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## WHAT GAS STRATEGY FOR A EUROPEAN ENERGY SYSTEM IN TRANSITION? INVESTMENT CHOICES UNDER UNCERTAINTY

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An EU approach to LNG and gas infrastructure needs to ensure that the interests of European consumers – citizens and businesses alike – are protected. This means developing a cost-effective strategy that solves damaging contradictions between current gas policy and wider energy and climate policy. Here's how.

- > The first test of the success of the Energy Union is the infrastructure choices that are made. Wrong energy infrastructure decisions can have significant implications, from diverting scarce public money away from high value projects in other sectors or regions, to creating 'lock in' to levels of gas consumptions that are in conflict with EU decarbonisation goals. Ultimately, European consumers bear most of the risks related to building energy infrastructure – building too much or too little, in the wrong place or of the wrong type.
- > European leaders have affirmed that Europe needs more diversification - not more gas - and that demand reduction is an important investment for energy security. These principles must be fully integrated in the overall approach. We recommend that the European Commission develops a strategy consisting of:
  - > A broad **gas strategy for Europe** which sends a strong political message that the EU is serious about lessening its gas dependency, guides Europe through the necessary decline of unabated gas, places safeguards protecting European consumers against wasting money uneconomic projects;
  - > An **action plan** to specifically target Member States most vulnerable to disruptions in Russian gas supply and help them develop alternatives;
  - > A **Foreign Policy Strategy** to reduce Europe's exposure to an increasingly uncertain and competitive geopolitical landscape, and manage Europe's relationship with Russia.
  - > An initiative to strengthen the evidence base and metrics that European decisions makers use to support strategic infrastructure choices decisions and evaluate the added value of new projects.



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## CONTEXT: KEY CHALLENGES

As the European Commission considers the launch of an ‘EU strategy for Liquefied Natural Gas (LNG) and gas storage’ in 2016, E3G defines what challenges a coherent LNG strategy for Europe would need to resolve and questions whether such a strategy could ever do the job.

### 1) Europe needs to address both security concerns and decarbonisation commitments.

Natural gas has an important role to play in Europe’s low carbon transition. There is scope for coal-to-gas fuel switching to help reduce emissions in the near term, and to provide much needed flexibility to European power markets. In transport, it can help decarbonise the shipping and the freight industry currently heavily relying on oil. But while gas will play an important function, the volumes of gas consumed in the EU will continue to decline.

Over the longer term achieving the EU’s climate objectives will mean limiting the unabated combustion of fossil fuels, including gas. According to the European Commission’s Low Carbon Roadmap, the power sector will need to achieve 54-68% emission reductions by 2030, and to nearly reach carbon neutrality by 2050 (See Table 1).

This raises questions about whether new gas import infrastructure built now can continue to be used throughout its economic lifetime, and how to manage Europe’s transition away from gas. **A European LNG strategy must include a strategy to manage the planned decline of European gas use.**

**Table 1: Sectoral reductions consistent with European decarbonisation trajectory to 2050**

GHG reductions compared to 1990	2005	2030	2050
Total	-7%	-40 to -44%	-79 to -82%
Sectors			
Power (CO <sub>2</sub> )	-7%	-54 to -68%	-93 to -99%
Industry (CO <sub>2</sub> )	-20%	-34 to -40%	-83 to -87%
Transport (incl. CO <sub>2</sub> aviation, excl. maritime)	+30%	+20 to -9%	-54 to -67%
Residential and services (CO <sub>2</sub> )	-12%	-37 to -53%	-88 to -91%
Agriculture (non-CO <sub>2</sub> )	-20%	-36 to -37%	-42 to -49%
Other non-CO <sub>2</sub> emissions	-30%	-72 to -73%	-70 to -78%

Source: European Commission Low Carbon Roadmap

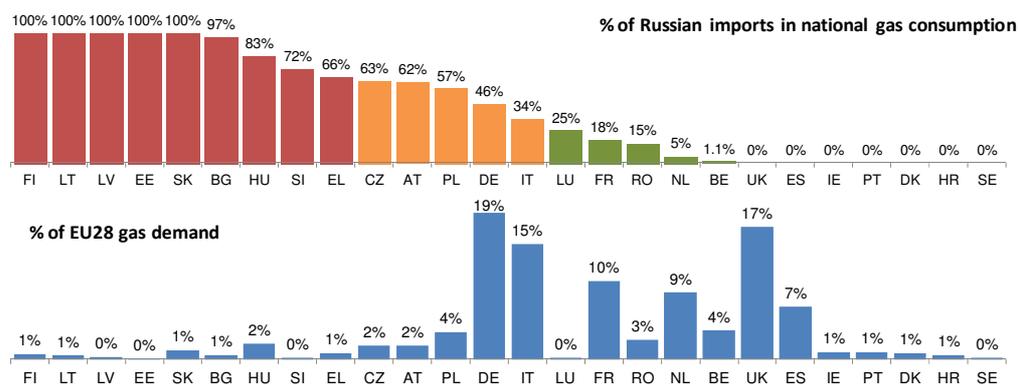
### 2) The internal market for gas is not suited to alleviate existing security concerns

Concerns about security of gas supply are predominant in Europe, especially in CEE countries. Latvia, Lithuania, Estonia, Finland and Slovakia are fully reliant on Russia for their gas use; Bulgaria, Hungary, Slovenia and Greece are dependent on Russia for more than two thirds of their gas consumption. These countries most vulnerable to disruptions in Russian gas supply only represent 7% of total European gas demand (see Figure 1); their collective needs only represent about a fifth of Russia’s gas exports to Europe, and a volume is equivalent to a third of the EU’s gas storage capacity.

Europe has significant gas import infrastructure: the EU currently has 197 bcm of LNG import capacity – equivalent to 48% of total EU demand in 2014, with a further 77 bcm of LNG import capacity under development. This is enough to cover all gas import projections until 2040<sup>1</sup>.

Such import capacity is however greatly underutilised (the utilisation factor of existing LNG import facilities is only 24%) and does nothing to alleviate security the concerns of the most vulnerable countries. **This shows that there is no European-wide security of supply crisis, but rather local concerns and a lack of solidarity.** The concerns of Europe’s most vulnerable countries could be addressed through a targeted approach.

**Figure 1: % of Russian imports in national gas consumption and % of EU28 gas demand**



Source: Eurostat, Eurogas, E3G. Note: Cyprus and Malta were not included for lack of data.

There are considerable barriers to maximising use of existing import capacity:

- > Market forces: LNG imports have suffered from competition with relatively cheaper pipeline gas, or domestic production – although prices are now converging.
- > Insufficient intra-EU network: 95% of EU LNG import infrastructure is situated in Western Europe, and internal gas transmission infrastructure is insufficient to connect LNG terminals to CEE countries (several of them have no access to this supply). 76% of new LNG import capacity is still being built in the West (see Figure 2).
- > Lack of TSO cooperation: even more regionally, lack of infrastructure has prevented several countries from getting access to existing LNG import capacity. Projects such as the interconnector Greece-Bulgaria (ICGB) has suffered from delays mainly due to lack of commitment from market participants. Trilateral decision making in the Baltic states is also proving slow and an important hurdle to the development of a competitive gas market in the region.
- > Gazprom’s market power: analysts consider that Gazprom has sufficient market power to be able to react to any market development, and to undercut any competing offer to preserve market share.

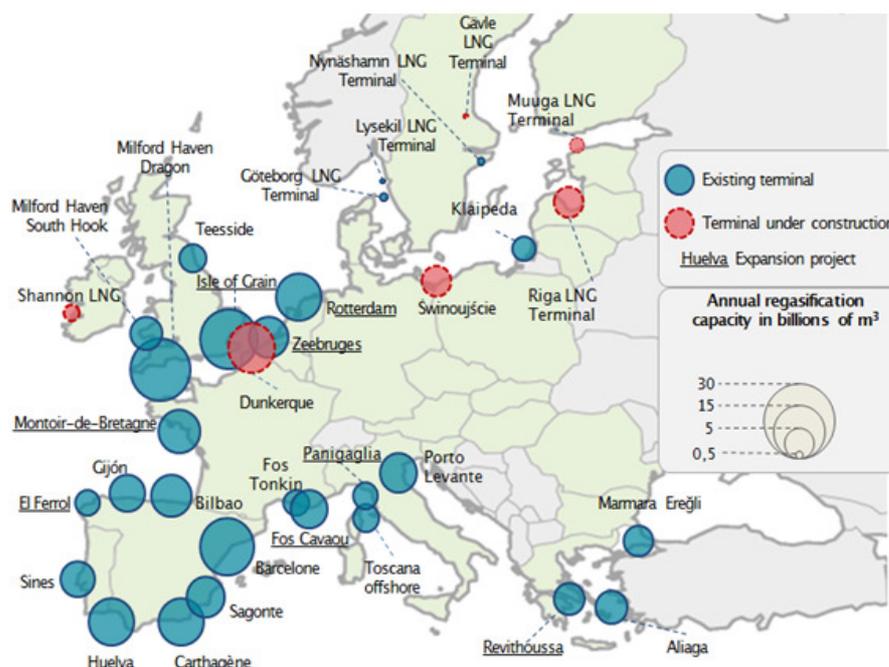
It is not credible that existing underutilised capacity in Western Europe is used to alleviate security risks in the East. **A European LNG strategy must prioritise the case of Member States most vulnerable to interruption in Russian gas supply.**

<sup>1</sup> <https://ec.europa.eu/energy/sites/ener/files/documents/LNG%20consultation%20-%20publication.pdf>



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Figure 2: Existing and planned LNG terminals in Europe



Source : GIIGNL, GLE, Gas in focus

### 3) Managing the uncertainty of future gas demand level & prices

Europe's track record of forecasting gas demand is poor, and in recent years EU gas demand has been considerably overestimated. The 2009 'Ten Year Network Development Plan', foresaw 8% increase in gas demand from 2010 to 2013. In reality, demand fell by 14% - a difference of 22%.

Major uncertainty remains on future demand levels, with projections ranging from a 38% increase in consumption by 2035 in the Eurogas 'base case' projection to a further 25% decline in gas consumption in European Commission scenarios in which efficiency, renewables and emissions targets are met<sup>2</sup> (see Figure 3). Uncertainty is also felt in the market – leading industry players have explained that security of gas supply is no longer an issue in European markets, and that the balance of risk had moved to demand.

"Total storage capacity is above import requirements -- this has no precedent in Europe. [...] The main economies are well supplied and will be well supplied."

"There is no security of demand in Europe -- no-one knows where we are going."

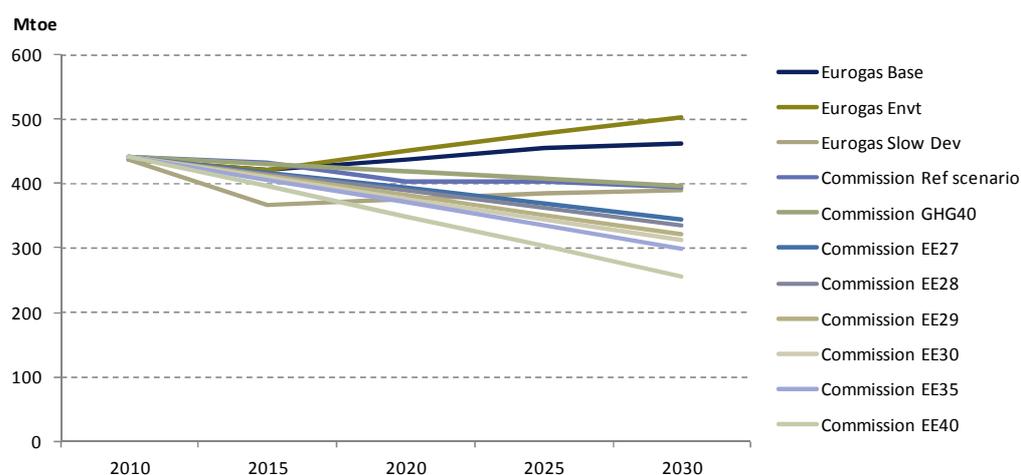
- ENGIE former vice president Jean-Francois Cirelli<sup>3</sup>

<sup>2</sup> <http://www.e3g.org/news/media-room/europes-declining-gas-demand>

<sup>3</sup> <http://www.platts.com/latest-news/natural-gas/london/european-gas-supply-no-longer-a-risk-demand-is-26211997>

Misevaluating future gas demand has significant implications. An expectation of rising demand could lead the EU’s energy security strategy to focus on accessing new sources of gas, rather than on alternative approaches such as demand reduction or strengthening internal connections; it could put gas infrastructure investments at risk of becoming stranded assets if the increase in gas demand does not materialise as it was the case with the now underutilised Spanish LNG terminals. An overestimation of demand can skew the economic evaluation of new projects, thus diverting public money to uneconomic projects from higher value projects in other sectors.

**Figure 3: Total European gas demand according to selected models**



Source : European Commission, Eurogas, E3G

It is also important to understand that the level of dependence on Russian gas imports or other suppliers mainly depends on market forces over which European leaders have no or little control on. The evolution of Asian and Latin American markets, Japan’s decisions towards its nuclear fleet, or security risks in the Middle East country will have an impact on where Member States source their gas from. Gazprom’s strategy towards Europe alone has significant impacts on Europe’s gas import profile.

Ultimately, most of the financial risk – whether paying for underutilised or stranded assets due to over capacity, or dealing with high gas prices and/or market shocks due to lack of supply flexibility - is currently borne by consumers. The goal of a European strategy on gas should be to find a fair balance between increased flexibility of supply through diversified gas supply routes and the protection of European consumers – residential, commercial or industrial – by ensuring that money is not wasted.

**A European LNG strategy should propose ways to assess the value of diversification and increased supply flexibility while defining safeguards to limit the risk of public money being spent on projects bringing little value to consumers.**

**4) LNG supply interacts with different elements of Europe’s energy system.**

This includes other forms of gas infrastructure such as pipeline import capacity and domestic production (conventional and unconventional). Importantly however it also includes electricity supply and demand-side infrastructure (including energy efficiency and e-mobility investments). For instance, energy efficiency measures can deliver material reductions in short



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and medium term European gas demand, thus decreasing the volume of new gas import capacity needed. Notably, an EU-wide building retrofit programme could cut gas use by an amount equal to ~80% of Russian imports; development of EU demand side electricity markets could cut gas use in the power sector equivalent to 75% of Russian imports<sup>4</sup>.

Investments in one area affect the viability of investments in others. It is important for Europe to be able to make best value investment choices across sectors, in recognition of the interconnectedness of the system. **A European LNG strategy must fit into wider European energy priorities and inform how to assess and prioritise infrastructure choices across different elements of Europe's energy system.**

#### **5) The nature of the energy security challenge facing the EU is changing.**

Europe's approach to energy security will have to account for the rapidly-changing landscape of geopolitical risks facing a number of suppliers and transit countries.

The reliability of new trading partners is more important than the number of import routes. Since the beginning of the most recent Ukrainian crisis, the European Commission's strategy on energy security has focused on diversification of gas supply via a number of import routes - "Algeria and Turkey; Azerbaijan and Turkmenistan; the Middle East; Africa and other potential suppliers" as well as on increasing access routes to gas imports through new Liquefied Natural Gas terminals. None are without problems (see Figure 4).

Azerbaijan is facing international condemnation on its human rights abuses as well as growing domestic discontent. Turkmenistan, one of the most repressive states in the world, faces a growing threat from the Taliban along its 744km-long border with Afghanistan. A more assertive Russian policy in the Caspian has also sparked fears of a new geopolitical clash over the region's gas resources. Availability for export of Middle Eastern and North African gas remains far from certain and a new wave of terrorism undermines prospects of future stability<sup>5</sup> (see box "Mounting security, resource and economic risks in LNG suppliers").

It is moreover highly uncertain to what extent new suppliers, such as the US and Eastern Mediterranean countries, can be reliable partners in the future. Shale gas production in the US is scaling back due to low global prices and dwindling resources and it is unclear the extent to which the US administration is willing to risk increasing domestic prices and its own energy security through new export in order to meet Europe's diversification needs. New discoveries off the coasts of Israel and Egypt have yet to be proven commercially available and given rising regional energy demand it is unclear how much gas will be available for export to Europe. The same is true for Iran's gas resources given increasing competition for securing gas supply from China and India.

Taken collectively, these challenges suggest that the narrow focus developing new gas import routes ultimately may neither guarantee Europe's energy security nor help stability in Europe's neighbourhood.

**A European LNG/gas strategy must reduce Europe's exposure to an increasingly uncertain and competitive geopolitical landscape, and avoid fuelling a wide range of instability risks in energy producing countries through supporting corrupted and undemocratic regimes.**

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<sup>4</sup> <http://www.e3g.org/news/media-room/energy-efficiency-as-europes-first-response-to-energy-security01>

<sup>5</sup> <http://www.euractiv.com/sections/energy/does-diversification-supply-routes-really-deliver-energy-security-312463>



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Figure 4: The new gas geopolitical landscape



### Mounting security, resource and economic risks in LNG suppliers

**Algeria** is expected to become a net-energy importer by 2030 due to rising domestic demand driven by population growth. Like many countries in the Middle East and North Africa region, Algeria is already experiencing the effects of climate change in the form of stronger warming temperatures and vast areas of rainfall deficits especially in the south. Climate change is expected to heighten the country's challenges of preserving food and water security. Failing to preserve energy, food and water security will further feed directly into the grievances, especially of the vast young unemployed population, that sparked the "Arab Spring" uprisings.

**Nigeria's** 175 million inhabitants, oil and gas dependent economy is in bad shape. Opaque dealing and corruption have increased over the past decade and low oil prices are crimping revenues and shattering budget forecasts. Nigeria's 36 states, most of which rely on fossil fuel revenues distributed by the federal Government, are having trouble paying salaries and pension. In June, dividend from the state natural gas company were drawn in a stop-gap attempt to pay salaries, yet conditions lack to address structural issues to address rising social and economic discontents. At the same time the war against the terrorist group Boko Haram is flailing and its allegiance to the Islamic State (IS) is a rising global security concern.

Despite bring the most prosperous part of the Arab world, the **six Gulf states** now find themselves facing a twin threat of domestic terrorist attacks from Shia and IS-backed extremists. Targeting key oil and gas infrastructure has been a core part of the IS' strategy. If the Suez Canal were made target of IS attacks, all LNG supply from Qatar to Europe would be halted.



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## A GAS STRATEGY FOR EUROPE

To effectively address the challenges laid out above, the EU needs:

- > **A broad gas strategy for Europe** which sends a strong political message that the EU is serious about lessening its gas dependency, and:
  - Informs the interaction between the various elements of Europe's energy system, and proposes ways to **support infrastructure choices decisions**.
  - Helps guide Europe through the **planned decline in use of unabated gas**.
  - **Protects European consumers** – citizens and businesses alike – against the risk of public money being spent on projects bringing little value to consumers.
- > **An action plan to help Member States most vulnerable to disruptions in Russian gas supply** by developing alternatives.
- > **A Foreign Policy Strategy** to manage increasing geopolitical risks and Europe's relationship with Russia.
- > **An initiative to strengthen the evidence base** that the EU has at its disposal to assess and manage uncertainty around gas demand, supply and prices, **and develop new metrics** to evaluate the value of projects across criteria and support infrastructure choices decisions.

The paragraphs below develop these recommendations in more details.

### 1) A gas strategy for Europe

Decisions on LNG interact with numerous elements of Europe's energy system and investments in one area affect the viability of investments in others. An LNG strategy cannot be defined entirely separately from a European strategy on heating & cooling, or in juxtaposition to Europe's plans for increasing energy efficiency. **We thus recommend the European Commission to develop a broad Gas Strategy for Europe defining the role of gas in supporting Europe's energy policy objectives.**

Such strategy must clarify the role of gas in Europe and define or reiterate objectives in that respect: address security of supply concerns through demand reduction and diversification, guide European through decarbonisation of its economy, prevent waste of public funds on projects bringing little value to European citizens.

#### Security of supply

- > European leaders have affirmed that Europe needs more diversification, not more gas – A European Gas Strategy consistent with the Energy Union should thus focus on decreasing European gas needs and increasing supply flexibility where it is most needed, **through three main initiatives**.
- > First, the immediate and core focus of Europe's gas strategy should be to implement the **'energy efficiency first' principle** to minimise gas use and gas infrastructure needs across Europe in the power & heating sector, in European industry, in buildings.



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- > Secondly, an **Action plan for decreasing reliability on Russian imports in most vulnerable countries**. See below for more details.
  - > Thirdly, a **foreign energy policy strategy to deliver stability in energy producing countries**. See below for more details.

#### **Decarbonisation**

- > An EU gas strategy should not only consider how gas can support European energy security in the near term, but also how Europe will transition away from it in line with its decarbonisation objectives.
- > Beyond implementing the **efficiency first principle**, the European Gas strategy should also
  - > Set out a clear timeline for the **phase out of fossil fuel subsidies** including for gas and gas infrastructure
  - > **Maximise the potential of options** available to transition away from gas in the electricity and heat sectors - through **RES, EE, electrification of heat and transport**, etc.
  - > Develop **alternatives to gas as source of flexibility and main option for energy storage** – through development of thermal storage, electricity storage (batteries and e-mobility), etc. To ensure diversification of gas demand options as well as supply.
  - > Drive use of **LNG in shipping and trucks**.
  - > Support the development of **gas CCS**.
  - > Include an **industrial strategy for gas-intensive sectors**.

#### **Public value for public money**

- > European consumers currently bear most of the risks related to overbuilding or, conversely, not building enough energy infrastructure. The European strategy for gas must develop a framework aimed at finding a fair **balance between increased flexibility of supply through diversified gas supply routes** and the **protection of European consumers** – residential, commercial or industrial – by ensuring that money is not wasted.
- > Such framework would consist of two main streams. One aimed at improving the evidence base and metrics at the disposal of European decision makers when assessing the value of given strategies and projects. The second one, relying on these new and more sophisticated metrics, aimed at introducing safeguards in European legislation and tariff regulations to effectively ensure that public money brings public value.
- > The legislative safeguards should notably
  - > Introduce a ‘cost effectiveness stress test’ when evaluating gas import projects, i.e. testing their cost effectiveness against a hierarchy of actions: a) demand side investment b) electrification c) greater utilisation of existing and accessible infrastructure.
  - > Limit the potential to recover costs through regulated tariffs for projects which do not meet this stress test. Offer guidance through the mandated closure of greatly



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underutilised assets with little prospects for future uptake and which are not critical to a region's flexibility of supply options.

- > Limit the use of regulatory incentives to alleviate demand / volume risks (currently recommended under TEN-E regulation article 13).
- > Introduce conditionality to infrastructure funding through European funds (CEF, EFSI, potentially structural funds) to ensure that Member States are delivering on their existing EE commitments before seeking EU support for new infrastructure.
- > The initiative to strengthen the evidence base and metrics supporting energy infrastructure planning and financing decisions is described in more details below.

## **2) An action plan to address the gas security of countries most vulnerable to Russian gas supply**

There is no European-scale security of supply crisis, but rather local concerns and a lack of solidarity and cooperation between Member States.

Solving security of supply challenges for most vulnerable countries is not a only a question of reducing Russian imports, but one of options creation for these countries – developing access to other source(s) of supply, to solidarity mechanisms, supporting switching to electricity for heating, or to retrofitting an outdated building stock, etc..

Supporting the most vulnerable countries in developing these options would lessen concerns, show solidarity, increase Europe's and in particular these countries' bargaining power towards large energy suppliers. Given the share of European gas demand these countries represent, this is an issue that can be targeted strategically at a relatively small cost.

The action plan should offer a clear timeline for

- > Brokering regional cooperation agreements between relevant governments, TSOs, regulators.
- > Developing credible solidarity mechanisms supporting these countries in difficult times.
- > Identifying projects of critical importance for these countries' flexibility of supply.
- > Unlocking access to finance for such projects, on **condition that these countries are taking action to minimise their new infrastructure needs through demand reduction and increased regional cooperation.**

## **3) A Foreign Policy Energy Strategy: Strategic engagement to deliver stability in energy producing countries**

The European Commission – DG Ener in partnership with the European External Action Service (EEAS) – and engaged Member States should carry out a strategic and resilient assessment of how energy investment impact stability in energy producing countries, and assess where reforms can be made to increase the impact of external support. It is important that this initiative separates political decisions from market decisions.



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The EEAS should convene European and regional governments to identify a common view on the highest priority areas for international support to energy projects with highest impact on stability and security of producing countries.

The EEAS should initiate a dialogue on sustainability and stability with Member States active in supporting development of critical energy infrastructure in the Middle East and North Africa region:

- > New projects should support development of new industries that are sustainable under future resource stresses and climate policy.
- > The EEAS should analyse real potential of individual countries capability to develop competitive advantage in clean energy exports to Europe and the wider region.
- > Member states should develop active industrial strategies around existing investment in renewable energy and in resource efficiency sectors to drive development of local supply chains.

#### **4) An initiative to strengthen Europe's evidence base and metrics supporting energy infrastructure decisions**

Important and complex decisions must be supported by reliable, up to date and independent analysis. Europe must revamp its evidence base supporting energy infrastructure decisions to break from its poor record of assessing the value and viability of new energy infrastructure projects.

The European Commission should launch an initiative to

- > Impose a reality check on its gas demand scenarios and ensure that the selection and prioritisation of projects in the PCI list and Connecting Europe Facility is based on scenarios consistent with EU GHG, RES and EE targets and 2050 decarbonisation objectives.
- > Inform the impact on gas volume and infrastructure needs of other elements of Europe's energy system such as development of renewable energy, progress on energy efficiency, electrification of heat and transport, use of LNG in ships and trucks, etc.
- > Develop a Cost and Benefits Analysis for infrastructure projects taking into account their impact on a region's flexibility of gas supply options, and also their economic viability under a hierarchy of actions (a) demand side investment b) electrification c) greater utilisation of existing and accessible infrastructure).
- > Develop metrics to evaluate the risks to consumers, and risks to investors, of specific projects.

The initiative could be initially launched by a combination of the JRC, the European Political Strategy Centre, DG Energy but would ultimately be better suited under the remit of an independent body working for EU-level institutions and Member States governments alike. We have issues propositions on such a European Climate and Energy Risk Observatory<sup>6</sup> in a separate document available [here](#).

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<sup>6</sup> See [http://www.e3g.org/docs/The\\_Energy\\_Union\\_needs\\_a\\_new\\_approach\\_to\\_policy\\_making.pdf](http://www.e3g.org/docs/The_Energy_Union_needs_a_new_approach_to_policy_making.pdf)



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### About E3G

E3G is an independent, non-profit European organisation operating in the public interest to accelerate the global transition to sustainable development. E3G builds cross-sectoral coalitions to achieve carefully defined outcomes, chosen for their capacity to leverage change. E3G works closely with like-minded partners in government, politics, business, civil society, science, the media, public interest foundations and elsewhere.

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