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POLICY BRIEF

Moving the electricity transmission system towards a decarbonised and integrated Europe: missing pillars and roadblocks

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Highlights[1]

- The establishment of a seamless electricity transmission system and the completion of a single market for power in Europe are currently hindered by the lack of adequate answers to several, basic questions concerning the coordination of actions and decisions, the sharing of costs and benefits, and solidarity beyond costs and benefits.
- The absence of these three core 'pillars' explains, at least partially, why the European electricity industry is currently affected by several critical issues. In some cases, these issues constitute 'roadblocks' on the path towards a fully integrated electricity system and a decarbonised energy sector. Redispatching actions, on the one hand, and capacity adequacy and crisis management, on the other, are two relevant examples of such roadblocks.
- To remove these two roadblocks, we propose a set of recommendations that address the three missing pillars and clearly identify key roles, tasks and responsibilities both at national and supranational level.
- Member States, industry stakeholders and society at large can have alternative and even opposing views of our suggestions and how to successfully confront the two roadblocks and the other critical issues. However, they should all acknowledge the necessity, while developing their own proposals, to deal with the missing pillars and provide explicit answers to the basic issues of coordination, sharing and solidarity.

1. This policy brief is based on a research report published by the Florence School of Regulation: Glachant J.M., N. Rossetto and J. Vasconcelos (2017), *Moving the electricity transmission system towards a decarbonised and integrated Europe: missing pillars and roadblocks*, EUI, April.

1. Introduction

It is more than 20 years since the EU embarked on a difficult journey to create a single market for electricity.[1] Nevertheless, European power plants and grids do not yet operate as a single seamless system. The price of electricity and ancillary services often diverges between national markets despite the growing number of interconnections and the relevant share of unallocated cross-border capacity. The massive deployment of renewable energy sources for the generation of electricity and the deep wave of technological innovation in the ICT sector have recently introduced new challenges – but also new opportunities – for which a prompt policy response is imperative.[2]

In this policy brief, we identify three core pillars that are missing in the building of a single market for electricity in Europe. They are: the coordination of actions and decisions, the sharing of costs and benefits, and solidarity beyond costs and benefits. They result from several, often basic, questions that European policy-makers did not address or did not address properly and timely in the past decades. Unfortunately, the absence of such core pillars is slowing down the completion of the internal market and is making the transition to a low-carbon economy more expensive.

By looking at the critical issues currently affecting the electricity sector through the lens of the missing pillars, it is possible to outline a few recommendations that answer to some of the basic and long overdue questions. In what follows, we will illustrate this methodology for two cases that in our view constitute relevant 'roadblocks' on the path towards a full integration of the electricity systems in Europe.

1. Glachant J.M. (2016), The Long March towards an EU Power Target Model (1.0)… and the Journey towards a 2030 Target Model (2.0), *Policy Brief*, 2016/06, EUI, June.
2. Glachant J.M., V. Rious and J. Vasconcelos (2015), What future(s) for the EU power transmission industry?, *Policy Brief*, 2015/04, EUI, December.

2. Three core missing pillars in the European building of a single market for electricity

Today, the creation of a seamless electricity system in Europe is blocked by the absence of three core pillars. They are the following ones (see Fig. 1):

- Coordination of actions and decisions;
- Sharing of costs and benefits;
- Solidarity beyond costs and benefits.

In the electricity industry, a comprehensive set of tools for coordinating the actions and decisions undertaken at national and supranational level by market players, network operators and regulatory bodies is necessary to achieve consistent infrastructure development, reliable system operation and efficient commercial transactions. Regrettably, during the restructuring and the integration of the sector in the 1990s, EU legislation provided little or no concrete guidance for the definition of the new **coordination mechanisms**. The Member States adopted different market models, while TSOs and market operators carried on with legacy contracts or initiated new ad hoc bilateral transactions. 'Bottom up' initiatives, like that of market coupling, tackled only partially and slowly the fragmented landscape. Recently, some important steps have been taken (TYNDP, CACM Regulation, etc.), but they are not enough to achieve the degree of coordination needed.

Clear principles on how to **share the costs and benefits** of the integrated electricity system and its transition to a decarbonised future are essential to promote an efficient use of the available resources, the provision of public goods and the acceptance of public policies. Establishing such principles can be politically sensitive, because it requires an agreement defining short-term 'winners and losers' among different categories of market actors, network users and Member States. Disappointingly, the reluctance to openly discuss redistributive principles at EU level

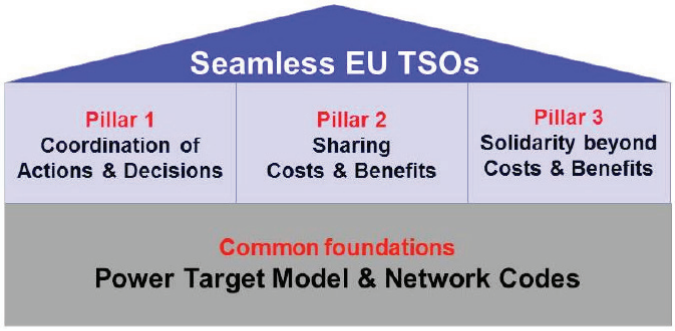

Fig. 1: The core missing pillars.

often led to the implicit conservation of the status quo. Inefficient or ineffective solutions to the critical issues affecting the electricity industry have frequently followed.

During abnormal situations, like an extreme weather event or a disruption of the main primary energy supply route, usual coordination and sharing mechanisms do not work appropriately. In these cases, continuity of supply, especially for the most vulnerable customers, is the main concern and the members of an interconnected power grid must show **solidarity beyond the cost and benefit** responsibility. A common reaction to emergencies based on roles and operational procedures defined ex-ante is likely to be the most effective and efficient, because national systems are increasingly interdependent on each other. However, the wide blackouts that struck some European countries in the first decade of this century did not lead to the adoption of a common and strong solution to the issue: from a formal point of view, solidarity in electricity is currently underdeveloped, especially when compared to the case of natural gas.

3. Two roadblocks in front of us

At present, at least a dozen critical issues are challenging the completion of the single market for power and the transition to a low-carbon economy. Some are related to **coordination**, like the development of a comprehensive European network expansion plan. Others are issues of **harmonisation**, for instance of congestion rents allocation schemes. On some issues Europe is moving forward, while on others it is not.

On two issues the EU is facing clear 'roadblocks', namely:

- Redispatching actions;
- Capacity adequacy and crisis management.

Following market closure, TSOs implement **redispatching actions** to relieve network congestions and ensure that the outcome of market transactions is compatible with the secure operation of the system. The fast deployment of renewables and the growth of cross-border trade in electricity over the last few years have increased the need for TSOs to implement such actions and the corresponding costs. Redispatching actions frequently call for cross-border coordination and cooperation, because they are sometimes used to solve congestions at the borders of the TSOs' control areas or because they impact upon the neighbouring control areas. However, the lack of a common definition and actual data on costs, the potential redistributive impact of any allocative mechanism and the national liability of the TSOs make the development of proper sharing mechanisms a sensitive topic. In turn, this slows down the development of coordination and cooperation among TSOs and the optimal operation of the European interconnected system.

Due to the liberalisation of the electricity sector, the growing interconnections among the European national grids and the deployment of variable renewables, any assessment of **capacity adequacy** performed in isolation at country level is nowadays of little meaning. National policies targeting capacity based on such assessments run the risk of distorting the internal market and 'picking the winner' in the investment process. In the context of an increasing interdependence, developments in neighbouring countries have profound impacts on any domestic power system, as illustrated recently

by the **'electricity crisis'** of January 2017. Nevertheless, the national responsibility of each TSO for the continuity of supply of its own country and, at times, a national distrust in neighbours explain why solidarity, although most needed, is not always shown during emergency situations and ex-ante rules are not yet in place. As a result, cross-border cooperation for crisis management remains fragile.

4. How to handle the roadblocks

The case of the two roadblocks show how unanswered questions in terms of coordination, sharing and solidarity are hindering the integration process and causing additional costs to European societies. However, thinking in terms of the missing pillars allows us to identify recommendations for handling, and eventually removing, those roadblocks.

For redispatching actions, we suggest that:

- **First**, NRAs develop, within ACER and on a short term horizon, a common methodology for the calculation and the allocation of redispatching costs, ensuring fairness and efficient signals for the TSOs and network users.
- **Second**, TSOs gathered in ENTSO-E shall improve, on a longer time horizon, the coordination mechanisms between system and market operation by assessing the configuration of market bidding zones and redrawing them in case they do not adequately reflect structural congestions.
- **Third**, Member States and EU institutions must reach a clear agreement on the regulatory framework for sharing the costs and benefits of the integrated power system, in particular when undertaking the bidding zone review process. If fundamental regulatory principles are not agreed upon because of diverging national interests and vetoes by Member States, then European bodies endowed with technical or regulatory expertise like ENTSO-E and ACER can remain stuck to piecemeal, suboptimal and temporary solutions.

For capacity adequacy and crisis management, we suggest that:

- **First**, TSOs shall develop, at ENTSO-E level, a common methodology for assessing capacity adequacy and valuing it cross-border.
- **Second**, the Member States and the European Commission should use exclusively such methodology to assess the need for capacity remuneration mechanisms, thereby expanding transparency and mutual trust.
- **Third**, when an electricity crisis affects a single country, its neighbours shall provide support by granting full access to their domestic resources at market prices.
- **Fourth**, in case of a multilateral shortage, the involved TSOs shall follow pre-established rules and pool the scarce available resources in order to minimise service disruptions and the impact on the most vulnerable consumers.

These recommendations do not constitute a fully-fledged roadmap to solve the two intricate issues represented by redispatching actions and capacity adequacy and crisis management. Nevertheless, by framing the problems in terms of coordination, sharing and solidarity, they identify key roles, tasks and responsibilities. On this basis, additional and more detailed recommendations can be developed at a later stage by technical experts.

5. Conclusions and policy implications

To illustrate the importance of the three core missing pillars, this policy brief provides a set of recommendations to handle two roadblocks, currently hindering the completion of the single market for electricity and making the transition to a decarbonised energy sector more expensive.

Clearly, different Member States, industry stakeholders and society at large can have alternative and even opposing views on how to address these two roadblocks and the other critical issues affecting the electricity sector. They can support different solutions depending on their understanding of the problems, their visions and specific interests.

However, in the debate on the legislative proposals presented by the European Commission in late 2016, policy-makers and all relevant stakeholders should acknowledge the necessity to deal with the missing pillars and to provide a clear answer to the basic issues of coordination, sharing and solidarity. If they will do that, then tangible progress in the integration of the electricity system will be possible to the benefit of the European citizens.

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