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SIX PRINCIPLES FOR A RESILIENT ENERGY UNION

DELIVERING ENERGY AND CLIMATE SECURITY FOR EUROPE

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Europe's energy system faces a challenging risk landscape that threatens its energy security, climate security and economic resilience. Events over the last year – from the crisis in Ukraine to the flooding in South East Europe to continued economic weakness and high levels of unemployment – have made these vulnerabilities painfully apparent.

The Energy Union concept is a recognition that these risks cannot be contained within national borders or managed in isolation from each other. The transboundary nature of the challenge calls for a collective and coherent response, reflecting the energy security and economic resilience gains from demand management, low carbon infrastructure and new technology.

The forthcoming Strategy Framework on the Energy Union is a unique political moment for Europe to raise its game on delivering a secure, competitive and decarbonised energy system. To achieve this, six core principles should be followed:

- > **Clear and consistent long term goals:** Europe's energy and climate strategies must be complementary, not contradictory.
- > **Securing investment:** EU security depends on access to finance, not just fuels.
- > **Integrated infrastructures:** Investment choices should look beyond outdated barriers between energy systems.
- > **Energy system resilience:** Explicit stress-testing and stronger governance can improve EU resilience to unforeseen uncertainties.
- > **Responsibilities as well as rights:** Cross-border solidarity should be matched by effective management of energy demand.
- > **A neighbourhood and global perspective:** Like energy systems themselves, an Energy Union must go beyond European borders.

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RECOMMENDED MEASURES

1. Clear and consistent long term goals

Europe's energy and climate strategies must be complementary, not contradictory.

- > Long term and consistent goals should be set out in order to ensure the Energy Union's focus on affordable, secure and green energy. All investments and policies as part of the Energy Union should be fully consistent with the EU's climate goals.
- > The Energy Union should include a regulatory strategy and glide-path for phasing out unabated coal, including measures to ensure security is maintained.
- > Metrics for affordability and security should be redefined as part of the EU's new governance framework, with specific indicators developed for macroeconomic resilience to fuel price shocks, unit energy costs for industry, and measures of fuel poverty and differentials in consumer purchasing power for energy within Europe

2. Securing investment

EU security depends on access to finance and clean technology, not just fuels.

- > A European energy investment strategy should be produced to ensure the Capital Markets Union and Investment Plan for Europe are designed to deliver the investment needs of the Energy Union, and to establish criteria to prevent publicly-backed investment from being mis-spent on projects that run counter to Europe's energy and climate security goals.
- > Prioritise structural reform and liberalisation of EU energy efficiency markets to create a more open and competitive EU-wide market for energy efficiency services, efficient construction products and components.
- > The Energy Union investment agenda should focus on scaling-up low cost citizen finance sources as well as institutional investment from large asset holders such as pension funds.

3. Integrated infrastructures

Investment choices should look beyond outdated barriers between energy systems.

- > A new package of measures should be developed to kick start new markets in smarter demand services and technologies across Europe, ensure demand-side resources are enabled to compete on a fair and equivalent basis to the supply side, and make sure that the requisite enabling data and energy infrastructure is delivered.
- > The Energy Union should accelerate the timely delivery of cross-border electricity infrastructure and market integration, including regional platforms for cooperation as a stepping stone to fully integrated European power markets.
- > Europe should put in place more ambitious strategies for electrification of transport and heat and for smarter mobility, which are designed to maximise the cost-effective reduction in EU exposure to imported fossil fuels as well as reduce CO₂ and other harmful emissions.



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4. Energy system resilience

Explicit stress-testing and stronger governance can improve EU resilience to risk.

- > The EU's energy systems and policies need to be stress tested against a range of risks. The EU and member states should develop shared horizon-scanning assessments of potential risks to delivery of EU and member state energy and climate objectives, drawing on a full range of scientific, economic, security, foreign policy, and technological expertise. This should be incorporated into the new governance system as part of the 2030 climate and energy framework.

5. Responsibilities as well as rights

Cross-border solidarity should be matched by effective management of energy demand.

- > Access to EU energy funding for supply side or import infrastructure investment should be made conditional on fulfilling agreed demand side goals.
- > The Energy Union should be built on an 'Efficiency First' approach, which prioritises lower-cost demand-side measures ahead of supply-side interventions.
- > Improving the efficiency of space heating in existing buildings should be an early priority for the Energy Union.

6. A neighbourhood and global perspective

Like energy systems themselves, an Energy Union must go beyond European borders.

- > Access to the Energy Union should be opened to the Energy Community, Turkey and other neighbourhood countries, and should include a strategy for co-development of renewables, storage and energy efficiency in Europe's neighbourhood.
- > Europe should implement a clean technology diplomatic strategy for engagement with consumer countries, focused on cost reductions through development of global supply chains, open trade and coordinated research and innovation.



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INTRODUCTION

The global context in which the European energy system operates is changing faster than at any other time in recent memory. Europe has witnessed major geopolitical shifts to its east and south, rapid and uneven technological and economic changes, financial and resource shocks and increasing extreme weather events. All of these shifts have far-reaching implications for the energy sector; none of them were wholly foreseen in the models used to inform EU energy policy.

This landscape of systemic risk facing Europe's energy and climate security is alarming. It has worrying parallels to economic crisis, where individually-rational decisions by different actors made the system as a whole collectively vulnerable. Europe should not wait for another crisis before these risks are addressed.

The Energy Union concept represents an opportunity for Europe to establish a common energy agenda that better stimulates smart investment, and improves the resilience and coherence of EU energy and climate policy.

The objectives of the Energy Union were well captured in the 26 and 27 June European Summit, setting out the Energy Union's focus on "*affordable, secure and green energy*"⁵, and in the five pillars outlined by European Commission Vice-President Maroš Šefčovič.⁶

All of these objectives are vital to the security and prosperity of Europeans. If the Energy Union is to succeed it must ensure all three critical objectives of EU energy policy are reliably met at all times. **Our analysis suggests that with good policy and market design this is readily achievable.**

Our major economic competitors face similar challenges. Building an effective and forward-looking Energy Union is part of Europe's strategic competitive advantage. However, delivering these benefits requires significant changes to business-as-usual policy making and reformed markets which enable rapid deployment of new technologies, transformational business models and lowest-cost solutions.

This briefing note outlines a set of principles to take Europe towards a resilient Energy Union with a forward-looking climate policy.

⁵ European Council conclusions, 26/27 June 2014

⁶ Opening speech of Vice-President designate for Energy Union. European Parliament, Strasbourg, 20 October 2014



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CONSISTENT LONG TERM GOALS

A first requirement of an effective Strategic Framework for Energy Union is to set out clear and consistent long term goals for all of its objectives, and explicit valuation of policies against these goals.

Both energy and climate security depend on changing energy sector investment patterns, which are mainly delivered through the private sector. This requires coherent, effective and long term investment signals to be sent from the public to the private sector. The financial crisis has shown the practical limitations of markets in effectively managing long term and systemic risk on their own. To avoid investment in stranded and vulnerable assets it is critical that clear and stable long term signals are given to markets.

As countries work towards a global agreement on climate change in Paris in 2015, the strategic framework for the Energy Union must be fully aligned with Europe's international commitments on climate. The agreed EU objective to reach 80-95% greenhouse gas reductions by 2050 in the context of a global agreement will mean that Europe's energy sector will need to achieve near-zero emissions by this date⁷. Energy sector investments such as pipelines and power plants tend to be long lived assets, and most of what is built in the near term will remain on the system to 2030 and much will still be operational in 2050. In practice this means that no distinction can be made between investments to safeguard short term security of supply and investments for long-term decarbonisation. All investment made as part of the Energy Union agenda will need to deliver both security and decarbonisation.

The strategic framework for the Energy Union should seek to align policy approaches to ensure that energy security, climate security and economic resilience are delivered on an ongoing basis.

Some commentators have argued that economic, security and environmental objectives are a zero-sum game, and that the Energy Union will have to choose between objectives. This is both factually questionable and strategically misguided. If delivered in a consistent manner, low carbon investments also strengthen European energy security, economic resilience and competitiveness. A low carbon pathway with higher levels of energy efficiency and indigenous renewable energy, for example, would drastically reduce European exposure to future fuel price spikes (shown in figure 1 below).

⁷ The energy sector will need to achieve emissions reductions beyond 80-95% as a result of the greater difficulty in achieving this level of emissions reductions for non-CO2 GHGs, agriculture and industrial processes.



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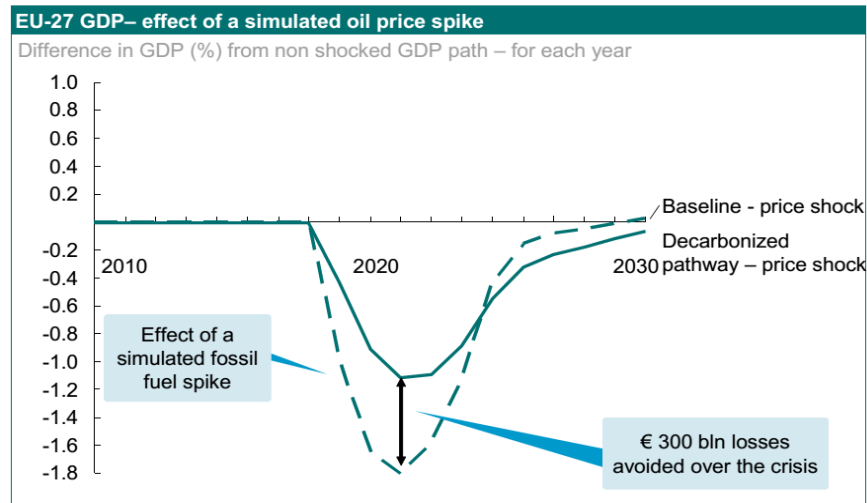


Figure 1: Decarbonised pathway also builds resilience to fossil fuel price shocks⁸

Currently, however, the required long term investment signals are not being delivered on a consistent basis through current arrangements. Different sets of policies and investment incentives cannibalise one another.

For example, there is a notable disconnect between the economic valuation of energy infrastructure and that of energy efficiency for the purposes of European policy and investment. As shown in Figure 2 below, gas demand in Europe has fallen by 9% over the last decade, but gas projects are currently evaluated against a scenario that assumes gas demand will rise by 23% by 2030 – to a level 30% higher than the European Commission’s own reference scenarios for EU gas demand, which foresee consumption flatlining even without new policy measures. If the EU achieves a 30% energy efficiency goal by 2030, as first proposed by the Commission, then EU consumption would be 72% lower than is being assumed for EU gas pipeline investment. The current 27% energy efficiency target will have much the same effect.

⁸ ECF et al. **Roadmap 2050: a practical guide to a prosperous, low-carbon Europe**



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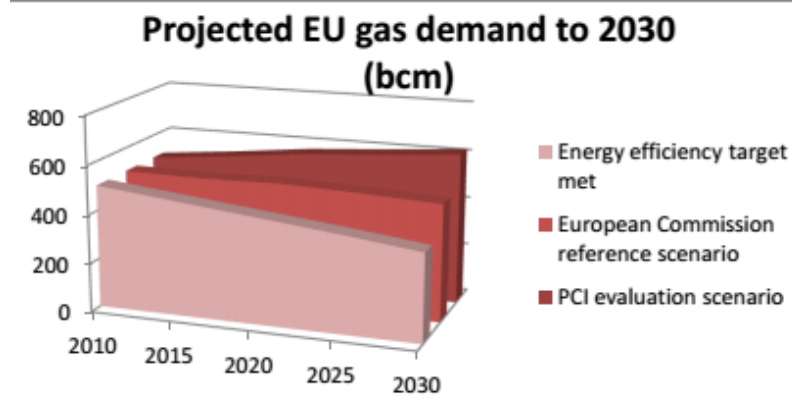


Figure 2: Inconsistencies between scenarios increase uncertainty for investment⁹

A failure to bridge this consistency gap will lead to public objectives being missed and public money being wasted on expensive but underutilised infrastructure projects.

Short-termist interventions that are in conflict with Europe’s long-term goals compound rather than reduce risk to Europe’s energy system, as they increase uncertainty for investment. This is particularly apparent in the case of unabated coal power generation, where measures introduced to promote coal as an ‘indigenous resource’ for energy security purposes can lock out space for investment in cleaner indigenous resources such as renewables or carbon capture and storage (CCS). Instead, the Energy Union should set out a clear regulatory strategy and glide-path for phasing out unabated coal, including measures to ensure security is maintained throughout the transition and a clear investment signal is given for CCS.

A second requirement is to ensure all of the Energy Union’s goals are clearly defined and measured, to enable transparent evaluation of policies and investments. This will be particularly important in the context of the new governance arrangements developed as part of the 2030 climate and energy framework, which will track a set of key indicators on an ongoing basis.

The EU currently has clear environmental goals, relating to not only climate change but also air quality and other environmental factors. Objectives for security and affordability, however, are much less well defined and measured, which raises the risk of designing policy and mobilising investment against the wrong outcomes.

Energy security, for example, can be understood as either as a matter of physical disruption or of economic resilience, but current metrics do not seem aligned with the outcomes required. Evaluating scenarios on the basis of percentage of imports – as was done in the 2030 Climate and Energy Framework Impact Assessments - don’t capture the issue *volumes* of imports, so hide the effect of efficiency on energy security. Measuring energy security in terms of diversification of supply routes similarly misses the fundamental role for demand, and the reliability of trading partners is more important than just number of import routes. A

⁹ E3G. [Energy Security and the Connecting Europe Facility: Maximising public value for public money.](#)



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preferable approach would be to measure the economic resilience of scenarios to fossil fuel price shocks (see figure 1).

Similarly, energy prices are often used as a proxy for competitiveness and affordability. However, as shown through the recent European Commission evaluation, energy costs are a more useful metric than prices for economic competitiveness¹⁰. Explicit measurement of fuel poverty and of differences in purchasing power across Europe would better capture the social dimension of affordability than the metric of energy prices alone, yet neither is measured on a consistent basis across Europe.

Suggested measures

- > Long term and consistent goals should be set out in order to ensure the Energy Union's focus on affordable, secure and green energy. All investments and policies as part of the Energy Union should be fully consistent with the EU's climate goals.
- > The Energy Union should include a clear regulatory strategy and glide-path for phasing out unabated coal, including measures to ensure security is maintained throughout the transition and investment in abatement technologies is made.
- > Metrics for affordability and security should be redefined as part of the EU's new governance framework, with specific indicators developed for macroeconomic resilience to fuel price shocks, unit energy costs for industry, and measures of fuel poverty and differentials in consumer purchasing power for energy within Europe

Further reading

ECF et al. **Roadmap 2050: a practical guide to a prosperous, low-carbon Europe**

Green Growth Platform: Report to Ministers. **Energy Security & the 2030 Climate & Energy Package: The Big Picture: A Low Carbon Energy Union Targets Security, Climate, Jobs & Growth.**

The Ministerial Green Growth Group: **Going for Green Growth - The economic case for ambitious EU low carbon action now**

¹⁰ European Commission. **Energy Prices and Costs Report.**



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SECURING INVESTMENT

The EU's energy security depends on securing investment and new technology deployment, not just securing supplies of fossil fuels.

As the EU decarbonises and fossil fuel use decreases, energy security and affordability will be increasingly driven by the cost and availability of infrastructure finance. The EU needs to invest over €2.5 trillion in energy over the next decade by some estimates¹¹. The vast majority of this investment needs to go into capital-intensive low carbon infrastructure (including power generation, storage, networks and energy efficiency measures), with financing costs making up a significant proportion of overall system costs.

Delivering this investment at an acceptable cost will be challenging. Banks have scaled back their investment to meet solvency requirements imposed after the financial crisis. Utility balance sheets are shrinking, which reduces their ability to carry large-scale investment. Bringing new sources of finance into the sector is a clear imperative.

The Energy Union should therefore focus on how to ensure access to adequate and timely low cost finance for supply, infrastructure and efficiency investment across the whole of the EU. This will require drawing on under-used pools of European institutional assets. There is particular scope to maximise the synergies between President Juncker's Jobs, Growth and Investment Package, the Capital Markets Union process and the Energy Union agenda.

For these initiatives to positively contribute, however, they need to be carefully designed to leverage public and private finance around the highest value investment for Europe's Energy Union objectives – particularly the demand side and electricity networks. Over-investment in fossil fuel infrastructure and in coal-fired generation (as has been proposed in many of the national submissions for the Investment Plan) would displace higher-value investment and work counter to Europe's investment agenda as a whole¹². As part of Europe's Energy Union agenda, a European Energy Investment Strategy should be produced to set out both how the investment needs for Europe's Energy Union will be reached and a minimum set of criteria to prevent publicly-backed investment from being mis-spent on projects that run counter to Europe's energy and climate security goals.

The focus on investment as part of the Energy Union will need to go beyond looking at new financial instruments to develop a broader set of structural reforms that will drive increased competitiveness through accelerated investment in efficiency and low carbon infrastructure across the European economy. Energy efficiency investment in particular is held back by a range of systemic barriers that add transaction costs and slow or prevent investment and scaling of investment. Reforms are needed to develop demand side markets that enable energy service businesses to deliver energy savings elsewhere in the economy, including giving customers greater control over their energy consumption. A concerted package of measures focused on kick-starting a competitive European-wide market for energy efficiency services,

¹¹ DIW. [European Energy Sector: Large Investments Required for Sustainability and Supply Security](#).

¹² E3G. [Europe's Choice: Low-carbon growth or high-carbon risks? Analysis of member state proposals for the European Investment Plan](#).



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construction products and components should be an early priority for the Energy Union. This should be accompanied by changes to state aid rules to streamline absorption of public funding and structural reforms to accelerate an increase in energy productivity across the economy.

Alongside institutional finance, citizen finance (i.e. investment from communities and private individuals) has the potential to play a major role in filling the investment gap. Citizen finance has been used successfully to fund deployment of onshore wind, solar and even power transmission projects, crowdfunding models have been used to help clean innovation start-ups get off the ground. Remarkably, citizen finance can also make projects significantly cheaper to fund, as citizen investors are willing to accept up to 3 percentage point lower returns on equity than traditional investment.¹³ Given the capital intensive nature of most low carbon investments, scaling up citizen finance has potential to make Europe's Energy Union more affordable to deliver, as does decentralisation and enhancing a prosumer approach.

Suggested measures

- > A European energy investment strategy should be produced to ensure the Capital Markets Union and Jobs, Growth and Investment package are designed to deliver the investment needs of the Energy Union, and to set out a minimum set of criteria to prevent publicly-backed investment from being mis-spent on projects that run counter to Europe's energy and climate security goals.
- > Prioritise structural reform and liberalisation of EU energy efficiency markets to create a more open and competitive EU-wide market for energy efficiency services, efficient construction products and components. This should be accompanied by changes to state aid rules to streamline absorption of public funding and structural reforms to accelerate an increase in energy productivity across the economy.
- > The Energy Union investment agenda should focus on scaling-up low cost citizen finance sources as well as institutional investment from large asset holders such as pension funds.

Further reading

DIW. **European Energy Sector: Large Investments Required for Sustainability and Supply Security.**

E3G. **Financing the Decarbonisation of European Infrastructure**

E3G. **Energy, climate and European reform: Seven propositions for the new Commission.**

1. ¹³ DIW estimates that traditional profit-driven equity investors have an equity hurdle rate of 7-9%, whereas Bürger investors in Germany may be satisfied with 4-6%. **Impact of Renewable Energy Act Reform on Wind Project Finance.**



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INTEGRATED INFRASTRUCTURES

The Energy Union must address the security and resilience of energy *systems*, not just fuels.

Technological innovation and decarbonisation are driving increased integration between the electricity and gas systems, and between power and transportation. Facilitated by ICT and smart systems, energy security goals will often be met most effectively by active demand, cross-border infrastructure, distributed storage and energy efficiency rather than supply-side investment. However this is poorly captured in Europe's current energy security strategy, which has a disproportionate focus on fuel imports.

The Energy Union should develop incentives and markets that allow investment to flow to the highest value areas and remove outdated barriers between energy systems. In practice, this means prioritising cost effective demand reduction alongside investment in new infrastructure, and valuing the multiple benefits of integrated systems.

For example, recent technology innovation means that demand-side and decentralised technologies have major potential to create a more dynamic, cost effective and resilient energy system. These technologies range from smart appliances able to modulate the timing of electricity consumption, to home energy management systems to smarter power distribution grids through to domestic solar systems connected to batteries and electric vehicles.

However, demand side markets remain fragmented and underdeveloped, and the available resources have not been exploited to their fullest. The EU's three existing internal energy market legislative packages have focused primarily on the supply side of the markets and on networks, rather than on activating the demand side of the market. As part of the Energy Union agenda, a new package of measures should be developed to kick start new markets in demand side services and technologies across Europe, ensure demand-side resources are enabled to compete on a fair and equivalent basis to the supply side, and make sure that the requisite enabling data and energy infrastructure is delivered.

Similarly, cross-border electricity infrastructure and market integration reduces overall need for back-up generation capacity and can maximise the utilisation of Europe's indigenous renewable power resources. The European Commission and Council have set out an objective for countries to reach 15% interconnection capacity by 2030. The strategic framework on the Energy Union should include measures to accelerate the timely delivery of cross-border electricity infrastructure and market integration, including regional platforms for cooperation as a stepping stone to fully integrated European power markets.

As part of an integrated approach to infrastructure and investment, Europe should also put in place a strategy for electrification of transport and heat, designed to capture the benefits of not only decarbonisation but also energy security and European technology leadership. Europe's energy security vulnerabilities apply as much to oil (where 34% of EU imports are supplied by Russia and significant proportion of the remainder is sourced from countries



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undergoing or at risk of conflict) as to gas¹⁴. Electrification of vehicles (and to a lesser extent heat) is an important element for reducing Europe's exposure to oil price volatility and disruption risks, and also offers an important (yet so far underutilised) resource for power system flexibility. To maximise the value of this approach, the EU's electrification and power sector decarbonisation strategies need to be interlinked.

This integrated approach to infrastructure should also treat smarter mobility planning and management as a resource on a par with supply-side transport infrastructure. Smarter mobility is a cost-effective and swiftly deployable resource to moderate dependency on oil imports, and has strong economic co-benefits.

Suggested measures

- > The Energy Union should develop incentives and markets that allow investment to flow to the highest value areas and remove outdated barriers between energy systems. A new package of measures should be developed to kick start new markets in demand side services and technologies across Europe, ensure demand-side resources are enabled to compete on a fair and equivalent basis to the supply side, and make sure that the requisite enabling data and energy infrastructure is delivered.
- > The Energy Union should bring forward measures to accelerate the timely delivery of cross-border electricity infrastructure and market integration, including regional platforms for cooperation as a stepping stone to fully integrated European power markets.
- > Europe should put in place more ambitious strategies for electrification of transport and heat and for smarter mobility, which are designed to maximise the cost-effective reduction in EU exposure to imported fossil fuels as well as reduce CO₂ and other harmful emissions.

Further reading

ECF et al. **Power Perspectives 2030: On the road to a decarbonised power sector.**

Cambridge Econometrics. **Fuelling Europe's Future.**

¹⁴ Source: **Eurostat**



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STRESS-TESTING EU ENERGY SYSTEM RESILIENCE

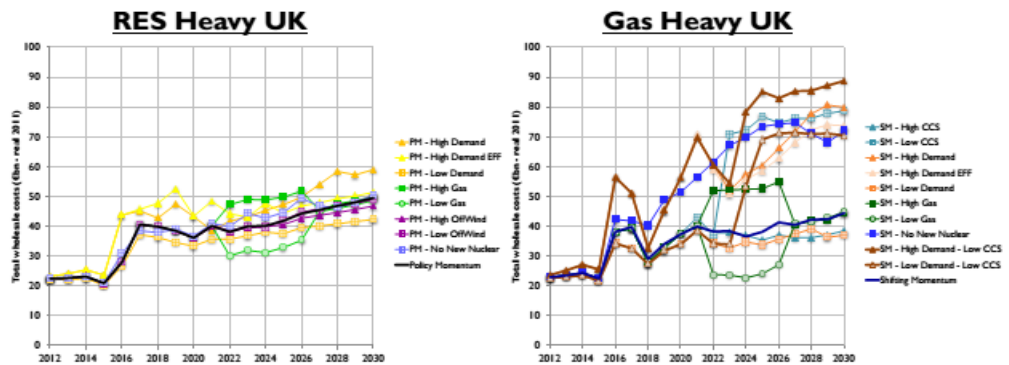
The EU’s energy system is exposed to major uncertainties and risks, relating to geopolitical conflicts, resource prices, technological innovation, climate change, economic development and demographic trends. This risk landscape is not evaluated on a systematic basis, and models used for policy-making fail to capture the full range of risks that Europe is exposed to. Fuel price volatility tends to be discounted, while innovation (e.g. the sharp reductions in PV module prices and LED costs) is often not internalised. While stress-tests are conducted for gas security, the resilience of the system as a whole to major uncertainties is not currently tested.

As part of the Energy Union framework, more explicit stress-testing of EU energy system resilience is needed. The EU energy system must be resilient in achieving its short, medium and long term goals under a broad range of scenarios.

Explicit stress-testing would identify the best interventions for delivering objectives such as improving macro-economic resilience to fossil fuel price shocks.

Stress-testing analysis shows that investment in energy efficiency and demand management in particular are highly valuable hedges against a wide range of key risks (figure 3). This is because reduced import and consumption volumes in absolute terms lower exposure to disruptions and price shocks, and the modular nature of investment means reduced reliance on future technological breakthroughs and deployment risks. The value of such investments in managing future risks and uncertainties needs to be built in to policy choices.

GB – Wholesale Electricity Costs 2012 -2030



Agent Based Modelling of Power Sector Investment Pathway Scenarios: Low/High demand; Low/High gas price shock; CCS/Nuclear delay; High low offshore wind price

Source: E3G Baringa 2012

Figure 3: Stress testing scenarios against shocks shows value of demand management and low carbon investment¹⁵

¹⁵ E3G and Baringa. Risk Managing Power Sector Decarbonisation.



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This approach for stress testing EU energy system resilience should be incorporated into the new European energy governance system under development as part of the 2030 climate and energy framework. The functions that need to be fulfilled for this stress-testing to be effective include:

- > Horizon-scanning for potential risks to delivery of EU and member state energy and climate objectives, drawing on a full range of scientific, economic, security, foreign policy, and technological expertise.
- > Modelling and assessment to test the robustness of Europe's energy policy and decarbonisation pathway against a full range of external shocks and 'extreme' scenarios.
- > Independent evaluation of the collective resilience to this risk landscape of the national energy plans produced as part of the 2030 climate and energy framework.
- > Identification of EU- and national-level actions to manage risk and increase resilience.

Suggested Measures

- > The EU's energy systems and policies need to be stress tested against a range of risks. The EU and member states should develop shared horizon-scanning assessments of potential risks to delivery of EU and member state energy and climate objectives, drawing on a full range of scientific, economic, security, foreign policy, and technological expertise. This should be incorporated into the new governance system as part of the 2030 climate and energy framework.

Further reading

E3G and Baringa. **Risk Managing Power Sector Decarbonisation.**

UKERC. **Energy Strategies Under Uncertainties.**



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RESPONSIBILITIES AS WELL AS RIGHTS

‘Energy Solidarity’ is core to the Energy Union concept. This must go beyond the rights of countries to depend on the rest of Europe for emergency gas supplies and support in times of crisis, or collective gas purchasing arrangements. Solidarity should also include responsibilities on Member States and European institutions should take to limit their vulnerability to external shocks – whether political or economic.

Currently, those European countries most dependent on Russian gas are also those with the worst energy efficiency per unit GDP. These countries are also most behind in implementing their commitments under the Energy Efficiency Directive¹⁶. Channelling scarce European public funds to build gas import infrastructure and share limited – and expensive - storage capacity will be a poor investment if the gas, once it arrives, is just wasted in inefficient factories and in heating draughty homes.

A balanced Energy Union would incentivise delivery of least cost energy reductions before it subsidises increased supply and imports. Access to funds in the EU Connecting Europe facility should be made conditional on delivery of country obligations under the Energy Efficiency Directive. If emergency access to energy storage is to become mandatory then energy efficiency targets must also be binding on countries. Countries cannot be allowed to benefit from the prudent investments of others if they are not prepared to implement the reforms needed to deliver cost-effective energy savings.

This is not just an issue of fairness and economic efficiency but also one of security. Attempts to reduce the political impact of Russian gas imports merely by diversifying fossil fuel supplies do nothing to increase European economic resilience against volatile global fossil fuel prices. It is increasing import prices that have doubled European fuel import bills to over €1 billion a day, exporting jobs and growth outside the EU. Physical energy demand has been flat for a decade, despite economic growth, due to policy-driven efficiency improvements.

This ‘efficiency first’ principle should be reflected in the design of the Energy Union concept itself, with a focus on bringing forward low-cost demand-side solutions ahead of supply-side policy measures. In particular, there are significant economic and security gains to be achieved from energy retrofits of existing buildings. Space heating is the largest single source of energy demand in Europe, and the majority of Europe’s gas imports goes towards heating buildings. 75% of buildings standing in the EU today were built during periods with no, or minimal, energy-related building codes and three quarters of those are expected to still be in use in 2050. The building sector has the largest longer-term, cost-effective emissions saving potential of any industrial sector – yet rates of buildings refurbishment across Europe remain significantly below their economic potential.

¹⁶ Coalition for Energy Savings. [Implementing the EU Energy Efficiency Directive, Analysis of Article 7 Member States Reports.](#)



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The same logic of combining solidarity with responsibility applies to joint EU action on climate change. Member States cannot attempt to improve their energy security at the expense of other EU countries' climate security. Climate change is already increasing the frequency of damaging extreme weather events in Europe, which has a direct impact on energy infrastructure and energy security. For example, the recent floods in UK, Germany, Hungary and the Balkans and equally devastating droughts and forest fires in Spain and Greece. Unless the world quickly sets itself on the path to a net zero carbon economy by 2050 then Europe will see rising climate change damages. Without rapid action to reduce greenhouse gas emissions, heat waves such as that that killed 22,000-35,000 people across Europe in 2003 will become normal by 2050, and will represent a cool summer by 2080-100. But the EU will not be able to credibly call on China to do its share by peaking domestic coal use in 2020, if at the same time it agrees to allow increased coal investment in order to preserve energy security.

Europe needs more cooperation to deliver energy and climate security. There are huge economic, environmental and security gains to be made through deeper market integration supported by stronger and smarter infrastructure, modern technology and new market models. Modernising EU energy markets to incentivise full use of cost-effective energy reductions, and creating a true single market in energy efficiency services, would bolster EU competitiveness. It would also create vibrant export industries capable of exploiting fast growing global markets for efficient and low carbon energy infrastructure and equipment.

Co-operation cannot be a one way street. Those countries that want to improve their energy security through the right to share, must accept their reciprocal responsibilities in creating a resilient, competitive and low carbon European energy system.

Suggested measures

- > Solidarity must come with responsibilities. Access to EU energy funding for supply side or import infrastructure investment should be made conditional on fulfilling agreed demand side goals.
- > The Energy Union should be built on an 'Efficiency First' approach, which prioritises bringing forward lower-cost demand-side measures ahead of supply-side interventions.
- > There are significant economic and security gains to be achieved from energy retrofits of existing buildings. Improving the efficiency of space heating in existing buildings should be an early priority for the Energy Union.

Further reading

Regulatory Assistance Project. **Unlocking the Promise of the Energy Union: "Efficiency First" is Key.**

E3G. **Energy Security and the Connecting Europe Facility: Maximising public value for public money.**



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NEIGHBOURHOOD AND GLOBAL PERSPECTIVE

Energy systems are increasingly global and do not stop at the EU's borders. Nor should the Energy Union.

Europe's economy and security is highly interdependent with that of its near neighbourhood, including the Energy Community countries and Turkey. These countries should not be seen as 'gas transit' countries alone, but rather should be invited to participate as partners in Europe's Energy Union.

The Energy Union should ensure that Europe maximises the potential of the plentiful clean energy resources not only within its own borders but in its near neighbourhood, from wind power and biomass in the Ukraine to solar and wind in Turkey and North Africa, to hydro-electric storage from Norway and the Western Balkans. The EU should seek to co-develop these resources with countries in the neighbourhood and provide full access for such resources to the internal energy market.

The energy efficiency potential of Europe's neighbourhood should also be seen as an important and largely untapped energy resource. Developing this potential is firmly in the interest of the EU as a whole, as the EU's security is interdependent with that of its neighbours.

Global technology markets are also providing new clean energy options, from the astounding cost-reductions in solar, wind and LED lighting driven by European demand, to the moderation of the impact of oil price volatility due to the global diffusion of EU vehicle efficiency standards. In the long run these markets will be more significant for EU energy security than short-run diplomacy focused on access to fossil fuels.

An active global clean technology market strategy – with a strong focus on diplomatic engagement with large energy consumer countries as well as energy producers - should be a key part of the Energy Union. This strategy should focus on cost reductions for clean technologies through development of global supply chains, open trade in clean tech and coordinated research and innovation strategies, as well as controlling fossil fuel costs through coordinated strategies by large consumers to moderate fossil demand. Such a strategy should shape the EU's approach to engagement in the Clean Energy Ministerial, the G7, and EU-China and EU-US energy summits.



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Suggested measures

- > Access Energy Union should be opened to the Energy Community, Turkey and other neighbourhood countries, and should include a strategy for co-development of renewables, storage and energy efficiency in Europe's neighbourhood.
- > Europe should implement a clean technology diplomatic strategy for engagement with consumer countries, focused on cost reductions through development of global supply chains, open trade and coordinated research and innovation.

Further reading

Nick Mabey and John Mitchell (Chatham House). **Investing for an Uncertain Future: Priorities for UK Energy and Climate Security.**

E3G. **Underpinning the MENA democratic transition: delivering climate, energy and resource security.**

E3G. **New Policy Frameworks for Electricity Infrastructure Cooperation in South East Europe**



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CONCLUSIONS

By building an ‘Energy Union with a forward-looking climate policy’, the EU has a critical opportunity to simultaneously strengthen Europe’s energy security, climate security and economic resilience. But to succeed in this task it must focus on building the Energy Union fit for the future rather than seeking to shore up the outmoded systems of the past.

To do this, the forthcoming strategic framework for the Energy Union will need to follow a set of basic principles. It should set out consistent long term goals, to ensure Europe’s energy policies and investments work in the same direction rather than undermining each other. Access to investment capital will become more important to Europe’s energy security than access to fuels, so the Energy Union strategic framework it will need to set out a clear investment strategy for mobilising finance. The Energy Union should develop incentives and markets that allow investment to flow to the highest value areas and remove outdated barriers between energy systems – including prioritising cost effective demand reduction alongside investment in new infrastructure. To ensure Europe can meet its climate and energy goals on an on-going basis, more explicit stress-testing of Europe’s energy system resilience needs to be designed in to its governance structures. Climate and energy security are fundamentally cross-border problems, so the Energy Union should set out responsibilities on member states for efficient management of energy as well as solidarity mechanisms for support in times of need. Finally, energy systems do not stop at Europe’s borders, and nor should the Energy Union: the strategic framework should set out a plan for collaboration on clean energy resources in Europe’s neighbourhood.