

HOLDINGS 
MYTILINEOS

**LNG, A GLOBAL COMMODITY AND
THE GREEK CASE**

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- ❑ LNG accounts for a relatively small amount of total gas exports, around 27,7%
- ❑ LNG share in inter-regional or intercontinental gas trade between North America, Europe and East Asia is expected to expand from 34% of total gas exported in 2007, to 38% by 2015 and over 40% by 2030
- ❑ LNG constitutes the main driver behind the increasing “fungibility” of gas
- ❑ **fungibility index** in oil was in 2008 over 65%, a truly global oil market, compared to the regionally structured gas markets in North America, Europe and East Asia which have no **common denominator** other than **LNG**
- ❑ As a result gas pricing formulae are reshaped towards more flexible and potentially non-oil indexed supply contracts
- ❑ **Medium (2015) and Long-Term (2030) Increase Compared to Piped-Gas:** the volume of LNG traded in 2008 is projected to augment by 27% until 2015, subsequently increasing to over 105% by 2030. By comparison pipeline natural gas will increase by a margin of merely 5% until 2015

❑ Major Markets Composition / Characteristics

- L.N.G. is primarily traded in two principal regional markets, East Asia and Europe and to a secondary degree North America
 - Supply dynamics and price structuring mechanisms in Asia, Europe and North America (U.S., Canada, Mexico) vary significantly.
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- ❑ East Asia accounts for 68,8% of global LNG trade, followed by Europe (24,4%) and North America (6,8%)
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- ❑ Almost all gas trade **in East Asia**, is based *exclusively* on LNG imports from Malaysia, Australia, Indonesia, Brunei and increasingly Qatar, Oman and the U.A.E. There are basically two major markets, Japan and South Korea, and two *prospectively* major emerging markets, China and India
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- ❑ **The Asian LNG market** is bound to long-term contracts that are priced following an oil-indexing formula.

- ❑ **North America, (U.S., Canada, Mexico)**, still remains primarily isolated from the emerging global gas trading system. Recent developments in unconventional, primarily **shale gas** production and an **increased utilization of coal/lignite** as a major feedstock for electricity generation, has significantly limited the projected demand for imported gas
- ❑ **LNG imports accounted in 2008 for less than 10% of total gas imports.** In 2008 US liquefaction capacity amounted to 145 bcm/y and is expected to reach 214 bcm/y by 2014-2015 even though LNG demand is estimated to be around 40 bcm/y
- ❑ As a consequence of this hemispheric sense of security, the market has been fundamentally liberalized, with spot-markets determining prices to a very large extent without “resorting” to any major oil indexing (Henry Hub Pricing Mechanism)
- ❑ The same is partly valid for **the UK**, at least as long as British gas autarky remains a reality, thanks to the (dwindling) resources of the North Sea area

- ❑ **Continental Europe** presents a much more diverse and idiosyncratic picture. Despite the fact that some spot and short-term markets have emerged in Holland as well as in parts of Belgium, Spain and Germany, the majority of European gas trade is still based on long-term, oil-indexed contracts that are principally dependent on pipeline imports from Russia, Algeria and Norway
- ❑ Pipelines still account for 85% of all EU imports. Russian exports that account for almost 42% of all EU imports dominate and will continue to dominate the supply equation despite rising LNG regasification capacity and the projection of massive LNG imports from the Arab Gulf area
- ❑ LNG still represents a mere 15% of total EU supply or 55,2 BCM in 2008. Even if the E.U. manages to compete successfully with established Asian markets for Gulf LNG exports it could only increase its LNG share to 140 BCM by 2025 or 25% of total imports

- ❑ Some 147 bcm/y of additional liquefaction capacity is expected to be commissioned by 2013, thereby increasing total capacity from 262 bcm/y in 2008, to 409 bcm/y by 2013, a net increase of 56%
- ❑ Qatar alone accounts for 50% of this net capacity increase and is expected to more than double its 2008 net export capacity of 40 bcm/y by the end of 2011.

History:

- ❑ Natural Gas was first introduced in the Greek energy mix in 1997
- ❑ In 1997 Greece consumed around 0,8 bcm whereas in 2008 demand rose to 4 bcm, a net increase of 500%
- ❑ In 2009 demand decreased by around 15% due to the financial crisis
- ❑ Overall, despite the economic downturn, natural gas demand is inelastic due to the steady decommissioning –for environmental reasons- of older oil and coal-driven electricity plants, a process that will climax over the next 5-10 years. Oil still accounts for around 16% of electricity demand. The utilization of oil in the electricity sector will be phased out completely by 2013

Demand Composition

- ❑ Demand is primarily driven by electricity generation that accounted in 2008 for 71,7% of consumption, a share which is among the highest in the EU-27
- ❑ In 2008 Industrial and Commercial consumers accounted for 22% of demand with the household sector representing a mere 6% of final consumption. It is notable though that demand in the household sector has almost tripled in the 2005-2008 period from 83 mcm/d in 2005 to 238 mcm/d in 2008
- ❑ Demand for electricity will continue to account for more than 2/3 of final gas demand for the next 5-10years

Import Dependence / Import Diversification

- ❑ Greece's indigenous gas production is minimal
- ❑ Imports account for almost 99% of domestic demand

Import Sources

- ❑ Greece pursues an effective policy of diversification thus significantly decreasing its dependence on its biggest importer
- ❑ In 2005 Russian imports accounted for 84,2% whereas in 2008 Greek imports from Russia covered 66,3% of demand
- ❑ Turkish gas exports channelled to the National Gas Transmission System through the ITG pipeline (Interconnector Turkey-Greece) accounted for 10,4% of demand in 2008
- ❑ The remaining share of imports comes from LNG

- ❑ The only active LNG terminal in Greece is the 5.3 bcm/y nominal capacity (actual capacity is around 4,3 bcm/y) Revythousa terminal
- ❑ Revythousa is owned and controlled from DESFA, the TSO (Transmission System Operator), but **is utilized only at 20-25%** of its technical capacity. Consequently, Revythousa **could accommodate up to 3 bcm/y of LNG immediately**
- ❑ **Plans for New LNG Terminals**
 - DESFA & PPC (state-owned electricity production) for an LNG terminal in Korakia, Crete,
 - the Astakos Project,
 - an idea from DEPA for an LNG terminal in north-eastern Greece, which they need to promote to Qatar and have already presented in to Sonatrach in Algeria.
 - Astakos and north-eastern Greece terminals is expected to operate with Qatari LNG. The Korakia terminal in Crete could operate with Egyptian LNG and/or CNG imports in order to produce electricity in Crete and replace PPC's oil driven power plants
- ❑ Floating Storage and Regasification Unit (FSRU)

- ❑ Greece has also increased the diversity of its LNG imports
- ❑ In 2005 LNG accounted for 26% of demand based on a long-term contract with Algeria's Sonatrach
- ❑ In 2008 LNG imports represented 23,4% of demand of which 4,9% originated from DEPA's imports in the short-term or spot LNG market from Egypt via a reselling agreement with Total and British Gas
- ❑ In 2009 due to the increase of spot-market cargoes LNG's share of the import mix rose to around 28%
- ❑ The first privately owned cargo (Mytilineos) arrived in Revythousa on 11 May 2010

The first attempt (December 2009)

- ❑ On November 2009 Mytilineos and Motor Oil Hellas announced a strategic alliance to procure natural gas for their own consumption and for wholesaling through a 50/50 joint venture
- ❑ Aluminion, an affiliated company to Mytilineos, applied to RAE and was granted the right to become a shipper on the transmission network
- ❑ Aluminion applied for permission to DESFA for bringing a 65,000 cm cargo on board ENI vessel Portovenere on December 2, 2009
- ❑ DESFA proposed to RAE and RAE accepted the release of the capacity of the pipeline feeding Aluminion
- ❑ Aluminion requested from DESFA to sign an one year transmission agreement and DESFA's officials resisted signing the document on the ground of the secondary law absence
- ❑ After a delay outside the terminal, Aluminion sold the cargo to another buyer

The second and successful attempt (May 2010)

- ❑ On April 2010, the Ministry for the Environment, Energy and Climate Change approved the Management Code of the National Gas Transmission System
- ❑ Mytilineos and Motor Oil jointly imported the first non-DEPA LNG cargo
- ❑ The cargo procured in Equatorial Guinea from BG and arrived on Revithousa on 11 May on board the 140,000 m³ LNG carrier “Methane Nile Eagle”
- ❑ Mytilineos received 70,000 m³ from the shipment, Motor Oil 20,000 m³ while DEPA received 50,000 m³
- ❑ Mytilineos and Motor Oil use the LNG to power their own industrial production while DEPA released the volumes on the downstream market
- ❑ The arrival of the first private LNG cargo marked the final and irreversible opening of the Greek natural gas market
- ❑ Four more cargoes (total 210,000 m³ LNG) procured and will arrive on Revithousa in the coming months
- ❑ PPC procured a 65,000 m³ cargo

Benefits stemming from the liberalisation of the Greek Natural Gas market

- ❑ Enhancement of the security of supply
- ❑ A positive message towards the international markets that Greece proceeds with all the necessary reforms
- ❑ Reinforcement of the competition will lead to lower natural gas prices and consequently reduction of the energy bill of the energy consuming industries which in turn results to the increase of the competitiveness of the Greek economy
- ❑ Cheaper natural gas in the power production sector will potentially result to the reduction of the electricity tariffs
- ❑ Cost reduction for the commercial consumers and households
- ❑ Enhancement of the penetration of most environmental friendly fossil fuel

- ❑ The strategic positioning of the Group focuses on developing new business activities in the Greek energy sector and on putting in place the largest installed independent power production capacity in the country, through a balanced portfolio of investments in thermal and renewable sources.

- ❑ The company's activities include construction, development and operation of thermal power plants and renewable energy sources (wind, hydropower and photovoltaic parks), and trading in electrical power and CO2 emissions

- ❑ The Group's total installed capacity attributable to thermal generation assets is expected to reach c. 1.2 GW by mid 2011
 - CHP plant in Viotia with an installed capacity of 334 MW is in operation,
 - CCGT plant in Viotia with an installed capacity of 444 MW will start hot commissioning in the coming September
 - Korinthos Power, a joint venture with Motor Oil, with an installed capacity of 437 MW is expected to start hot commissioning by the mid of 2011
 - Total consumption of Natural Gas of all three plants is c 1.2 bcm

- ❑ Mytilineos and Motor Oil will capitalize on the successful opening of the Greek Natural Gas market and continue the successful initiatives to penetrate even further the natural gas market
- ❑ LNG plays a pivotal role in the articulated natural gas strategy
- ❑ A number of investment options like FSRU is under consideration