ISSN 1977-3919

POLICY brief

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ISSUE 2012/01 • January 2012

# EU Involvement in Electricity and Natural Gas Transmission Grid Tarification[1]

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## Highlights

- Current EU involvement in the regulation of TSO revenues and transmission grid tarification is rather limited and the existing heterogeneity among national regulatory practices and transmission tariff structures might be an obstacle for functioning competition and adequate investments in the grids.
- However, we see neither the need nor solid justification for an EU-wide harmonization of the regulation of TSO revenues. ACER should take the responsibility for benchmarking national regulatory practices. Transparency standards should be extended. Innovative solutions to trigger investments (e.g. competitive tendering or a European tariff component) need to be considered. The EU shall call for the removal of legal barriers that might impede grid investments; it is notably necessary that third parties can invest where incumbent TSOs do not show interest to realize identified priority projects.
- To increase transparency, the cost components included in electricity transmission tariffs should be harmonized; they should only include costs related to transmission grid infrastructure. Locational signals providing reliable ex-ante signals should be introduced. To avoid a distortion in competition, the EU should fix an average share of the G/L-components; thus, introduce a minimum G-component. The behavior of grid users in the competitive sector must not be distorted, i.e. transmission tariffs covering the long-term cost of infrastructure should not be calculated based on energy transported (i.e. in €/MWh).
- In the European natural gas sector, there are more than 30 entry-exit zones with mainly administratively determined borders. The EU should set principles for determining the ideal size of entry-exit zones, but let concerned NRAs and TSOs agree on the result. Once market areas are merged, there are good economic reasons to implement a system of common tarification. The role for the EU here should be limited to support sound agreements between the respective stakeholders.
- We recommend some harmonization in natural gas transmission tarification to ensure that the breakdown of costs among grid users and among entry- and exit points respects the principle of cost-reflectiveness as much as possible. Adequate discounts on short-haul transports should be encouraged. Asymmetric re-allocation of costs, such that 'captive' domestic consumers have to bear disproportionately high costs, shall be prohibited.

1. Topic 6 of the EU's FP7 funded project THINK. The project report is available at: http://think.eui.eu.

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*The Florence School of Regulation (FSR) was founded in 2004 as a partnership between the Council of the European Energy Regulators (CEER) and the European University Institute (EUI), and it works closely with the European Commission. The Florence School of Regulation, dealing with the main network industries, has developed a strong core of general regulatory topics and concepts as well as intersectoral discussion of regulatory practices and policies.*

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## Background

The current EU involvement in the regulation of TSO revenues and transmission grid tarification is limited and mainly addresses issues related to interconnection and supply security as well as the definition of underlying principles for third party grid access and capacity pricing. Heterogeneity among national, or even local transmission tariffs might be an obstacle for functioning competition and adequate investments into the grids in the context of EU energy policy goals (i.e. "2014", "2020", and "2050"). Even though transmission tariffs account only for a small percentage of final industrial consumer electricity and natural gas prices, both their level and structure can have a strong impact on infrastructure investments and on how commodities are traded within and between countries.

In what follows, we derive recommendations on the future role of the EU and a potential need for harmonizing transmission grid tarification. We ask (1) whether existing heterogeneities in regulatory practice might hamper adequate investments or impede efficient competition and, if yes, (2) whether new EU legislation in place and new EU instruments notably from the Third Package – *once enforced* – provide an efficient solution. Increased trans-national involvement may have benefits, such as the better functioning of markets and the facilitation of infrastructure development, but it also comes at a cost, such as increased information asymmetry between individual decision makers and higher-level coordinating or regulating institutions. Both have to be weighed carefully. Practical and political implementability of the proposed solutions (both in the near- or long-term) is one of our key concerns.

## Regulation of TSO revenues: A national undertaking?

The observed heterogeneity in general price control mechanisms and instruments used to promote new investments probably does not hamper adequate investments in national infrastructures having no strong cross-border impact. Key parameters determining investment incentives are an adequate risk-reward ratio, regulatory stability and transparency, all issues national regulators can properly address. In addition, the current heterogeneity regarding instruments used to promote investments can actually provide valuable insights into 'func-

**Analytical framework for the analysis of policy measures going beyond the national level**

Any EU involvement must not go beyond what is necessary to achieve the high-level objectives in the EU Treaties, except for areas of EU exclusive competences. To discover the need and pertinence of policy measures going beyond national level, three questions are to be answered:

#1 - First, whether EU involvement is justified on the grounds of subsidiarity. Any higher European level of decision-making shall avoid pre-empting any area of legitimate Member State involvement. From an institutional perspective, there are shared competences between Member States and the EU regarding the achievement of the European energy policy goals – i.e. the completion of the internal market, a sustainable and environmentally friendly energy system, and security of energy supplies (Art. 194, Treaty of the Functioning of the EU). It is then legitimate to look at this more closely to see if there are substantial economic benefits to be made from a renewed EU involvement.

#2 - Second, whether the achievement of policy targets is hindered by profound and permanent market failures. In the presence of strong (positive or negative) externalities, decentralized decision-making will not result in the socially optimal investments from a regional or an EU-wide perspective. Distributional concerns occur as soon as multiple stakeholders are involved and diverging interests can hamper efficient decision making. Trans-national involvement can also be important to stimulate information benefits we can get from various national regulatory authorities being learning from their diverse regulatory approaches.

#3 - And finally, whether the necessary regulatory actions could be decentralized among various local players and whether objectives could be achieved based on voluntary, regional cooperation, instead of being the result of top-down, centralised decision-making to get a workable implementation process.

tioning' models and might allow to discover 'best practice' for specific situations.

Cross-country comparability, however, has shown to be difficult due to the observed heterogeneity in national regulatory practices in terms of determining asset base and level of remuneration. This could result in higher cost of capital and additional risk from the point of view of external investors, whose funds are indispensable to meet the substantial financing needs in energy infrastructures in the coming decades. Moreover, differing methodologies used to calculate the allowed revenue could actually hamper adequate investments regarding projects that have a regional (i.e. cross-border) impact. Especially in the electricity sector we face an increasing need to build long-distance transmission lines. Competition between corridors (and thus between TSOs from different Member States) can imply that the grid might be expanded where an investor gets a more favorable return. Finally, besides various exogenous factors that are beyond the control of TSOs and differences in internal operating efficiency, heterogeneity in national regulatory practices leads to a situation where for the same volume of assets different authorized revenues will be calculated, which in turn results in varying transmission costs and tariff levels.

*Our recommendations for future EU involvement:*

- We see neither the need nor solid justification for an EU-wide harmonization of the regulation of TSO revenues. Nevertheless, we recommend that decisions regarding the realization of projects with a pan-European impact should be taken on the EU level instead of being the result of a reaction to rates-of-return settled by national regulators in different Member States. Where a regionally specific solution has to be found (e.g. offshore grid), decentralized cooperation and coordination are appropriate.
- ACER should take the responsibility for benchmarking national practices and formulate an opinion about the appropriateness of various methodologies employed. Transparency (i.e. reporting) standards need to be extended.
- In view of the amount of predicted investment needs, innovative solutions to trigger investments (e.g. competitive tendering or a European tariff component) should be considered to become common tools, too.

## EU involvement in electricity transmission grid tarification

There is wide heterogeneity regarding electricity transmission tariff structures among EU Member States. This does hamper both adequate investments and efficient competition. While the EU has defined general principles of tarification, there is little EU involvement with respect to tariff design except for some harmonization of the maximal average G-component. The existing ITC mechanism is an ex-post instrument which is intended to compensate TSOs for the costs resulting from hosting cross-border flows of electricity. Apart from some methodological weaknesses, it is not designed to incentivize the timely realization of grid investments or to allocate costs of new infrastructures. These issues are expected to be addressed by the proposed Energy Infrastructure Package for projects of pan-European interest; however, we identified some factors that might hamper the successful implementation and effectiveness of this new regulation.

*Our recommendations for future EU involvement:*

- To increase transparency, the first area of harmonization should involve the clear definition of which cost components transmission tariffs should contain. They should only include costs related to transmission network infrastructure.
- Transmission tariffs should be allocated as far as possible based on the principle of cost causality. Locational signals should be introduced, taking into account national system specificities, being calculated based on sound methodologies and providing reliable ex-ante signals. The provision of time signals can be considered, too. To give economic signals to generators, obviously a certain share of the tariff needs to be paid by them. To avoid a distortion in competition, the EU should fix an average share of the G/L component; thus, introduce a minimum G-component.
- The behavior of grid users in the competitive sector should not be distorted, i.e. transmission tariffs covering the long-

term cost of infrastructure should not be charged based on energy transported (i.e. in €/MWh) but instead be paid based on booked capacity or lump-sum, computed separately for different types of grid users in different areas so that charges properly reflect the network-related relevant characteristics of the network users.

- The EU should call for the removal of the legal barriers that might impede grid investments where strong geographical asymmetries in costs (i.e. investment needs) and benefits occur. It is necessary that third parties can invest where incumbent TSOs do not show interest to realize identified priority projects.
- Finally, given the uneven distribution of benefits among stakeholders arising from increased interconnection capacities and the concern that national regulators tend to protect domestic consumers from rising prices, effective means have to be found to incentivize NRAs to support the development of identified priority projects.

## EU involvement in gas transmission grid tarification

In the natural gas sector, heterogeneity in tariff structures does not hamper adequate investments while it might certainly hamper efficient competition. There are more than 30 entry-exit zones with mainly administratively determined borders. Furthermore, systematic bias exists in the form of a cross-subsidization between short-distance transmission and long-distance transportation; domestic consumers tend to cross-subsidize transit flows. Other obstacles to functioning competition include contractual congestion, inefficient pricing of non-standard products, a persisting lack of backhaul capacities, or the limited compatibility of capacity products offered. The implementation of new legislation (i.e. Third Package, Network Code on capacity allocation mechanisms) will substantially increase transparency and compatibility and facilitate natural gas trade and competition. However, it does not address all obstacles listed above.

*Our recommendations for future EU involvement:*

- The EU should set principles for determining the ideal size of entry-exit zones, but let concerned NRAs and TSOs agree on the result. Boundaries of price zones should reflect the technical and economic conditions rather than political borders; mergers of market areas shall be evaluated on a case-by-case basis based on expected economic benefits and costs. Once market areas are merged, there are good economic reasons to implement a system of common tarification. The role for the EU here should be limited to support sound agreements between the respective stakeholders. The actual implementation of harmonization of tariff structures and definition of a mechanism to compensate TSOs can be managed at the regional level.
- We recommend some harmonization in natural gas transmission tarification to ensure that the breakdown of costs among grid users and among entry- and exit points is designed so that the principle of cost-reflectiveness is respected as far as possible. Adequate discounts on short-haul transports should be encouraged and an asymmetric reallocation of costs such that 'captive' domestic consumers have to bear disproportionately high costs, shall be prohibited.
- The EU, through ACER, should formulate a set of 'good practice guidelines' regarding natural gas transmission tarification. Entry- and exit charges should be actively used to provide locational signals to grid users wherever this is economically reasonable. Commodity-related components should reflect short-run marginal costs in order to avoid distortions in the behavior of shippers in the commodity market and network tariffs should clearly be identified, containing only those cost elements that are related to the transmission activity (i.e. infrastructure investment and operation).

## Summary of the findings

| | Regulation of TSO revenues | Electricity transmission tariffs | Natural gas transmission tariffs |
|---|---|---|---|
| Heterogeneity hampers adequate investments? | Probably not for purely national infrastructures<br>Probably yes for infrastructures with regional impact | Probably yes | Probably not |
| Heterogeneity distorts competition? | Possibly yes | Probably yes | Probably yes |
| New legislation – once enforced – solves the issues? | Probably not | Probably not | Probably not |
| Recommendations on future EU involvement in a nutshell | # No need for EU-wide harmonization<br># Decisions on realization of projects with pan-European impact to be taken at EU level; decentralized cooperation of all relevant stakeholders where a regionally specific solution is required (e.g. offshore grid)<br># Benchmarking of national practices through ACER<br># Consideration of innovative solutions to trigger investment (competitive tendering, EU tariff component) | # Definition of cost components to be included in tariff<br># Allocation based on principle of cost causality ➜ implementation of locational signals and consideration of time signals<br># Introduction of a minimum G-component<br># Transmission tariffs covering long-term infrastructure costs not to be charged in €/MWh<br># Removal of legal barriers that might impede investment<br># Incentivization of NRAs to support development of identified priority projects | # EU-wide principles for determination of ideal size of entry-exit zones<br># Breakdown of costs among grid users and among entry- and exit points such that principle of cost-reflectiveness is respected as far as possible<br># Formulation of "good practice guidelines" |