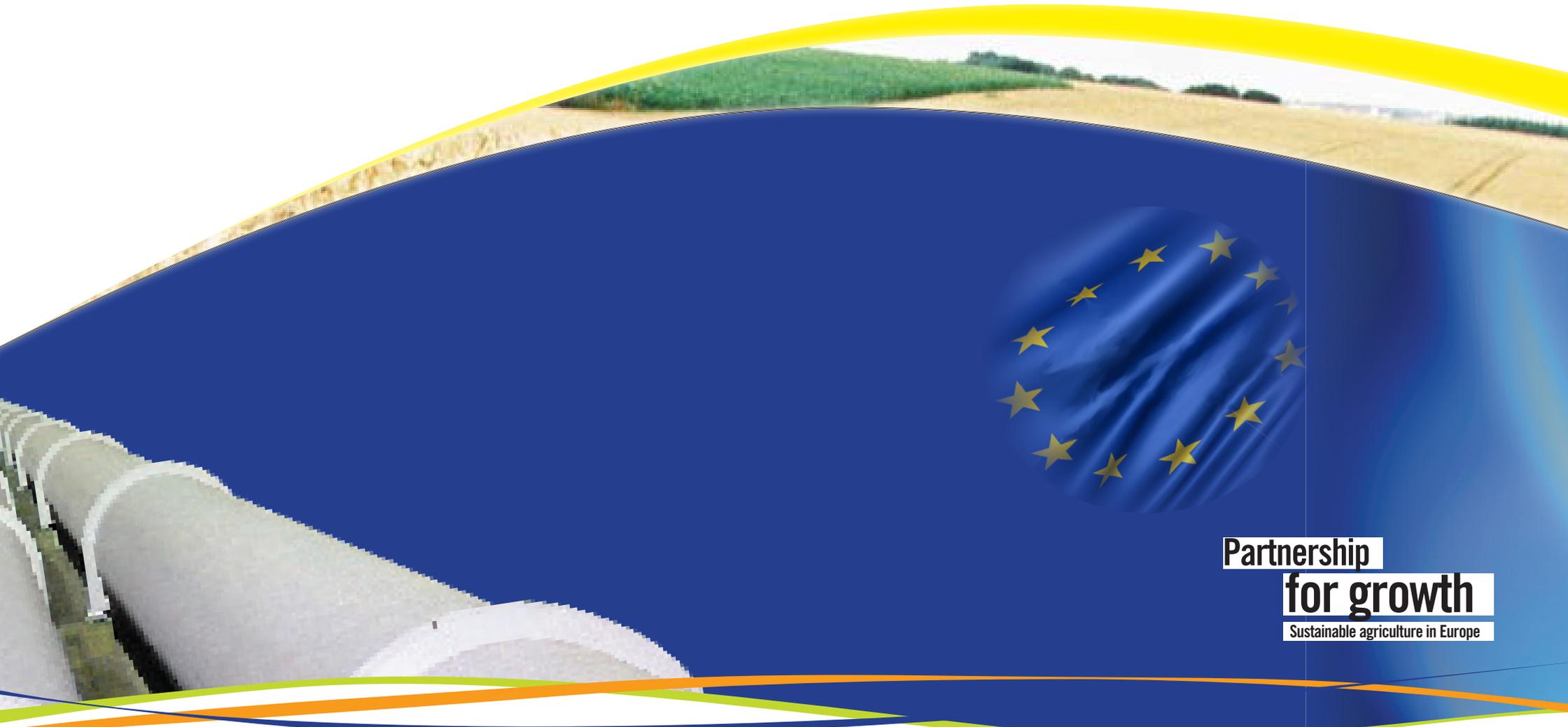


Faster Forward to Competitive Gas & Sustainable Agriculture in Europe



Partnership
for growth
Sustainable agriculture in Europe

“Feeding the world.
From gas field to
agricultural field.”

 **Fertilizers** made from natural gas are an essential component of sustainable food production.

 **48%** of the global population are fed thanks to the use of mineral fertilizers.



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Introduction

Europe has the moral obligation to play its part in contributing to the increasing food demand from other regions. It has both the climate and the available farmland to be self-sufficient in food production, yet it is currently a net food importer. Fertilizers Europe believes that the focus of EU agricultural policy should be on improving agricultural performance in terms of productivity, competitiveness and efficiency.

The fertilizer industry is the largest single sectoral user of natural gas amongst the EU's manufacturing sectors, and as such the European nitrogen fertilizer industry applauds the EU institutions' continued drive to establish a truly world competitive EU single energy and gas market. EU manufacturing, however, requires greater urgency and speed from the EU authorities in delivering a competitive and efficient energy market across Europe.

Europe is typically up amongst the world's highest energy cost regions and as a result must improve all sources of supply to the market including access to LNG and shale gas. Actions at regional, national, EU and global levels are urgently required to correct any uncompetitive situation especially when it arises from unfair state fixing of energy pricing by suppliers inside or outside the EU.

For natural gas in particular, and for other energy commodities, it is necessary to develop financial and physical commodity hubs that promote and encourage transparent interconnected prices. For gas, a European super-hub could supply enormous benefits to consumers.

Climate change abatement is a challenge where nitrogen fertilizers can contribute to reductions and solutions. There must be a "level carbon playing field" regarding equal commitments to reduction and technological improvements.

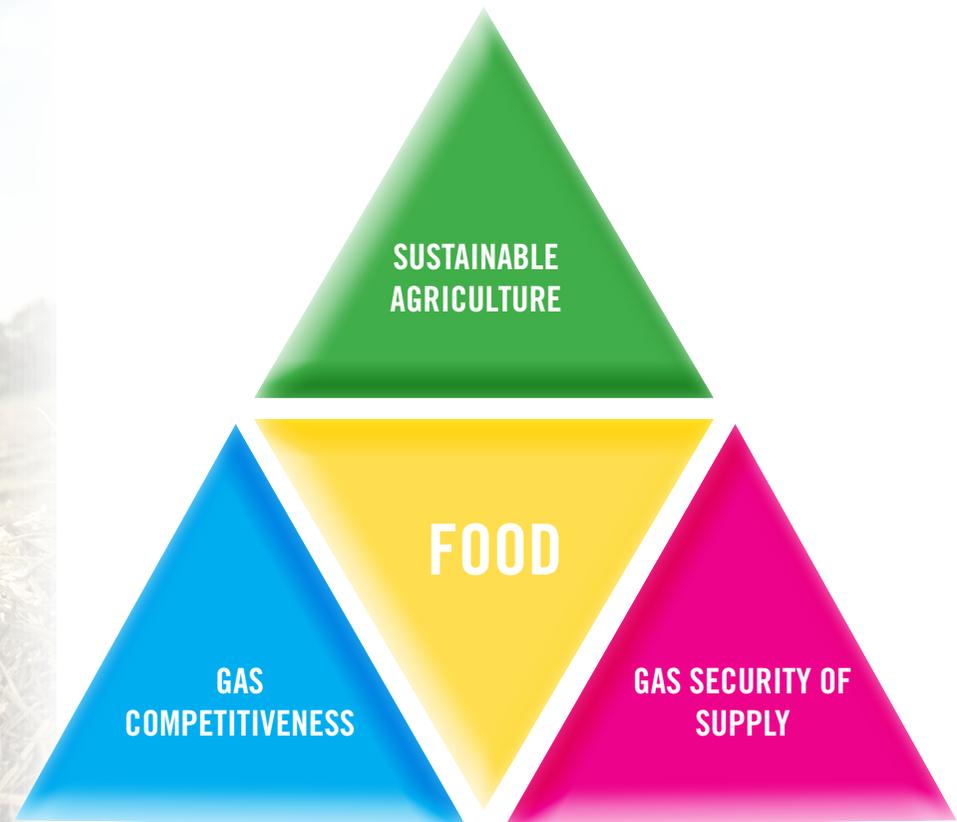




“On average, a plant produces 6 times more energy than that used to make and transport that fertilizer.”



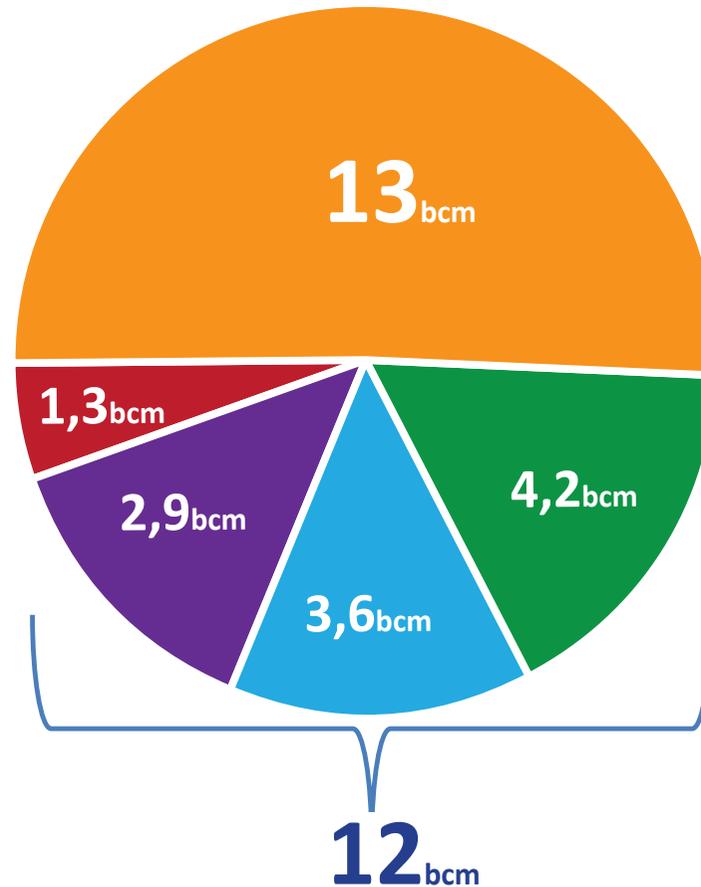
“Over the next fifty years, the world’s farmers will need to produce more food than has been grown in the last 10,000 years”



N°

The fertilizer industry is the largest single sectoral consumer of natural gas in the EU's manufacturing sector.

Policy Themes



The EU fertilizer industry consumes more gas than the following countries combined.

Fertilizer Gas Consumption vs Select Country Gas Consumption (in bcm)



Key Issue - Competitiveness

EU internal market

Internal EU market regulatory development:

It is imperative that the 3rd Gas Directive is implemented by Member States on time in accordance with the European Council's deadline, year 2014.

Competition laws and investigations must continue to be fully employed:

a second DG Competition sector study validating the correct operation of the gas and electricity markets should be done in 2016.

Bi-lateral agreements

EU bi-lateral relations and legal development:

Trade, transit and investment relations with regard to energy including gas require better legal regulation. The EU's bi-lateral treaties provide a great opportunity.

The EU's internal market acquis should be more speedily developed into bi-lateral relations with key transit (Ukraine) and key supplier countries (Russia and North Africa).

EU's "good neighbourhood policy" with North Africa and the former Soviet Union must level the energy – gas – carbon playing fields.

Global issues

Global WTO rules to correct unfair pricing:

The WTO's development of "Trade Related Rules for Energy Supply" (TRES) should be progressed. This should include the "outlaw" and prohibition of damaging dual-pricing or state fixing practices.

The EU fertilizer market continues to be targeted by competitors benefitting from artificially low state fixed and unfair gas pricing policies:

Currently the EU corrects the injurious impact by use of trade defense actions. The latter must be sharper and quicker. The EU should apply the maximum duty penalties, ie the EU regular practice of "lesser duty rule" should not prevail when dual pricing or gas subsidies are injuring EU industry.

“Farmers in Europe now produce more crops with less fertilizer than they did 20 years ago and their nitrogen-use efficiency is second to none”

Energy, feedstocks, carbon efficiency

Energy and feedstock efficiency:

The drive for energy efficiency is good business and environmental sense. Based on considerable investments, the EU industry has an outstanding best in world record of improved energy and carbon efficiency. Energy Efficiency should be a global private enterprise as well as public initiative.

Climate change (carbon management):

The EU has many of the world's most efficient ammonia plants. Carbon leakage, i.e. closure of efficient EU plants while less efficient plants continue with no improvements is a 'living reality' in the EU and world nitrogen fertilizer scene.



Competitiveness

Problems and Solutions



Problems

-  **High EU gas prices** (pg12)
-  **EU high import volume dependency** (pg14)
-  **Security of Supply** (pg16)
-  **Shale Gas Development and Environmental concerns** (pg18)
-  **Incomplete Single Market infrastructure** (pg20)
-  **Limited deployment of EU competition powers & trade powers** (pg22)

Solutions

-  **Hub, storage and diversity of sources will promote more market based prices** (pg13)
-  **More Pipelines, LNG and Shale Gas developments will improve supply volume to the market** (pg15)
-  **EU Security of gas supply based on preventative and emergency plans and improved interconnections** (pg17)
-  **UK and Polish Regulation and Governance are good practical examples** (pg19)
-  **Cross border, congestion management of gas supply will create a true internal market** (pg21)
-  **DG Competition & DG Trade must use classic powers eg antitrust merger, excessive pricing and sector studies** (pg23)



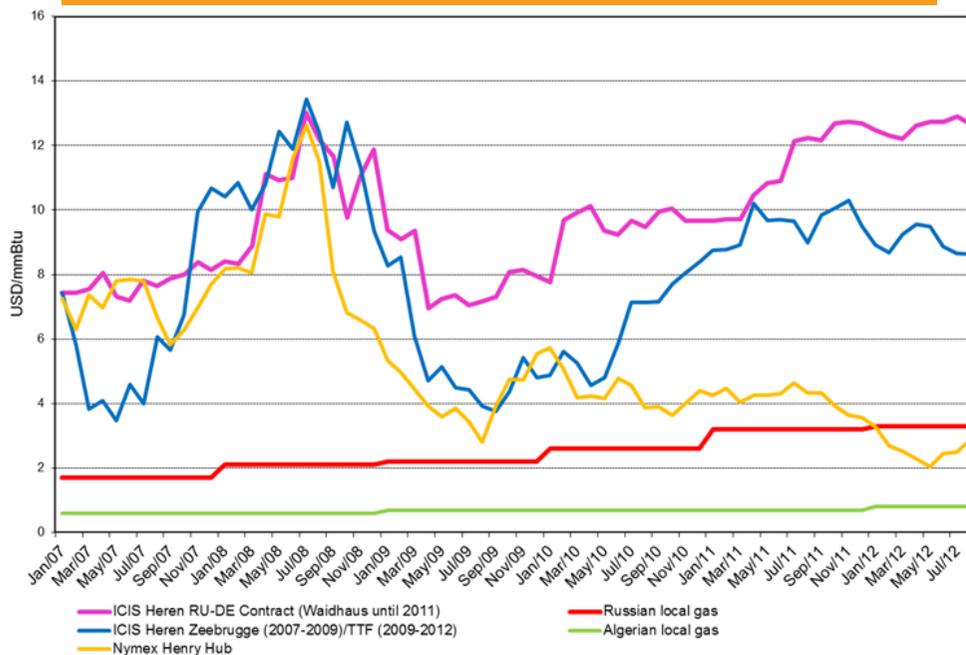
Problem: High EU gas prices



Why is Europe not part of the Golden Age of Gas?

-  **U**ncertain gas price reforms by major suppliers
-  Indexation to oil prices makes for link with OPEC high oil pricing.
-  **U**ncertain energy mix post Fukushima and Germany's nuclear phase out by 2022
-  **L**NG positive outlook when on spot basis but there is considerable oil indexation on EU sales. Indexation to oil prices makes for link with OPEC high oil pricing.
-  **N**o shale gas revolution in Europe; Shale gas limited by geology, water and environmental considerations
-  **G**rowing dependence on imports

EU and the US market gas against artificial state fixed gas



Problems

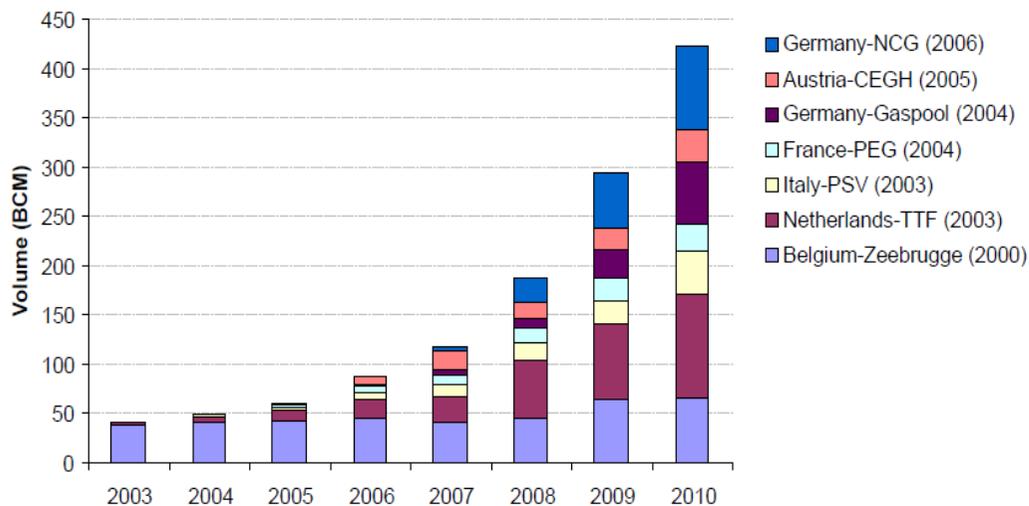
Oil-indexed EU contract high compared to EU hub-gas

Market EU prices against artificial low state-fixed in OPEC and FSU

Solutions: Hub, Storage and Diversity of sources



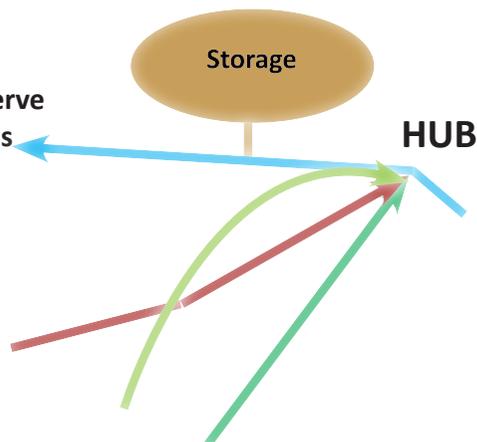
Internal market integration: Growth of hub traded gas volumes



Source: European Commission, IEA

Hub services typically serve short-term market needs

- Interchanges
- Exchanges
- Balancing
- Parking
- Banking
- Title transfers



Development of infrastructure to serve combined long-term and short-term market and competitive needs

Seasonal, cyclical and crisis factors must be accommodated for otherwise, serious losses to the EU economy will prevail, eg. Ukraine-Russia gas disputes in 2006 and 2009.

Market / physical hubs like Zeebrugge should be developed. They provide for physical - financial - and all trading services; they tend to serve short-term market needs; they also ensure "market" best practices - leading to long-term integration.

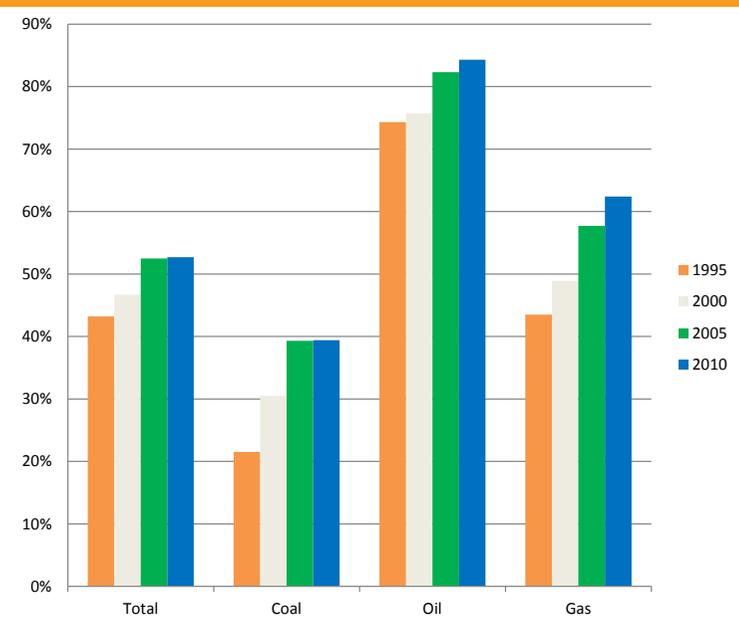
Strategically, the EU should consider a gas storage facility based in each key sub-region of the EU. The sub-region should assess and set up the necessary storage and interconnection facilities as needed and as economically viable.

Problem: EU High import Volume Dependency



“As European gas demand import grows, the dependence of EU on gas imports reaches 85% by 2035”

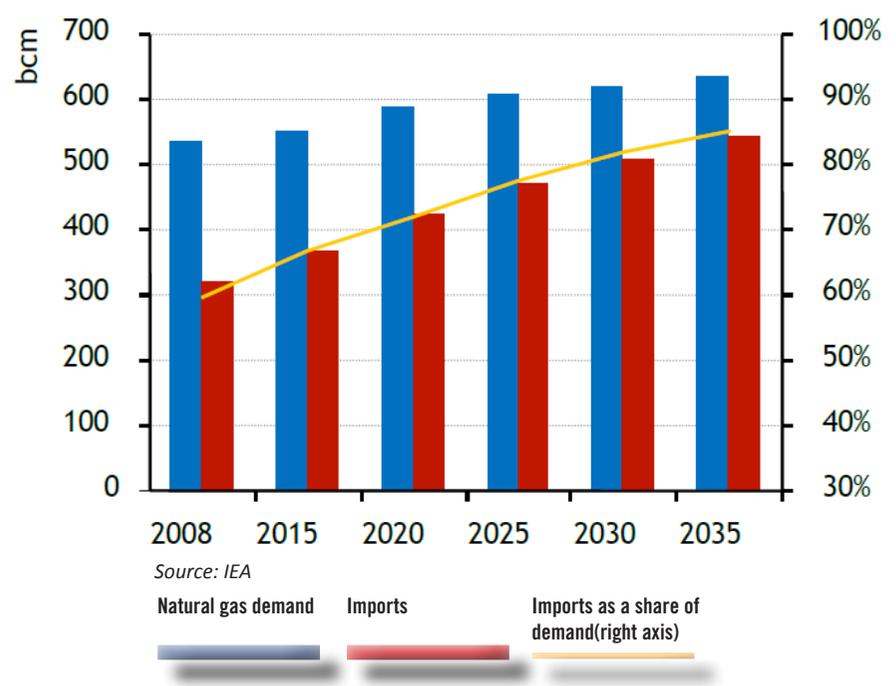
EU-27 Energy Import Dependency (1995-2010) by Fuel (%)



Import Dependency	1995	2000	2005	2010
Total	43,2%	46,7%	52,5%	52,7%
Coal*	21,5%	30,5%	39,3%	39,4%
Oil	74,3%	75,7%	82,3%	84,3%
Gas	43,5%	48,9%	57,7%	62,4%

**Coal and other solid fuels
Source: Eurostat, April 2012*

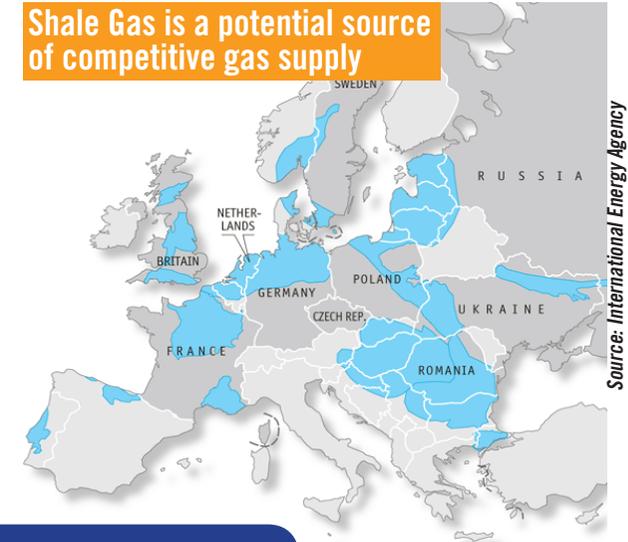
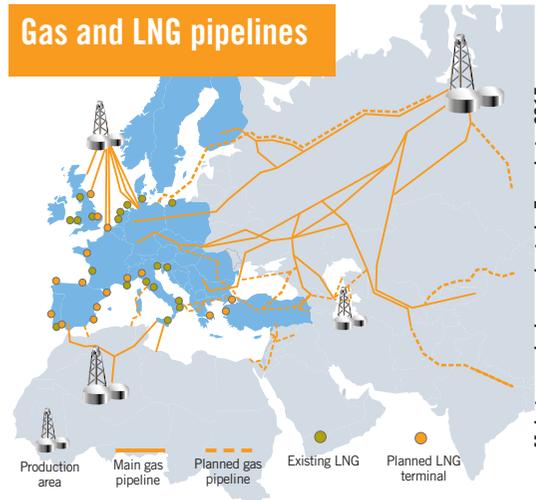
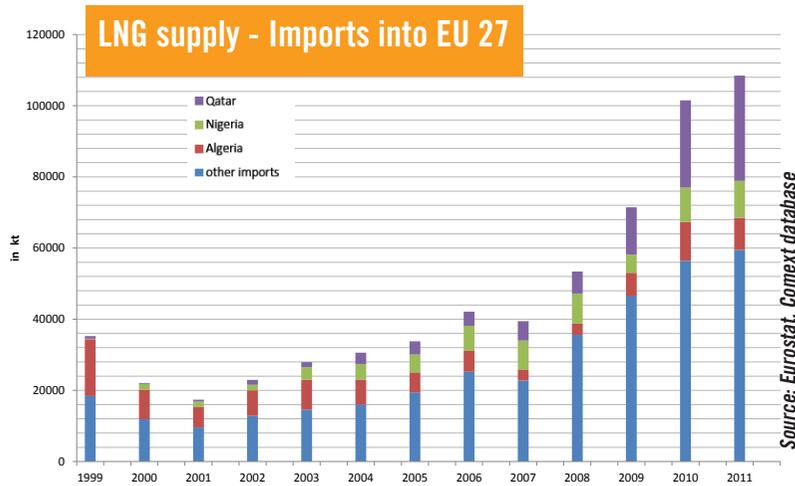
The EU is becoming more dependent on gas imports



Source: IEA

Solutions:

New pipelines, LNG and Shale Gas production in Europe would improve competitiveness and security of supply



Gas Pipelines, LNG & Shale Gas

- More big and small pipeline and LNG infrastructure provides for diversification of routes and sources
- Then inter-connection, storage and transparency across the whole Pan-European gas market is essential
- All can and should receive legitimate EU or governmental financial support
- The EU's expansion of the Trans European Network - Energy budget
- Implementation of the Security of Gas Supply with Preventative and Emergency planning is welcome; but sub-regional cross border integration and inter-connectivity is the best practical solution

Problem:
Security of supply



“There has been a history of oil and gas supply crisis or supply shutdowns.”

- ❧ Russia / Ukraine gas disputes - Winter period Year 2006 and Year 2009
- ❧ Russia / Belarus - Winter period Year 2006/2007
- ❧ Russia / EU tensions - On-going
- ❧ OPEC supplies - Arab Oil Boycott Year 1973/74
- ❧ Libya crisis - Year 2011



Solution:
EU Security of Gas supply

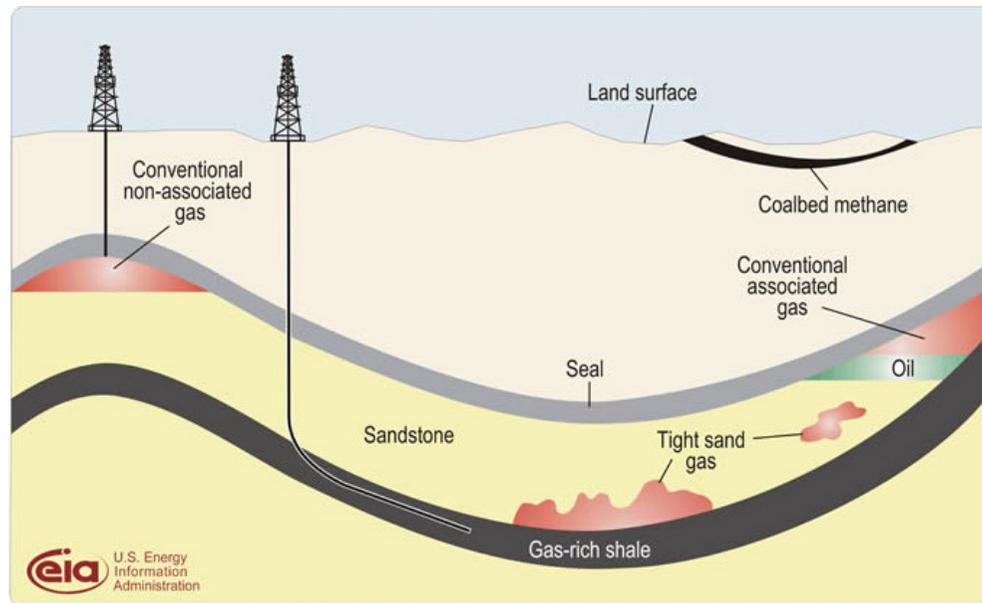


“Competitive supply and security of supply needs more infrastructure linked to more sources and more routes.”

-  **Preventative and emergency plans** promise better orderly conduct in crisis;
-  **Pre-warnings on ammonia factory shut downs are essential.** Unforeseen emergency shut-downs are expensive and can make re-starts more difficult to successfully conduct;
-  **Under food security pressures,** even “protected customer status” should be considered for ammonia/fertilizer operations
-  **Emergency shut-down and re-start costs** must be accounted for by Member States and “compensation” is an issue;
-  **There must a political / legal solution to the Russian problem, ie below cost gas pricing inside Russia;** dual-pricing with premium export prices; export monopoly of Gazprom; restrictions on Caspian supplies to EU; and other transit issues
-  **Better supply/demand forecasting and better “security” knowledge:** EU should develop a US type Energy Intelligence Agency

Problem:

Shale Gas Developments and Environmental concerns



Schematic geology of natural gas resources

The relatively new technology and techniques used in the hydraulic fracturing process has raised concerns on water contamination, seismic and geological stability and general environmental concerns, ie the landscape, degradation from construction and leakages.

A particular concern is the pumping of a pressurised mixture of water, sand and chemical additives down the wellbore and into the tight rock formations that contain natural gas. The water pressure helps to create fractures (fracs) in the rock, which are then held open by the grains of sand, allowing the gas to flow into the wellbore.

Solution:



UK and Polish Regulations and governance are good practical examples

UK Support - Regulation



There are significant risks to the Environment from shale gas, as in any industrial process. These risks can be successfully managed through effective regulation. To ensure effective controls and successful development public involvement is key.

Proportionate and risk based

- Permits required where there is significant risk
- Full disclosure required of fracking chemicals
- Powers to control and (where necessary) prohibit dangerous activities

Encourage best industry practice

- Well designed, site management
- Work closely with the Department of Energy and Climate Change, Local Planning Authorities and the Health and Safety Executive.

Source : UK Environment Agency's regulatory approach

Polish Support - Practical development



Poland is expected to be the leading power in shale gas in Europe.

They are due to grant 113 licenses for exploration and prospecting to 30 companies.

This includes 30 licenses to three Polish companies co-owned by the State.

They intend to have 71 exploration drillings by the end of 2012 and it is estimated that resources will meet Polish demand for shale gas for the next 35-65 years.

73% of the Polish population support the exploration of shale gas.

Source : Polish Ministry of Treasury

IEA Recommendations

The "Golden Rules" are principles that can allow governments, industry & other stakeholders to address these environmental & social impacts. They are "Golden Rules" because their application can ensure operators have a "social license to operate", paving the way for a golden age of gas.

Measure, disclose and engage

Watch where you drill

Isolate well & prevent leaks

Treat water responsibly

Eliminate venting, minimise flaring & other emissions

Be ready to think big

Ensure a consistently high level of environmental performance

Problem: Incomplete Single Market infrastructure



International infrastructure

-  Baltic connection to Poland
-  Nabucco pipeline
-  Caspian pipeline
-  Nord Stream II
-  South Stream

EU infrastructure and inter-connection

Implementation of one Regulatory regime by 2014.

“The internal market should be completed by 2014 so as to allow gas and electricity to flow freely”

- European Council Summit Declaration February 2011

Solution:

Cross border, transaction, congestion management of gas supply



Single European Market - New 3rd Gas Directive, toward an integrated Single EU Gas Market

-  **U**nbundling rules limiting national monopolies from controlling production/supply and transportation
-  **T**he establishment of new transportation companies with a mission to supply the maximum amount of gas should / improve supply / and conditions of supply / to the market
-  **P**romotion of the regional interconnectivity with the promise of sub-regional 10 year investment plans tackling infrastructural blocks or bottlenecks
-  **A**ccess to storage, LNG and financial / physical gas trading hubs are also addressed; congestion management schemes will be introduced
-  **S**tronger Independent National Regulators / European Agency: to champion and control competitive conditions and grid development
-  **C**ompetition powers are also to be better focused using Commission and enhanced national level powers - all in cause of pro-competitive gas supply

Internal market - regulatory & practical implementations

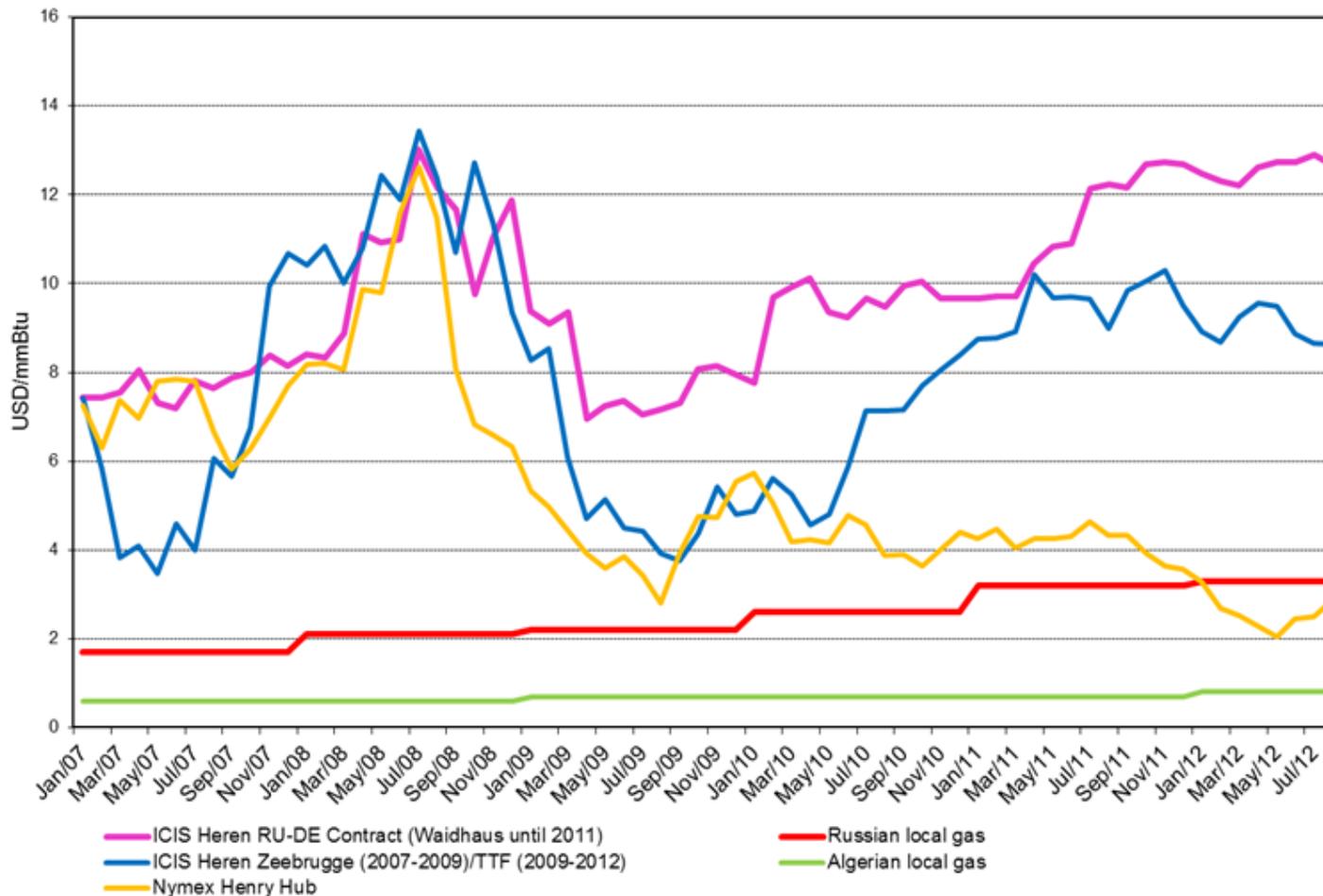
-  **T**he relevant institutional bodies, ie ACER, ENTSOG and the Commission must ensure capacity at borders that facilitate two-way flow connections; anti-congestion measures must be applied with rigour by authorities.
-  **N**ew market demands require new connections and inter-connections: planning approval, third party access and competitive supply conditions must all be accounted for in a efficient manner;
-  **S**pare and un-used capacity must be made available; greater transparency on gas flows and storage availabilities must be made obligatory
-  **T**he transmission companies, the regulators and the administration must now immediately resolve all remaining barriers on gas quality criteria;

Problem:

Limited deployment of EU Competition & trade powers



EU and the US market gas against artificial state fixed gas



Source: various independent fertilizer and gas press

Solution:

DG Competition & DG Trade must use classic powers



DG Competition

Key is to be tougher on infringements and competition cases

-  Raising of political awareness, economic crisis measures
-  Sector study: examine workings of major suppliers 2016
-  Using legal procedures such as antitrust and merger excessive pricing
-  Technical assistance through interpretative notices and bilateral contacts
-  Infringement procedures and competition law enforcement

Source: European Commission

DG Trade

Trade Defence

-  Presently EU trade defence instruments such as anti dumping and anti subsidy are the most practical correction of competitors use of energy / gas subsidies.
-  The current EU trade defence review foresees the removal of the EU's unique lesser duty rule on subsidy cases. The same should apply on anti dumping cases.
-  The better solution would be removal of energy and or gas subsidies at the source, ie the local governments' removal. But with OPEC and FSU countries this is a slow or unlikely process; thus strong trade defence instruments are necessary.

Bi-lateral and global legal development



WTO Cost Plus Plus Gas Deal

In response to the concerns expressed, the representative of the Russian Federation stated that upon accession, producers / distributors of natural gas in the Russian Federation would operate, within the relevant regulatory framework, on the basis of normal commercial considerations based on recovery of costs and profits. He confirmed that the policy of his Government was to ensure upon accession that these economic operators, in respect of their supplies to industrial users, would recover their costs (including the cost of production, overheads, financing charges, transportation, maintenance and upgrade or extraction and distribution infrastructure, investment in the exploration and development of new fields), and would be able to make a profit, in the ordinary course of their business. He added that his Government would continue to regulate price supplies to households and other non-commercial users, based on considerations of domestic social policy. The Working Party took note of these commitments.

Source: Final Working Party Report, WTO Accession of Russia

Trade & Energy Policy Development Making international regulation for the future

Trade and competition distorting measures such as state fixing of gas prices; dual pricing or pricing below full costs must be outlawed under international law.

Transit and transportation must be made totally free of political or peculiar interferences. For Europe the Energy Transit Protocol must be adopted and enforced by all – or urgently a new Treaty arrangement must be agreed between all interested parties.

Russia's rejection of the Energy Charter's Transit Protocol is unacceptable. Adoption of this or a truly genuine equivalent must be agreed.

Ukraine must meet its Protocol and Energy Community commitments on transit.

The WTO should agree a Trade Related Energy agreement (TRES) to regulate standards for trade in gas and energy products. Unfair state fixed pricing and dual-pricing should be "outlawed" by the WTO.

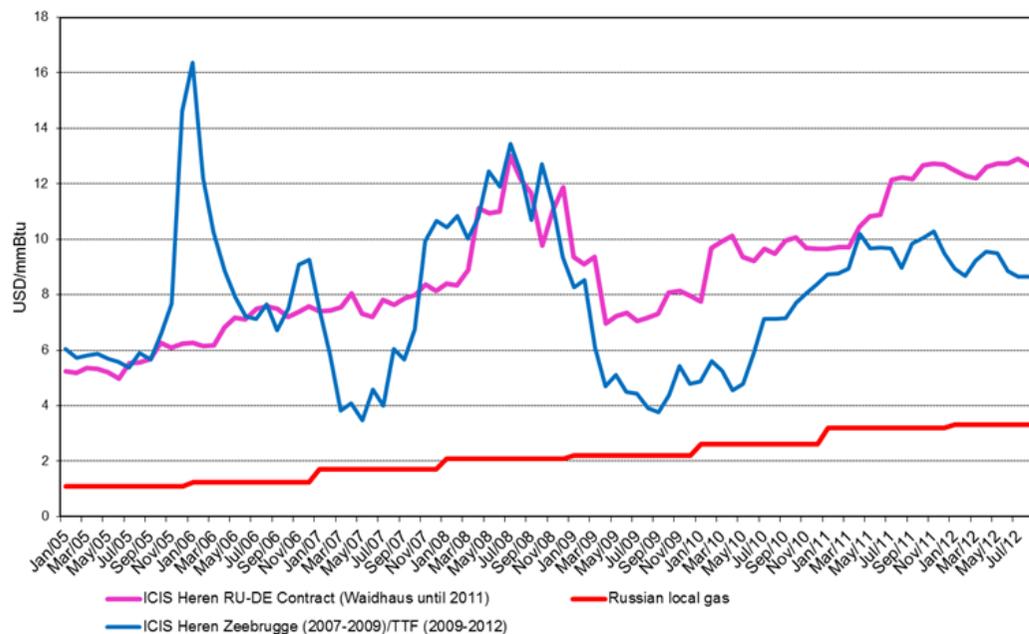
International energy products' trade and competition problems should be subject to regular dialogue or summits between producer and consumer countries with the aim of avoiding energy supply crisis.

International agreements are preferable to bi-lateral agreements. But for many situations bi-lateral discussions may be easier diplomatically and promise greater depth, eg the EU-Russia Energy dialogue and Partnership.

“Several suppliers practice unfair dual-pricing and artificially low state fixed pricing to advantage local industries: Russia is key example.”

Russia by PIPELINE to EU

Current EU correction is by trade defence actions: but in future the WTO should outlaw unfair pricing practices which distort a level playing field.



Source: various independent fertilizer and gas press

EU-Ukraine Partnership & Co-operation Agreement II: Model Energy Chapter

-  Promotes market pricing, ie reduction then removal of state interventions
-  Outlaws 'dual-pricing'
-  Immediate Ukrainian Alignment with 1st and 2nd Gas Directives
-  Future alignment with 3rd Gas Directive
-  Confirmation of free transit
-  Bi-lateral dispute settlement mechanism

Energy, feedstocks, carbon efficiency

EU Energy & Climate Change policy to year 2020

20-20-20-10

20%
reduction of
CO₂ emissions
by **2020**

20% reduction
of energy
consumption
by **2020**

20%
renewable
energy by
2020

10%
renewable
energy in
transport by
2020

McKinsey & Company

In a study by McKinsey (Innovation for Carbon abatement report) the fertilizer industry was highlighted as one of the biggest levers evaluated for emissions savings in the chemical industry.

Fertilizers contribute substantially to greenhouse gas reductions.

In 2005 fertilizers contributed to the saving of 1,600 million tons of greenhouse gas, second only to insulation (2,400 million tons).

Compare the yields of agriculture and the climate protection.

If fertilizers were not available, the yield from agriculture would drop by between 30 and 85 percent across the different regions of the world.

The absence of mineral fertilizers would require an additional 1,100 million hectares of land being farmed. At 1.5 ton CO₂ per hectare, this translates to 1,600 million tons of CO₂ (or equivalent greenhouse gas) saved by the use of fertilizers.

This clearly provides the best balance between food production, to feed an expanding population, and the preservation of natural land whilst tackling climate change.

Source: McKinsey report - 2008

“Mineral fertilizers increases agricultural yields avoiding emissions from land-use change.”

McKinsey & Co

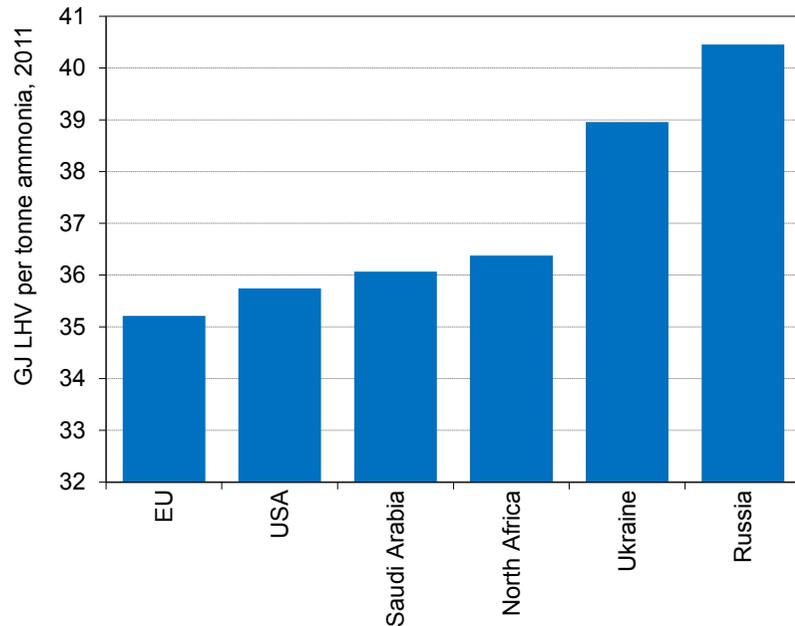
“Fertilizers can save 1,600 million tons of greenhouse gases”

McKinsey & Co

Energy efficiency of ammonia plants

“Closure of efficient EU plants while less efficient plants continue with no improvements is a “living reality” in the EU and world nitrogen fertilizer scene.”

Gas efficiency in ammonia production year 2011

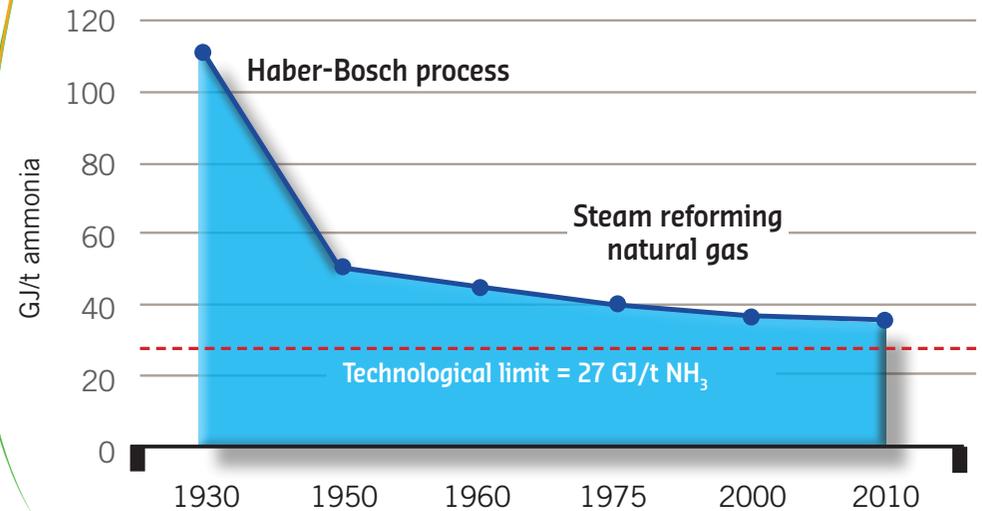


Source: INTEGER

“Energy Efficiency should be a public initiative as well as a global private enterprise”

Voluntary energy efficiency schemes promoting best available technologies and practices should be encouraged

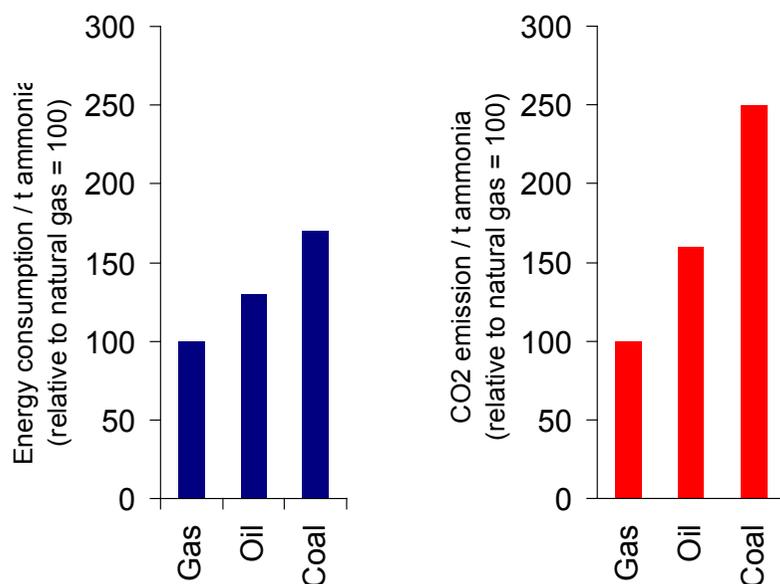
Energy efficiency of ammonia plants



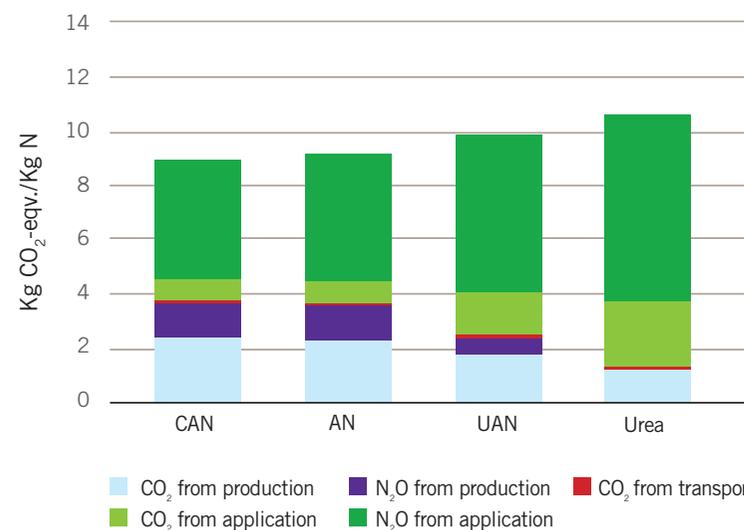
Energy mix and use (natural Gas and other energy sources)

“The life-cycle carbon footprint for ammonium nitrate is lower than for urea and UAN.

Relative Energy Consumption and CO₂-Release: Ammonia Plants with different Feedstocks



European nitrate production is good carbon management

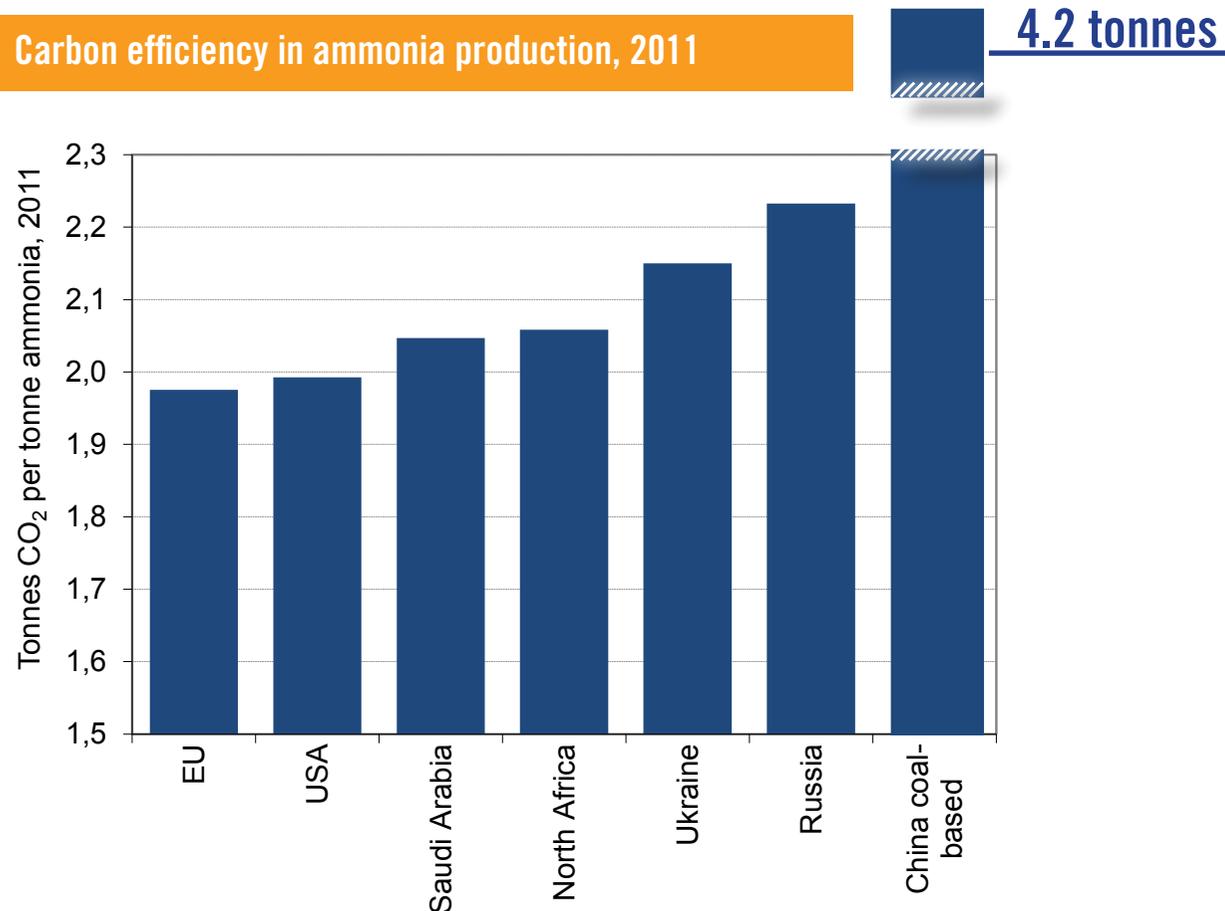


Source: Bentrup, F (2010)

The EU is amongst the world's most carbon efficient.

“The EU has many of the world's most efficient ammonia plants. Carbon leakage, i.e. closure of efficient EU plants while less efficient plants continue with no improvements is a ‘living reality’ in the EU and world nitrogen fertilizer scene.”

Carbon efficiency in ammonia production, 2011



Biofuels

The development of bio-energy, and more precisely biofuels, is a key element in combating climate change and has a unique role to play in saving the limited resource of fossil energy. The sustainability of many first generation biofuels has been questioned over concerns such as displacement of food-crops, effects on the environment and climate change.

There is, however, a general consensus that if significant emission reductions in the transport sector are to be achieved, biofuels must become more efficient in terms of GHG emission reductions and this can be achieved with the following generations of biofuels.

Depending on the feedstock choice and the cultivation technique, second-generation biofuel production has already the potential to provide benefits such as consuming waste residues and making use of abandoned land.

Apart from reducing greenhouse gas emissions, the road towards a bio-based economy will pave the way of rural areas development which could constitute the first step away from an oil dependent economy. It will thus lead to a more diversified future where renewable agricultural residues will become a significant feedstock for energy needs.

Harvesting a sustainable amount of agricultural residue, while leaving appropriate level of organic matter to ensure good soil quality and carbon storage, will not interfere with the food chain and it will provide rural economies with additional revenue.

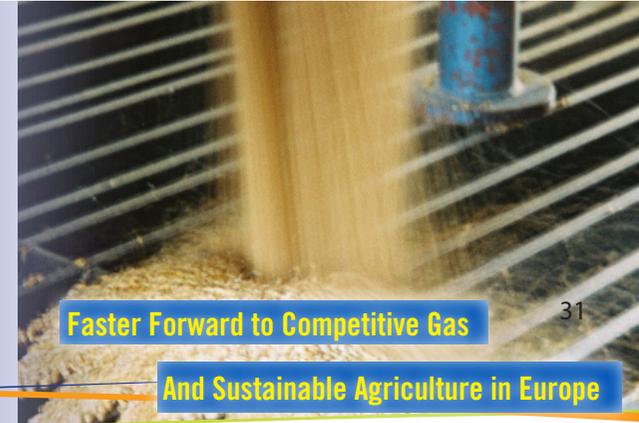
Biomass

Biomass is already making substantial contributions to the generation of energy in both conventional and highly efficient combined heat and power plants in many countries within the EU.

In exactly the same way as for food production, the use of mineral fertilizers increases the productivity of bio-energy crops and their intrinsic value as a raw material. Both the energy and CO₂ balance of the production and use of biomass crops are positive when fertilizers are efficiently used.

A photograph of a vast field of yellow rapeseed flowers in full bloom, stretching towards a hazy horizon under a clear sky.

Biomass crops are reducing
Europe's dependence
on fossil fuels.



Food Security

Meeting Europe's Food Needs

The fertilizer industry supplies “plant nutrients” which feed the world.

Mineral fertilizers have an essential role to play in meeting the twin challenges of feeding an increasing world population and limiting climate change. Mineral fertilizers are estimated to contribute today to more than half of the world's food production and protein supply.

The focus of European agricultural policy should be on improving the performance of the agricultural sector in terms of its productivity and efficiency. This will enable European farmers to increase Europe's self-sufficiency and its contribution to global food needs, as well as lead to more sustainable agricultural production. The sustainable intensification of European agriculture through the efficient use of mineral fertilizers can help the sector respond to main EU policy goals.

As natural gas is especially efficient in energy and carbon terms in the production of fertilizers, EU energy policy must recognize that natural gas supply ultimately equates to food supply and security of food supply. EU policy makers must differentiate between energy resources best used for heating purposes, eg nuclear, and other energy resources and those best used as feedstocks or manufacturing inputs.

Renewables including biofuels present an interesting diversification but are best employed when they are fully competitive and offer sustainable returns against hydrocarbons and are long-term sustainable.





Conclusions :
2014 European
competitive and
integrated energy
scene

Conclusions

-  **Food security and safety - best use of natural gas**
-  **Free, Fair, and Competitive Energy and Gas Trade relations backed by “good neighbour relations”; inter-connected infrastructure and law;**
-  **Sustainable gas and other energy supply based on market economy standards and respecting social and environmental care**
-  **Pan – European Single Energy Market**





gas = fertilizer
fertilizer = food security

“The internal market should be completed by 2014 so as to allow gas and electricity to flow freely”

European Council Summit Declaration February 2011



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