

Toward a European Energy Union:

12 policy recommendations for a consistent EU energy and climate policy

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A report for France Stratégie

Paris – 18 December 2014



Context and objectives of the report

- The *Commissariat Général à la Stratégie et à la Prospective* (now called France Stratégie) asked 3 European experts of energy markets to provide an assessment of European energy policy:
 - Marc Oliver Bettzüge, University of Cologne
 - Dieter Helm, University of Oxford
 - Fabien Roques, University Paris Dauphine
- One of the 10 priorities of the new European Commission President Jean-Claude Juncker consists in “reforming and reorganizing Europe’s energy policy into a new European Energy Union”:
 - We argue in our paper that the new Energy Union will need a radically new approach to European energy policy;
 - The Energy Union should learn the lessons from the failure of EU energy and climate policies in past decade.
- The full report is available at the following web link: [The new European Energy Union - Toward a consistent EU energy and climate policy?](#) Fabien Roques, Dec. 2014.
- This report follows on a first report which focused more specifically on the issues in European electricity markets: [European electricity markets in crisis: diagnostic and way forward](#), Fabien Roques, Nov. 2012.

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Key findings – 12 key policy recommendations

1. Define a credible vision and a consistent set of objectives

- Define a hierarchy of policy objectives (environment, security of supply, competitiveness) and address trade offs between the objectives
- Stress test policies and targets against scenarios with lower fossil fuel prices assumptions and a non cooperative approach toward climate change from other countries
- Use a system approach to evaluate costs from different technologies taking into account externalities and subsidies and monitor their evolution

2. Policies supporting decarbonization

- Instead of picking technology winners, support R&D and innovation and rely on a strong and predictable carbon price to drive investment in clean technologies
- Reform renewables support policies to control pace of deployment, encourage coordination between countries and limit market distortions

3. Policies supporting security of supply

- Address regulatory and licensing barriers to fast track the construction of critical infrastructure and create incentives for TSOs to cooperate through e.g. shared ownership
- Apply strictly EU competition policies to foreign gas suppliers to prevent discrimination and enhance procedures for gas supply coordination in the case of supply disruption
- Define procedures to manage coincidental electricity system stress events and coordinate capacity mechanisms to ensure security of electricity supply
- Reinvent coordination and planning mechanisms to provide better investment signals and reform the electricity Target Model

4. Financing and governance challenges

- Scale up public financing and develop innovative financing arrangements to leverage private investment and reduce the cost of capital
- Reform governance at the local, regional and European levels to enhance coordination and planning
- Introduce peer reviewed policy roadmaps and monitoring procedures to ensure consistency between policy targets and implementation instruments

1. Define a credible vision and a consistent set of objectives

Define a hierarchy of policy objectives and address trade offs

- European energy and climate policy has often been described as searching to strike a balance between a “trilemma” of objectives: environment and climate policy, security of supply, and the creation of integrated and competitive electricity and gas markets
 - There has always been a working assumption that the different policy objectives reinforce each other.

- However, in hindsight, the different pillars of Europe’s energy policy do not seem as synergetic as often believed
 - For instance, the relationship between liberalized power markets and security of supply is more complex than anticipated, as underinvestment and boom bust cycles seem to threaten security of electricity supply in a number of member states.
 - In addition, Europe’s green agenda has not been reconciled with Europe’s objective to create competitive and integrated markets: the impact on energy costs and on Europe’ competitiveness of the 2020 targets is becoming apparent today as many member states revisit their support policies for renewables, in order to contain costs for consumers.

Policy recommendations

- *In the context of the discussions on the policy and market framework to deliver on the 2030 targets, the EC should recognize the inherent conflicts between different policy objectives and define clear priorities.*
- *In particular the impact assessment for the 2030 targets should evaluate: the impact in terms of energy costs and industrial competitiveness of the different environmental targets; and the impact in terms of security of supply of deploying significant amounts of intermittent renewables.*

1. Define a credible vision and a consistent set of objectives

Stress test policies against non cooperative climate change scenarios and lower fossil fuel prices

- **Europe' strategy to lead in the decarbonization of its economy is based on the assumption that other countries will rally the cause of fighting climate change**
 - Little progress on the international scene toward a global agreement to mitigate climate change since 2008.
 - Current policies do not provide any incentives to other countries to join in a global agreement.

- **The conventional wisdom that underpinned Europe's commitment for decarbonization is that fossil fuel prices would increase steadily in the future**
 - This justified the support for low carbon technologies whose cost would reduce over time and converge with those of conventional fossil fuel technologies.
 - This implied that the green agenda costs would remain affordable, and would in the long term yield positive benefits to European customers.
 - However, the discovery and production of large quantities of shale hydrocarbons in the US, and the end of the "commodity super cycle" have largely changed the global energy market dynamics and call into question the affordability of Europe's climate targets.

Policy recommendation

The 2030 energy and environment policy framework should be stress tested against scenarios with:

- *a non-cooperative approach from Europe's commercial partners in the fight against climate change, and*
- *with lower fossil fuel prices than currently anticipated.*

1. Define a credible vision and a consistent set of objectives

Evaluate system costs, externalities, and subsidies and monitor their evolution

- Policy debates are based on implicit or explicit assumptions about the costs of different technologies, which do not take into account a system approach toward costs and often ignore externalities or subsidies
 - Often critical policy decisions are made on the basis of weak – or possibly even biased evidence – on the costs of different technologies
 - In the case of electricity generation, the comparison between different technologies does often not factor the “external costs” and/or the “subsidies”

- The evolution of the costs of clean technologies is a key uncertainty that needs to be monitored
 - The optimal level of support for clean technologies depends on their expected cost decrease, so that close monitoring of the evolution of costs is needed

Policy recommendations

- *Technology costs should be assessed from a system perspective and the principle of ‘cost reflective’ prices should be instituted. All technologies should bear the cost associated with their external effect on the energy system and society at large.*
- *A monitoring process should be put in place in all member states to track the evolution of the different types of energy system costs (including externalities) and subsidies over time.*
- *Policy roadmaps with a total subsidy budget and targeted dates for subsidy removal by technology should be defined to provide forward estimates of clean technologies support costs.*

2. Policies supporting decarbonization

Instead of picking technology winners, support R&D and innovation and rely on a strong carbon price

■ The European Trading Scheme (ETS) has become a 'residual market' for carbon abatement, with most CO2 reductions driven by targeted policies

- The recent agreement on a 40% GHG emissions reduction target for 2030 reaffirms the necessity of strong ETS
- But the proposed structural 'MSR reform' of the ETS does not address the key issue of the need for a predictable and credible price signal to support investment

■ Europe's support for clean technologies deployment contrasts with the lack of funds available for research and development (R&D)

- Given the uncertainties on the costs of the different clean technologies, an optimal policy mix would need to be geared toward R&D
- Instead of picking technology winners, the EU should invest in fundamental research and put in place a supportive framework for the demonstration and commercialization of innovation

Policy recommendations

The ETS needs a radical structural reform to provide a credible and bankable investment signal through a predictable minimum long term carbon price trajectory.

Whilst there are many ways in which a supply management mechanism can be put in place, a simple approach with cap and floor prices has many advantages.

Policy recommendations

EU countries need to scale up and coordinate better their R&D and innovation policies for clean technologies through a reform of the European Strategic Energy Technology plan

The 20% / 27% renewables deployment targets could be replaced by a clean technologies R&D and deployment target, whereby countries could choose to support clean technologies through a budget for R&D and / or deployment.

2. Policies supporting decarbonization

Reform RES support policies to control pace of deployment, encourage coordination and reduce market distortions

■ The “cannibalization effect” of RES support policies implies that there may be a structural and permanent need for subsidies for RES if their cost reduction does not outweigh their depressive effect on power prices

- Managing the pace of deployment of subsidized technologies is key both to control the costs, and to provide investors with a long term perspective on the value of existing and new thermal plants.

■ Policies to support RES lack of coordination, which has led to suboptimal deployment of renewables and increased costs for European consumers

■ RES support schemes based on production create distortions in the merit order in the electricity market

- When applying the recent State Aid Guidelines to integrate renewables in electricity markets, the EC should have a differentiated treatment considering the maturity and cost structure of the different technologies.

Policy recommendations

Member states should define coordinated clean technologies roadmaps and a monitoring process to control the volumes and pace of the different clean technologies added to the system.

In order to control the volumes of clean technologies, support schemes fixing a volume cap, or relying on auctions should be favored.

Policy recommendation

Member states should improve the coordination of renewables support schemes; The EC should create incentives to participate in such cooperation mechanisms, e.g. by adding a financial or accounting bonus to projects involving cooperation across member states toward meeting the 2020/2030 targets.

Policy recommendation

In order to remove distortions of power markets induced by clean technologies support schemes, Europe should eventually phase out production-based support schemes and instead concentrate support for renewables on investment, preferably through an auctioning process.

3. Policies supporting security of supply

Address regulatory and licensing barriers to fast track the construction of critical infrastructure

- Progress on building interconnection and other critical infrastructures supporting electricity and gas markets integration has been slow over the past two decades
 - There would be significant benefits in having a more interconnected market across Europe, estimated to range between 12.5 to 40 bn€/year in 2030, or about 25 to 80 € savings per capita / year.

Policy recommendations

- *The EC should address permitting and licensing hurdles, through e.g. the creation of a one-stop-shop agency as part of ACER and/or regional transmission planning committees.*
- *Greater engagement with local communities is needed to relieve local opposition, e.g. through benefit sharing mechanisms.*
- *The regulation of Transmission System Operators (TSOs) should provide stronger incentives for TSOs to cooperate and to build interconnection capacity - e.g. by mandating that part of the congestion rents and cross border rents be channeled to investment in new lines.*
- *Stronger coordination requires the implementation of regional transmission development agencies under joint ownership from TSOs.*
- *A more radical approach would consist in creating regional TSOs through e.g. cross-ownership between national TSOs.*

3. Policies supporting security of supply

Enhance gas supply security in the short and long term

- The recent Russian-Ukraine conflict and the associated dispute about Russian gas supplies have revived concerns about security of imported gas in Europe
 - In response, the European Commission released an EU energy security strategy on 28 May 2014.
 - The mechanisms to enhance Europe's energy supply security are well known.

Policy recommendations

- *In the short, term, the resilience of the EU gas system to supply disruptions requires:*
 - i) *Developing more coordinated preventive planning through regional risk assessments, e.g. on a yearly basis;*
 - ii) *Developing and regularly updating emergency preparedness procedures to deal with stress situations.*

- *In the medium to long term, EU gas security can be improved by:*
 - i) *Fostering the development of well-functioning and integrated gas markets;*
 - ii) *Reducing energy demand through energy efficiency policies;*
 - iii) *Fast-tracking the build-up of critical infrastructure;*
 - iv) *Better coordination when negotiating with external energy suppliers, and strict application of EU energy and competition law, possibly coupled with the implementation of an internal regional aggregation mechanism for Eastern European countries to reduce discrimination against some of the most dependent member states;*
 - v) *Diversification of gas supply sources and routes, and supporting security of supply in the EU's neighborhood (e.g. through the timely construction of the Trans Adriatic Pipeline (TAP) which will transport Caspian natural gas to Europe).*

3. Policies supporting security of supply

Coordinate capacity mechanisms to ensure security of supply

- There is currently much worry that the current EU power market design is sending inadequate investment signals which may endanger security of electricity supply
 - Many countries have taken steps to introduce a capacity mechanism, using very different approaches.
 - The result is a patchwork of mechanisms which could undermine the further integration of European electricity markets.
 - The drivers of capacity mechanisms across Europe are different depending on the country considered, such that it is unlikely that a common approach at the Europe level will be practical or even suitable.
 - But there would be merits in working toward some degree of coordination in order to minimize the potential distortions associated with different capacity mechanism approaches.

- Policy recommendations

- *The EC should produce guidelines for the regional coordination of capacity mechanisms and to ensure the possibility for cross border capacity participation*
- *A critical issue to address is the definition of a legislative and operational framework to deal with situations of coincidental scarcity events*
- *TSOs need to cooperate on a regional basis to define common certification and verification procedures for plants and demand response, and to develop operational rules to deal with situations of system stress.*

3. Policies supporting security of supply

Reform the electricity Target Model to provide better signals

- European electricity market need to send better scarcity signals to balance the system in real time
 - The historical approach focused on integrating day-ahead power markets
 - The growth of intermittent renewables requires liquid and well integrated intraday and balancing markets.
 - Scarcity pricing is key to remunerate flexibility.
 - Locational signals are lacking and prevent a coordinated development of generation, demand response, and the network
- Electricity market design needs to evolve to improve fixed cost recovery and facilitate investment in capital intensive technologies
 - The change in the cost structure toward capital intensive technologies raises questions about the fundamental principle of marginal cost pricing.
 - Risk transfer mechanisms such as long term contracts have a role to play in reducing the cost of capital and thus costs for consumers.

Policy recommendations

- *The EU target model needs to be revised to fast track the integration of short term balancing in order to enable the least cost integration of renewables in the system.*
- *This will require to reprioritize the current Framework Guidelines and Network Codes process and to give ACER a stronger mandate in order to overcome some of the current hurdles.*
- *The redefinition of price zones and/or the introduction of location specific network charges would provide better locational signals and improve the coordination of network and generation investment.*

Policy recommendations

- *In the long term, electricity markets based on marginal cost pricing will need to be supplemented with some other mechanisms to foster fixed cost recovery and reduce the cost of capital. This can happen gradually through the ongoing reforms introducing capacity mechanisms.*
- *A more radical approach would be a move to 'hybrid power markets' with auctions of long term capacity contracts to ensure that there is competition 'for the market', whilst the spot and intraday markets would ensure competition 'in the market'.*

4. Financing and governance challenges

Scale up public financing and develop alternative financing arrangements to leverage private capital

- Significant investments are required to decarbonize Europe's energy sector and renew ageing infrastructure, but the current EU regulatory framework is not fit to attract the massive amounts of capital
 - The EC estimates that out of the EUR 200 billion needed for electricity and gas networks of European importance, EUR 100 billion should be delivered by the market, whereas the other EUR 100 billion will require public action.
 - In an increasingly global economy, fierce competition for capital means that the energy sector in Europe will have to compete to attract funding with other investment opportunities globally in a range of other sectors.
 - The current EU regulatory framework is not fit to attract the massive amounts of capital that are required to finance the transition to a low carbon economy.

Policy recommendations

- *The EC and the European Investment Bank (EIB), together with the member states financial institutions, need to scale up the amount of public money lending and equity financing available to Trans-European Network projects and Projects of Common Interest (PCI).*
- *In addition, alternative financing arrangements (such as public-private partnerships) and investment vehicles (such as project bonds and suitable investment funds) should be developed to leverage private capital.*

4. Financing and governance challenges

Reform governance at the local, regional and European levels to enhance coordination

- **The 3rd Energy package created new institutions at the European level which play an important coordination role, namely ACER and ENTSOE and ENTSOG**
 - Much of the slow progress on market integration and critical infrastructure projects can be attributed to the limited mandates ACER and the ENTSOs.
- **Coordination at the regional level is a potential promising way forward for further European energy coordination**
 - Scope for closer energy policy cooperation of neighboring countries sharing some similar constraints.
 - Opportunity for bottom up involvement of all stakeholders to find practical solutions.
 - Can be either informal and rely on regional forums to disseminate information, or more structured processes through e.g. a formal peer review process and some form of institutionalisation.
- **Local communities have a growing role to play in the design and implementation of energy and climate policies**
 - The development of decentralized generation and active demand response increases the need for coordination at the local level.

Policy recommendation

ACER and the ENTSOs should be empowered to coordinate and harmonize further regulatory practices. Indicative planning should be reinforced to improve the coordination of network and generation development, e.g. by broadening the scope of ENTSO's 10 year network development plans to assess the impact of different national energy transition plans.

Policy recommendation

Regional coordination groups should be set up with a mandate ranging from: i) To share information through a peer review process; ii) To develop cooperation mechanisms on specific policy instruments, for instance for CRM and/or RES cross border participation; iii) To develop joint policy initiatives or joint policy instruments.

Policy recommendation

One challenge of Europe's energy policy going forward is to ensure the consistency of the multiple levels of decision and implementation. The governance and regulation of local players such as Distribution System Operators (DSOs) and municipalities should ensure that all stakeholders have incentives to optimize the system.

4. Financing and governance challenges

Introduce peer reviewed policy roadmaps to ensure consistency between policy targets and instruments

■ Investments are hampered by perceived policy and regulatory uncertainty

- A key source of policy uncertainty relates to the perceived disconnect between the long term policy targets, and the concrete short term policy instruments put in place to deliver on these targets.
- The inability of policy makers to credibly commit on a set of long term predictable policy objectives is a key issue that undermines the European energy policy framework.

Policy recommendation

- *The EC and the member states should develop energy policy implementation roadmaps. These would provide a forward looking view of the required policy changes needed (e.g. carbon price evolution, timing for phase out of renewables support, etc.).*
- *The process to elaborate these roadmaps should be largely consultative and open to a wide range of industry stakeholders, through a peer review at a national, regional, and European level.*
- *Last but not least, a process to assess regularly progress against the policy roadmap should be put in place. This would rely on a set of indicators, which would be periodically reviewed.*



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