

5th Energy Symposium

“Cyprus: a new energy gateway to Europe”

Nicosia, 1st November 2017

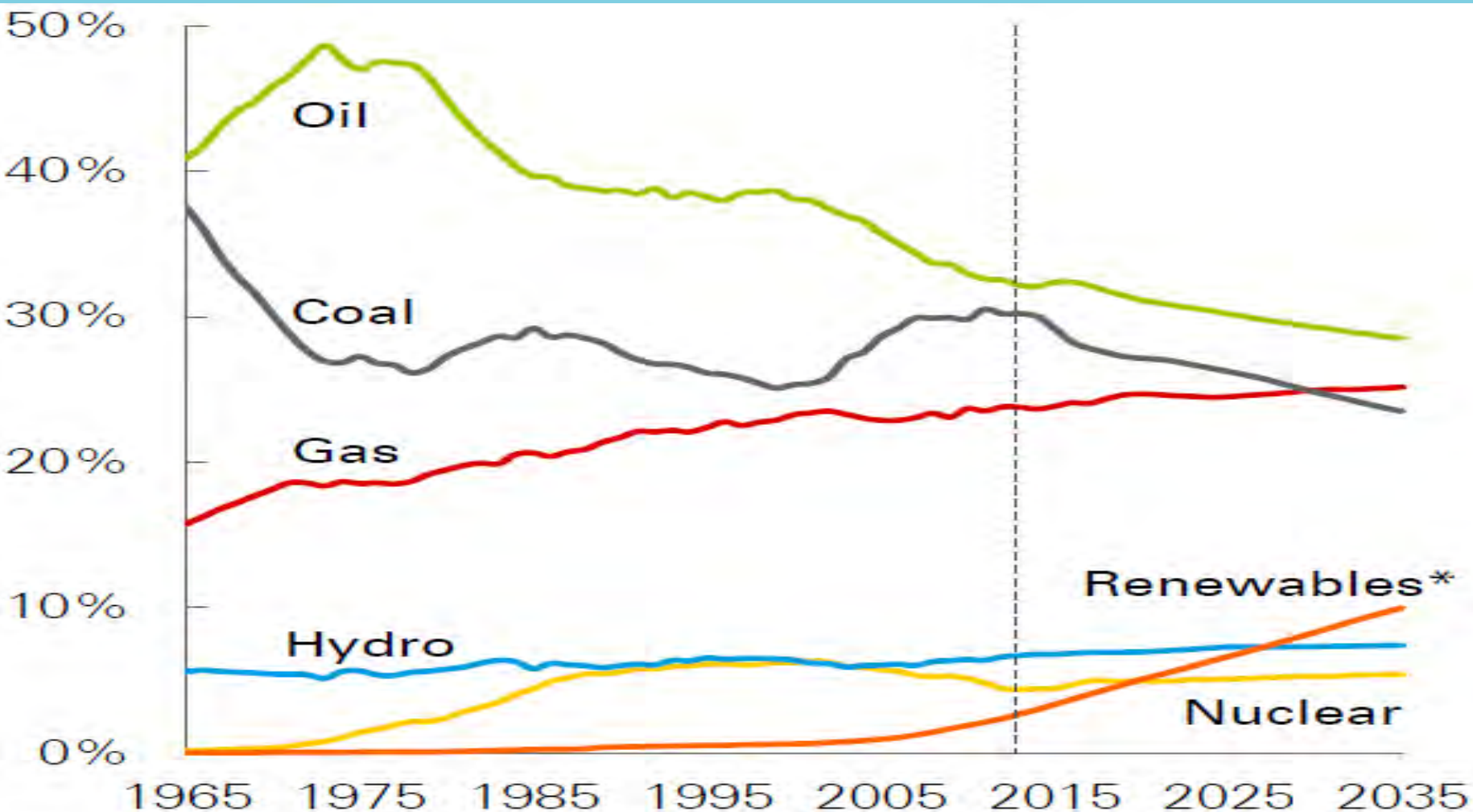
“Strategies to cope with energy transition and establish Cyprus as a new gas supplier”

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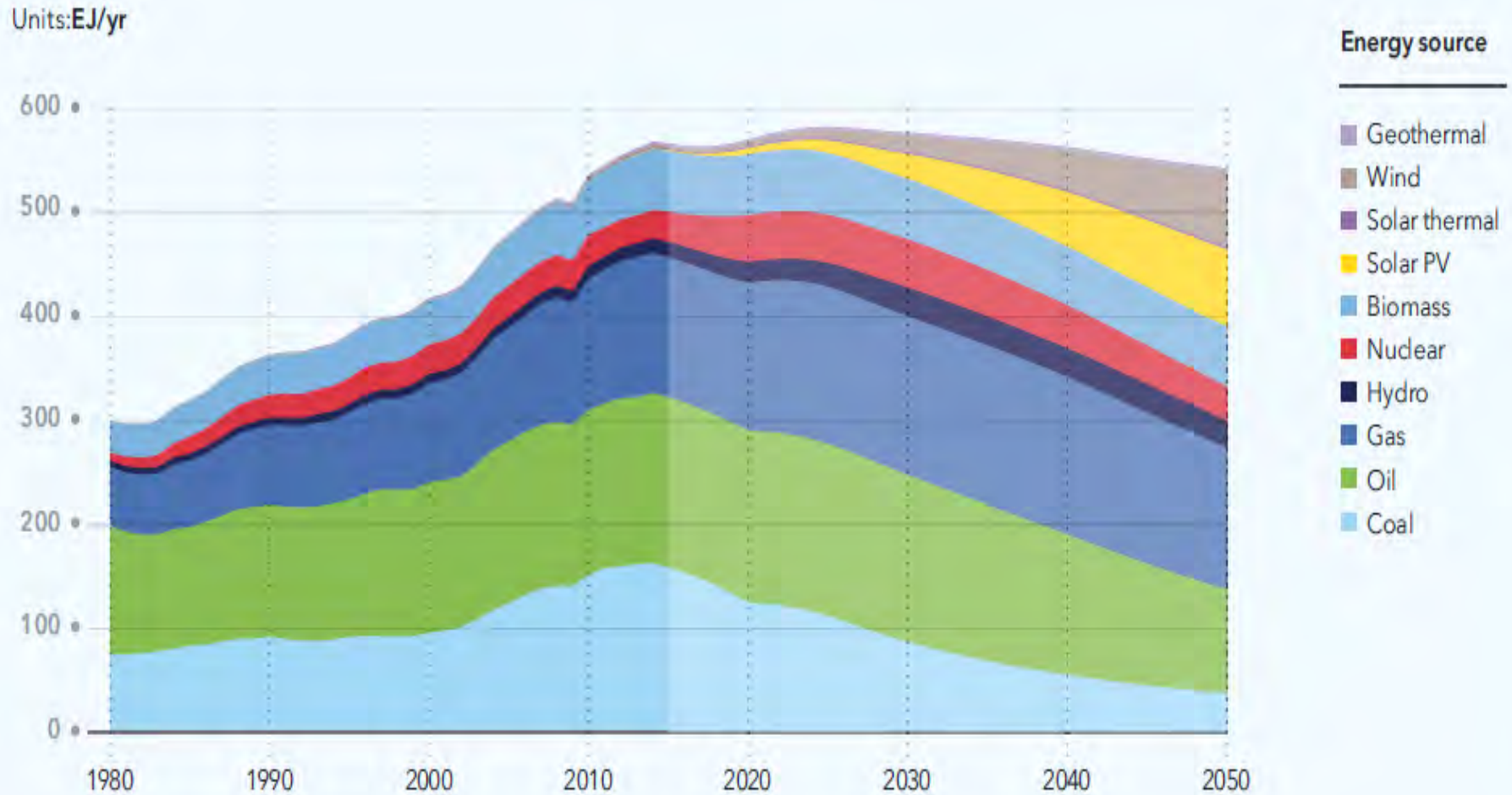
Energy Transition and the European Gas Industry



Oil “shocks”, revolutionary technologies and climate change policies have brought serious changes in the energy mix the last 50 years

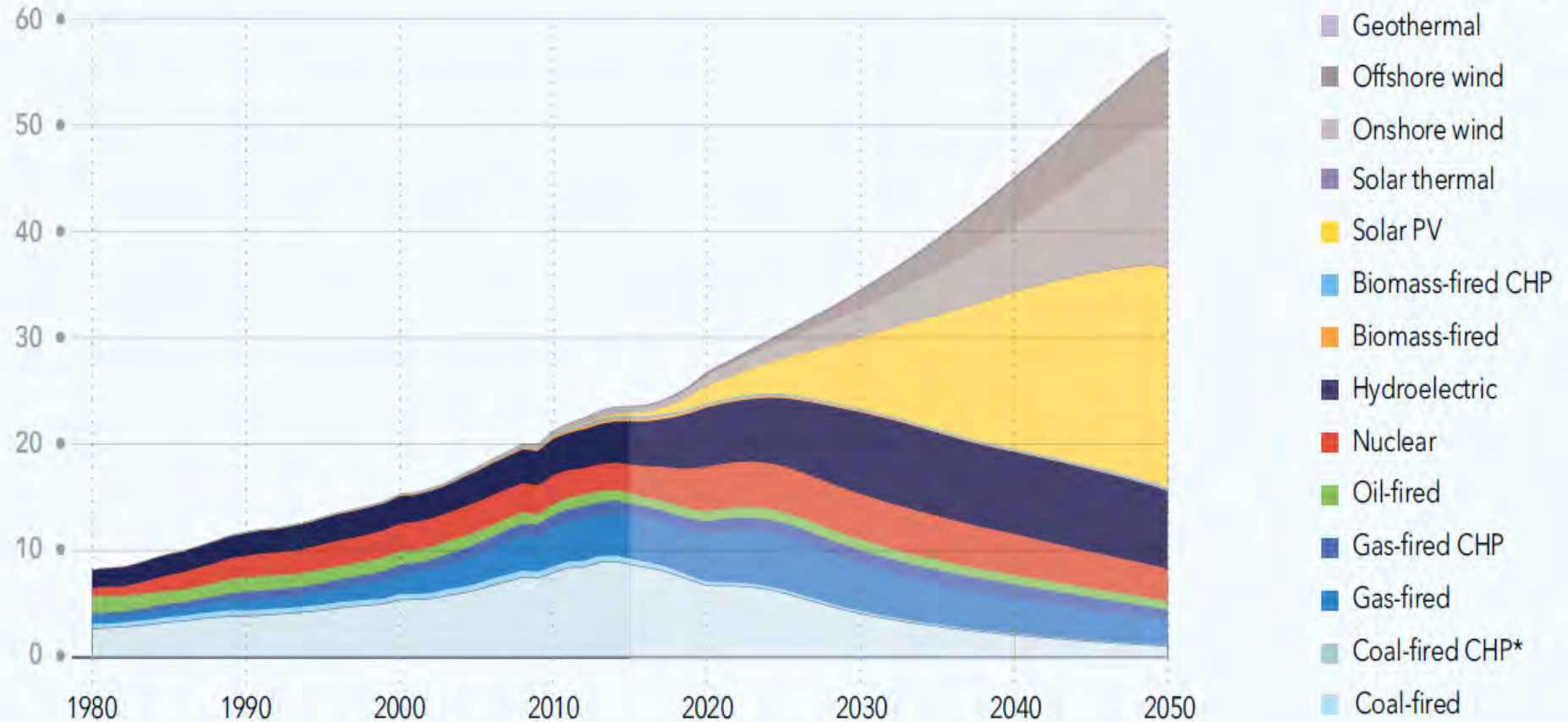


The achievement of the ambitious EU's GHGs targets will lead to radical changes in its energy mix by 2050

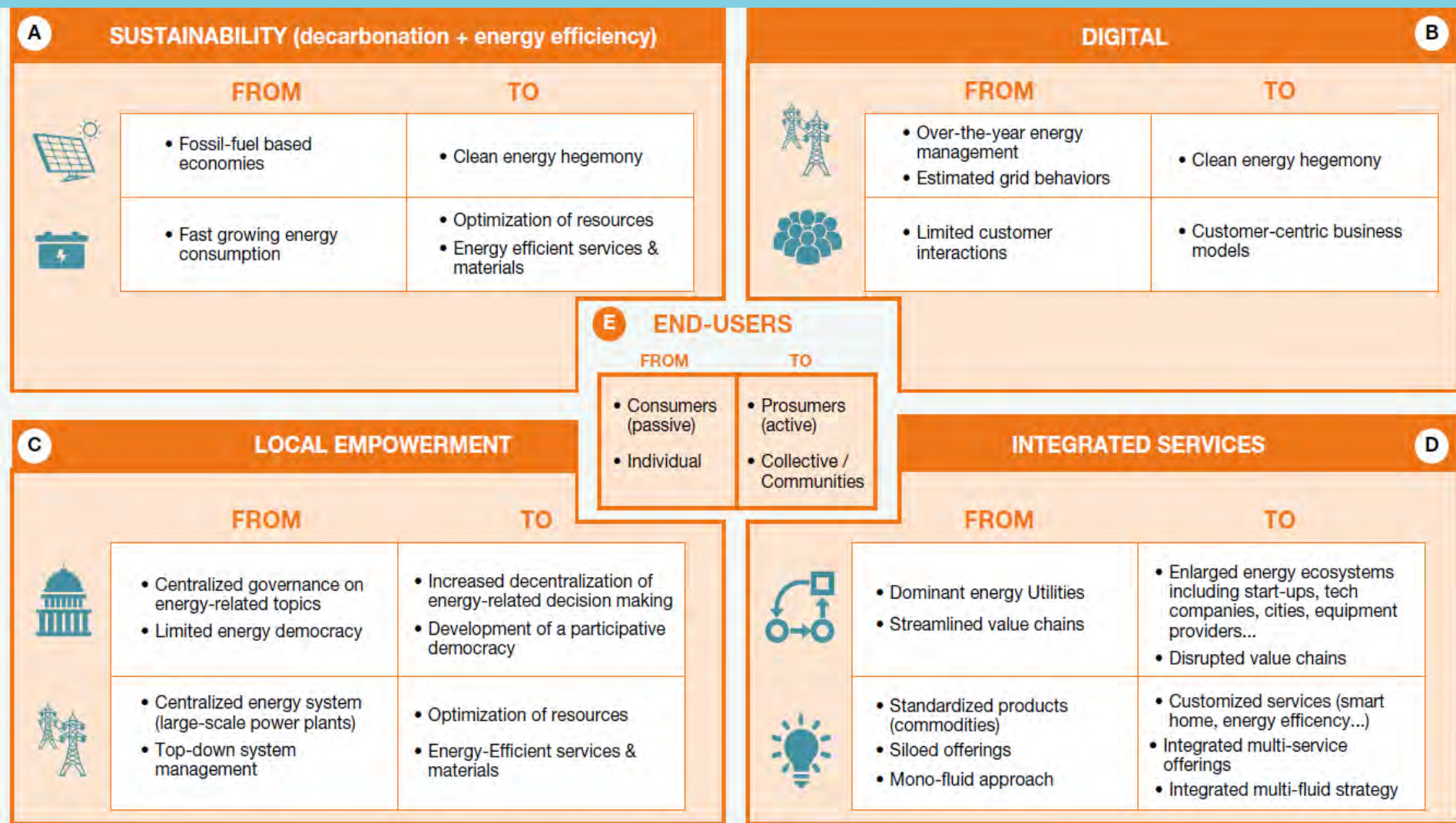


...especially in regard to power generation sources

Units: PWh/yr



Megatrends in the European energy sector in the “energy transition” era





Changing business environment cause changes in gas industry's business models

- More globalized and liberalized gas markets
- From national to global gas companies
- From state-owned to private gas firms
- Forward and backwards integration movements across the gas value chain
- From long-term gas supplies to gas-to-gas competition and short-term/spot transactions via hubs
- From pure gas to digital integrated multi-services energy companies

The European gas industry faces many challenges on its journey to successful transition

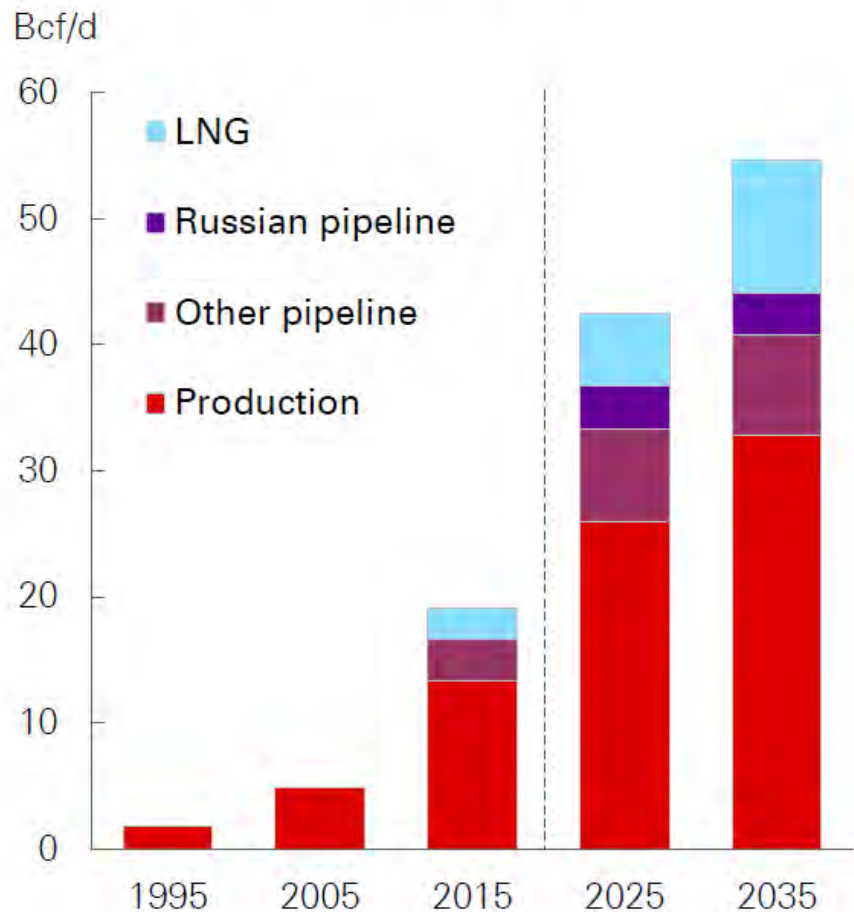
- ✓ Rising gas import dependence mainly due to decreasing indigenous gas production
- ✓ Increasing competition from other regions to secure future gas quantities (i.e. China and India etc.)
- ✓ Persisting instability in neighboring gas producing and gas transiting countries
- ✓ Sluggish gas demand growth due to pure economic growth, energy efficiency measures and increasing competitive pressures from other forms of energy, mainly RES
- ✓ Evolving sustainability, integration and digitalization strategies in order to adapt to “energy transition”
- ✓ Changing roles and risks of key market players due to the ongoing market liberalization process and energy transition
- ✓ “Low for longer” oil and gas prices may undermine upstream investments

Factors and drivers supporting natural gas demand

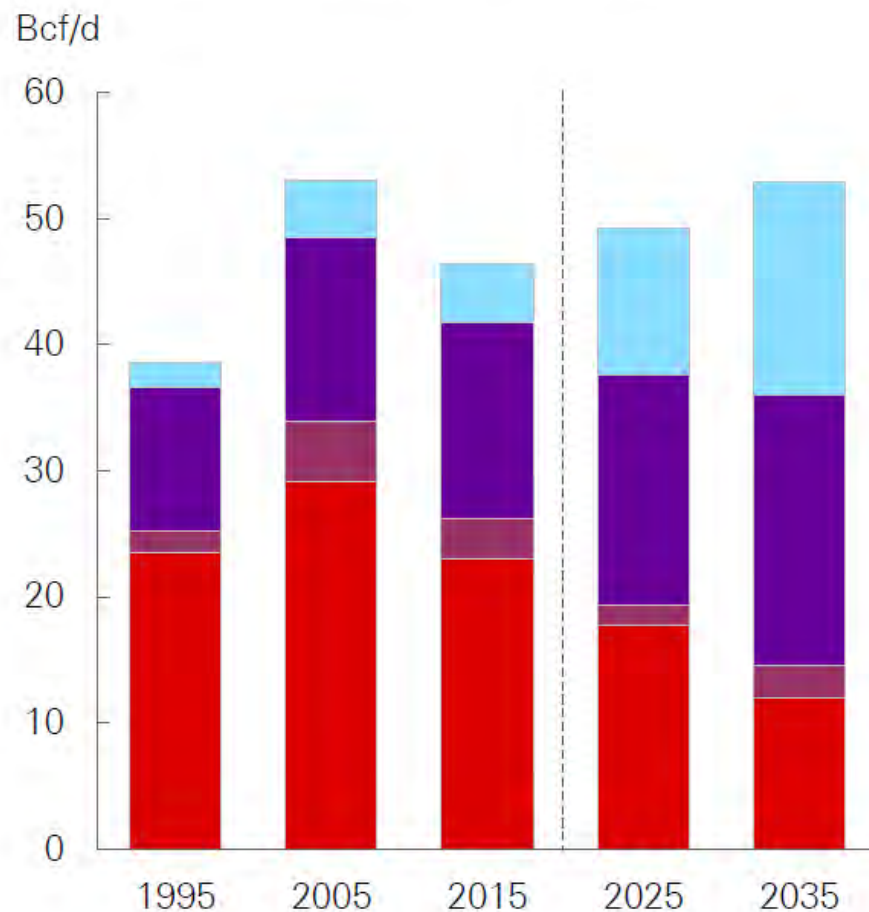
- ✓ Vast reserves, able to support world's consumption for more than 70 years
- ✓ “Lower for longer” gas prices drive gas demand growth
- ✓ Excellent energy and environmental friendly characteristics
- ✓ Remarkable technological achievements that reduce costs across the value chain and end-consumers prices (deep water exploration and pipe laying, horizontal drilling, fracking technology, high CCGT plants' efficiency etc. etc.)
- ✓ New gas pricing mechanisms resulting in decoupling from oil and evolution of hub indexed formulas, along with gas prices convergence worldwide
- ✓ Technological progress across the LNG value chain resulting in significant growth of its trade in traditional and new markets as well as in the creation of a global gas market (FLNGs, q-max ships, FSRUs, small-scale applications)
- ✓ Gas constitutes the most cost-efficient fuel to cope with energy efficiency, environmental and climate change challenges at least in the mid-run
- ✓ Gas is the best back-up fuel option to RES and would maintain its complementary role for RES even in the long-run

Global gas demand will continue to increase, although with a different growth pattern in each region

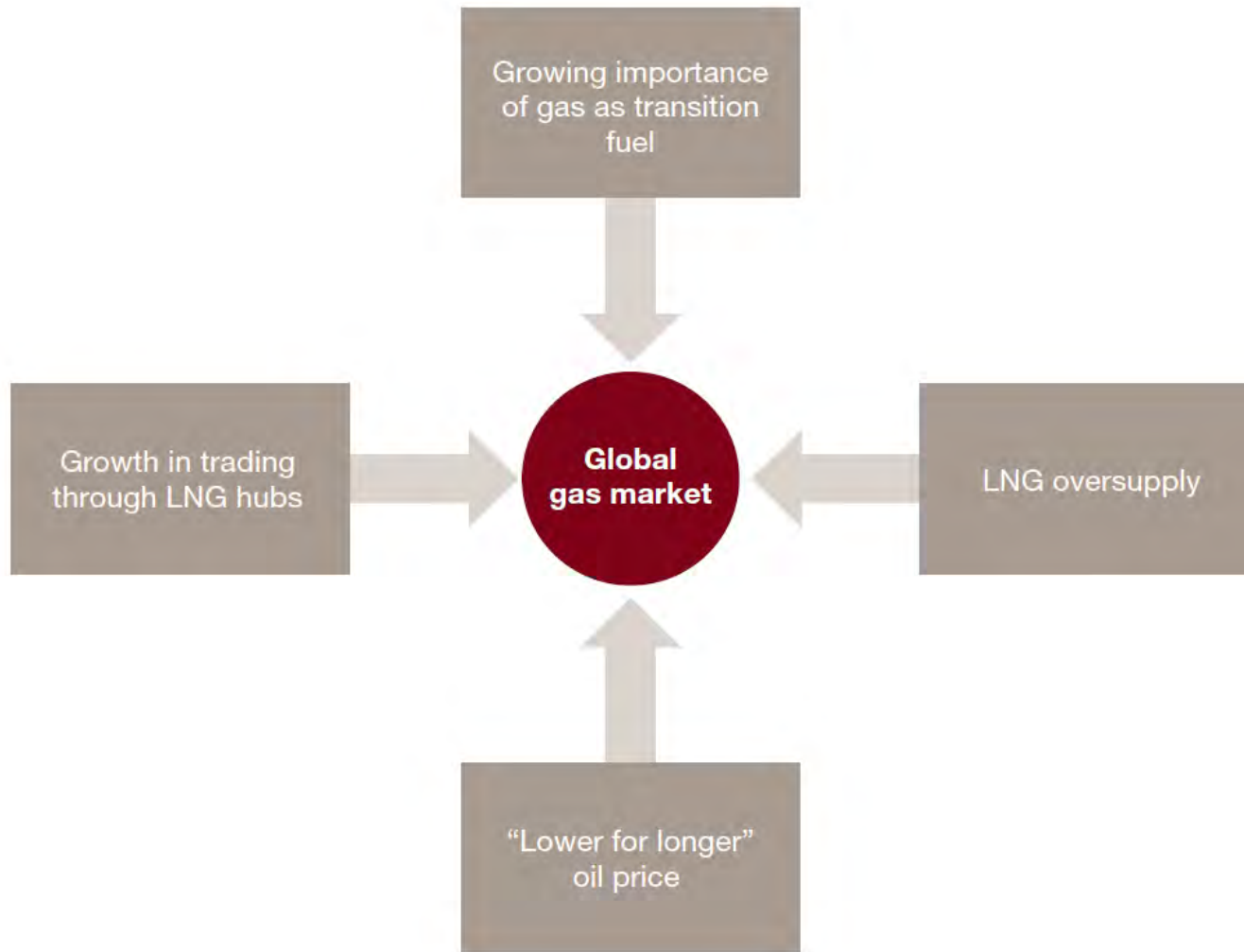
Gas supply to China



Gas supply to Europe



...but the gas market landscape will be quite different in the years to come



Source: Strategy& analysis

Gasification strategies and the role of natural gas in Cyprus' energy mix



Cyprus has already discovered the Aphrodite gas field and has sound expectations for new significant findings





However, since monetization of Cyprus' gas reserves & resources is still uncertain and will take several years, a new gasification strategy has been adopted





Market trends and contractual terms/models for LNG imports through FSRUs are currently quite attractive for buyers

- Global market will be oversupplied at least the next 5 years (US LNG, Australia LNG, Qatari LNG etc. etc.)
- Reduction in the average contract length and contract volumes
- Rise of destination free and volume flexible LNG contracts (due to US LNG)
- Increasing role of LNG 'intermediates' (Portfolio Players and LNG Traders)
- Growing number of LNG contracts with hub indexed price mechanisms
- Increasing LNG buyer's bargaining power allow them to gain influence over certain contractual terms (e.g. ToP level, annual and daily flexibility etc.)
- Sellers are now forced to accept lower buyers' credit quality
- Rising number of transactions on a short-term and/or on spot basis

Natural Gas will be the ideal transition and back-up fuel in Cyprus





**Gas-fired power plants and RES will
complimentary cover Cyprus' energy needs
in the years to come**

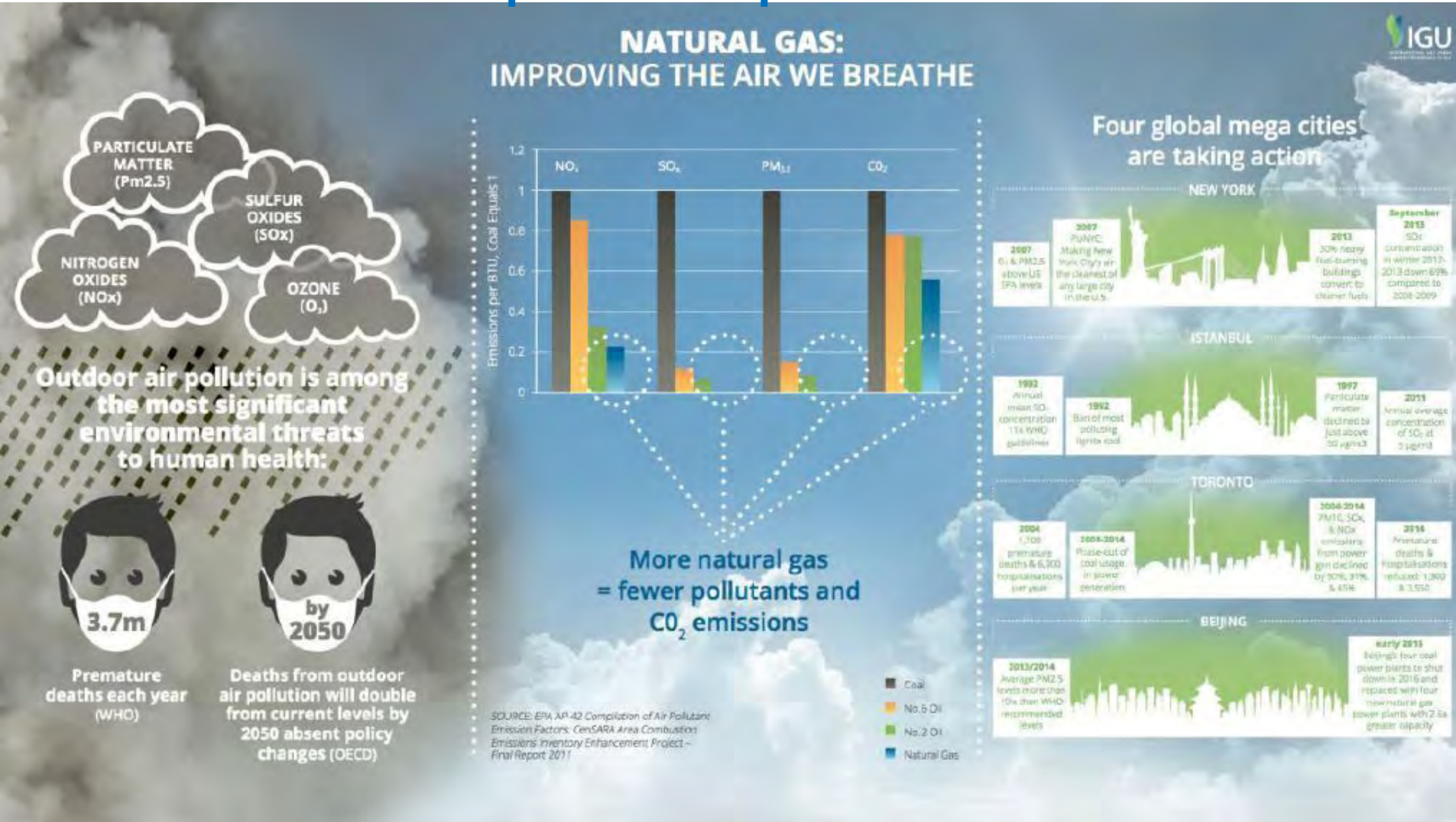




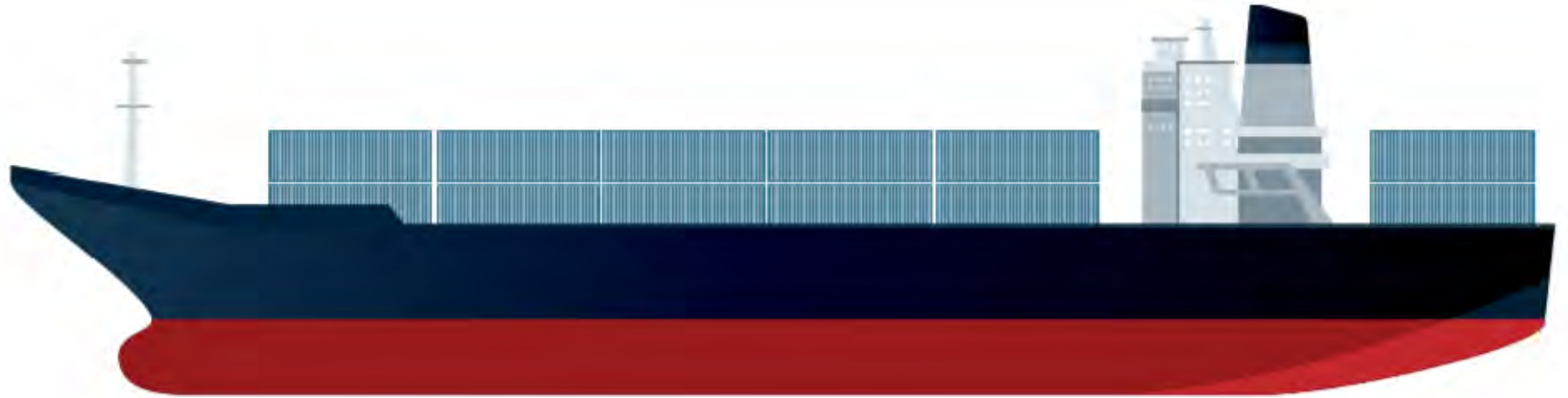
Industrial areas will also be supplied with natural gas



Natural gas is the most cost-efficient fuel to cope with energy efficiency and environmental protection policies in urban areas



The use of LNG as marine fuel will reduce drastically SO_x as well as CO₂, NO_x and soot emissions

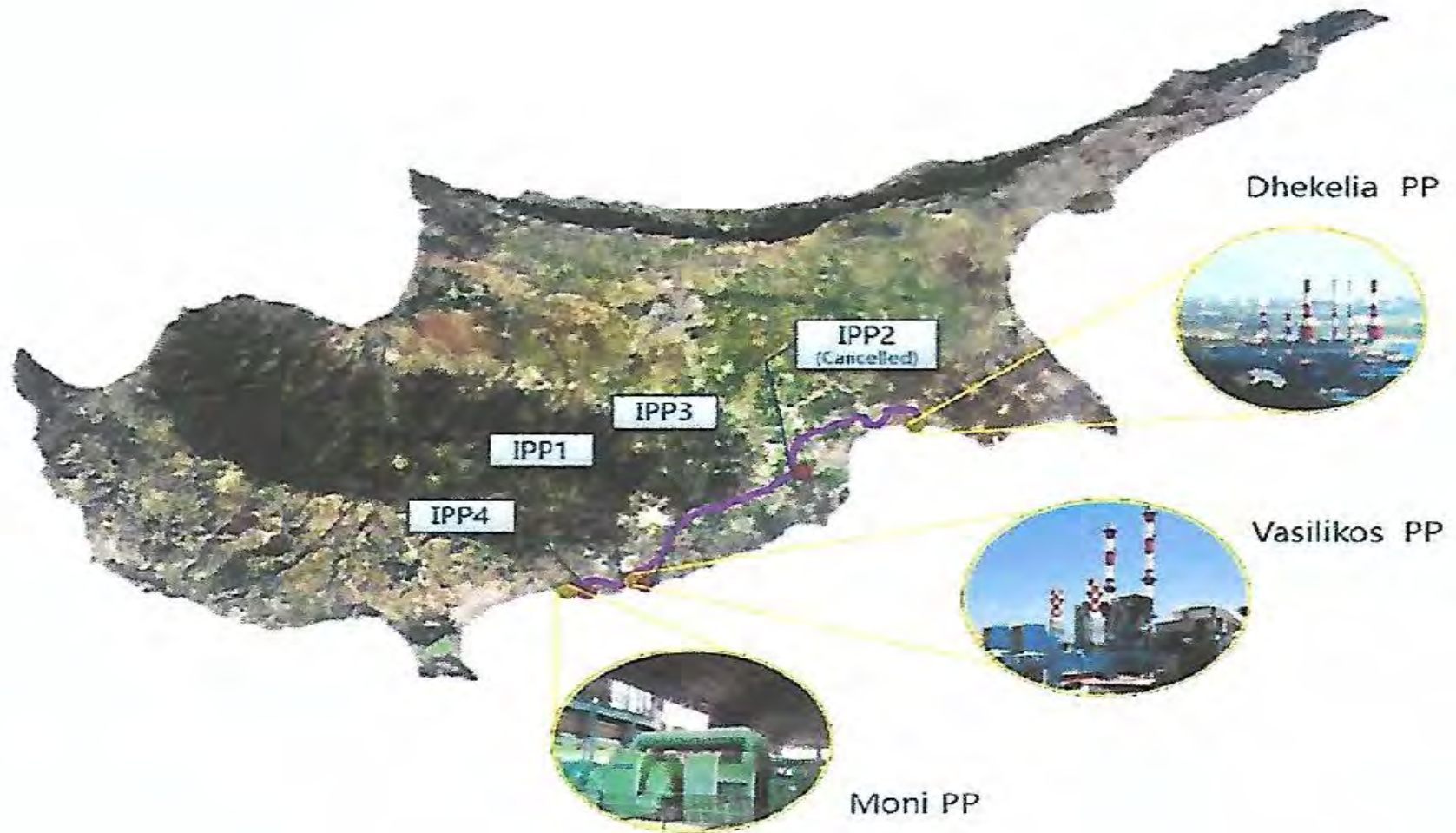


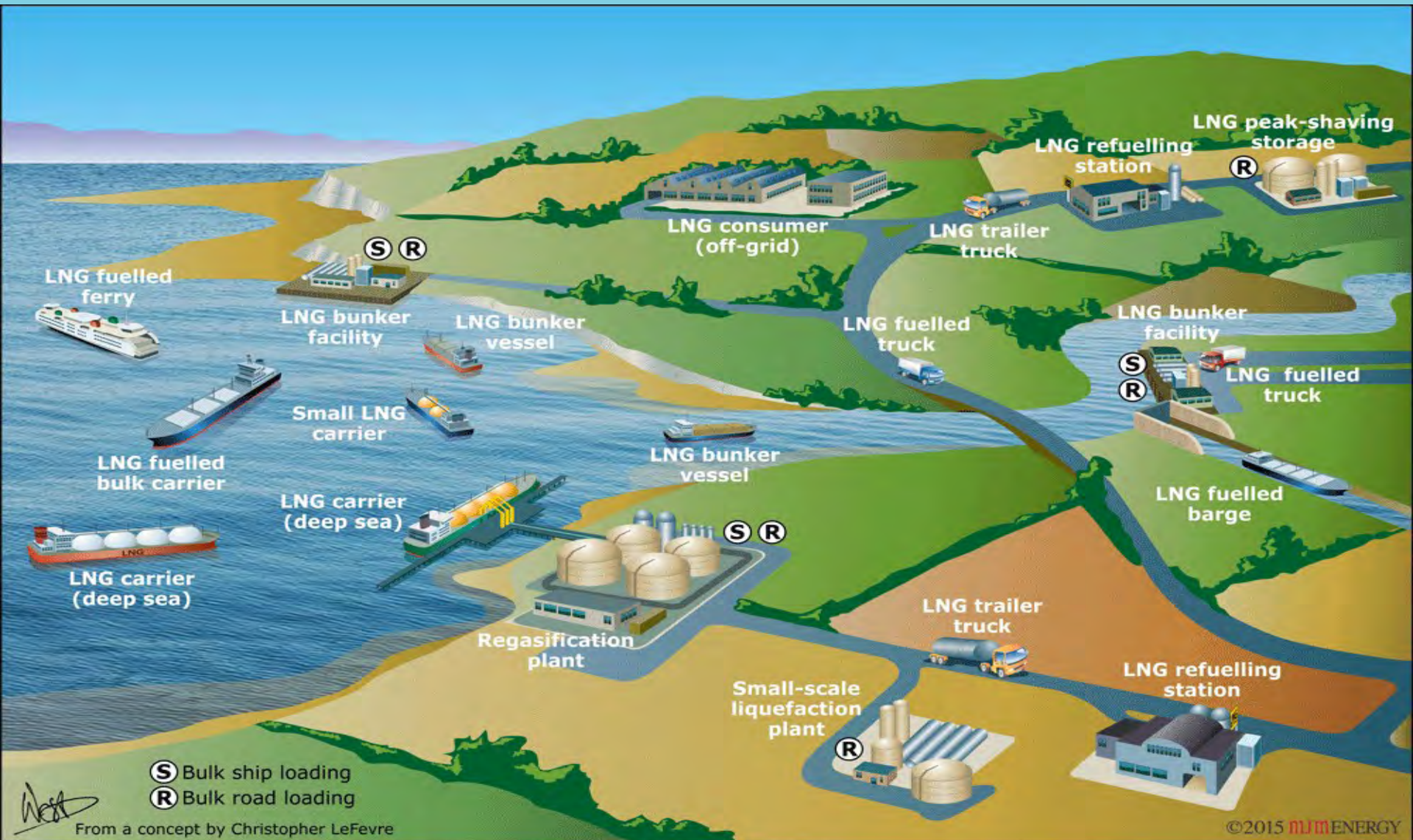
One large container ship, powered by 3 percent sulphur bunker fuel, emits the same amount of sulphur oxide gasses, as 50 million diesel-burning cars...

**The infrastructure dilemma:
Gas networks or virtual pipelines?**

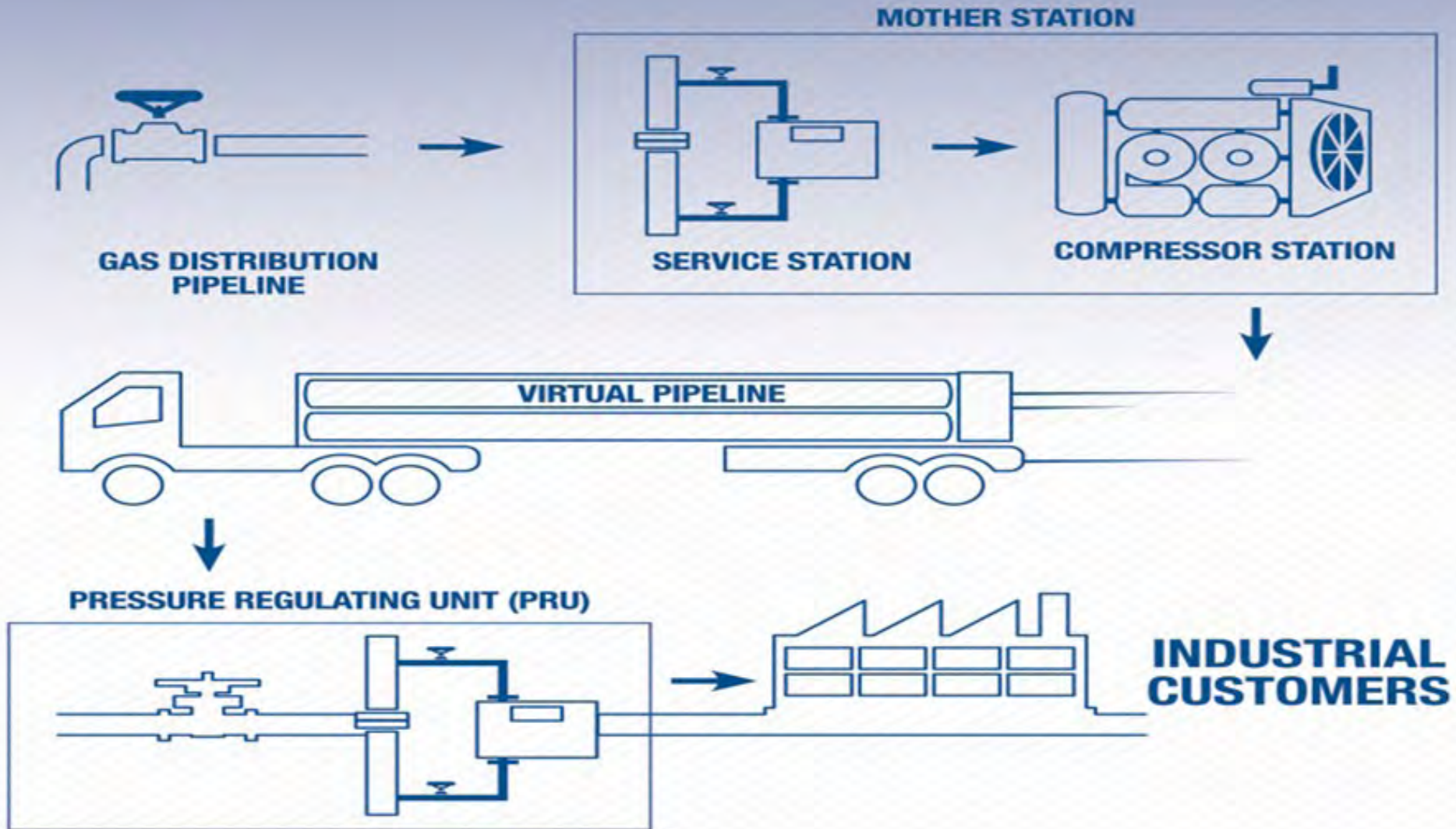


Current gas transmission pipeline plan





The CNG Virtual Pipeline concept





Virtual pipelines (CNG or LNG) can promote the use of natural in transport nationwide and reduce GHGs emissions





Virtual Pipelines can also promote the use of natural gas in industrial areas and isolate industrial plant





Virtual pipelines consist a cost-efficient way for gas supplies to hotels, hospitals and other of-grid buildings





Establishing Cyprus as a new gas supplier



Cyprus and Greece are set to become a new gas entrance to Europe





The East Med pipeline: project rational & strategic importance

- Cyprus, Greece and Israel are committed to developing strong political and economic relations to ensure peace, security and cooperation in the region
- Within such a policy framework the proposed East Med gas pipeline fully fits with the European energy strategy:
 - ✓ to enhance energy security
 - ✓ to diversify gas supply sources and transport routes
 - ✓ to reduce dependency on Russian gas
 - ✓ to secure competitive energy prices for the consumers through gas-to-gas competition
- The pipeline has been formally acknowledged by EC as a priority and integral part of the Vertical Corridor and has been included in the official list of PCI projects
- Moreover, East Med pipeline would offer a brand new and absolutely safe energy corridor to Europe

The East Med pipeline: project configuration & status

- Length: 1870 Km (from Levantine Basin to Greece via Cyprus and Crete and then via the Poseidon pipeline to Italy and/or via IGB pipeline to Bulgaria)
- Diameter: Offshore 26-32” (46” in the gulf of Patras), Onshore 42-46”
- Capacity: 11 bcm/year (1 bcm for Cyprus and 10 bcm for Europe), expandable to 16 bcm/year in a future phase)
- Maximum water depth: 2960 m
- Design Pressure: max 360 bar
- CAPEX: ~ 6 billion Euros
- OPEX: ~ 125 million Euros/year
- Project Status: Feasibility study under execution by IGI Poseidon (Edison and DEPA)
- Intergovernmental Support: Cyprus, Israel and Greece expected to sign IGA by the end of 2017
- EU Support: East Med pipeline has been included in the list of PCIs and received finance for the feasibility study

- ❖ The European gas industry faces many challenges on its journey to successful transition
- ❖ Although gas will continue to play a crucial role in the energy mix in the coming years neither the industry nor the markets will be the same and gas companies should effectively and timely adapt if they are to survive
- ❖ Cyprus has adopted an interim gasification strategy based on LNG imports via an FSRU till the time of potential supplies of locally produced natural gas
- ❖ Timing and market conditions are currently quite attractive to enter into an LNG contract
- ❖ Natural gas is going to play a key role as transition and back-up fuel in the years to come towards a low carbon economy in Cyprus
- ❖ By choosing to develop the absolutely necessary gas networks and to employ LNG/CNG virtual pipelines Cyprus would potentially maximizes the benefits of an increased natural gas share in its energy mix
- ❖ Active support of the East Med pipeline (and/or of a liquefaction plant in Vassilikos in case of new significant findings) will establish Cyprus as a new gas supplier to Europe and potentially to develop into an LNG traded hub in Eastern Mediterranean

Thank you for your attention

Questions?

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