

FOSTERING ELECTRICITY TRANSMISSION INVESTMENTS TO ACHIEVE EUROPE'S ENERGY GOALS: TOWARDS A FUTURE-LOOKING REGULATION

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EXECUTIVE SUMMARY

A strong and secure transmission network is a widely recognised prerequisite to enable European energy and climate policy goals. It is expected that the attainment of these goals would lead to a major increase of welfare for the European economy.

To meet these goals major investments in electricity transmission infrastructure are necessary. This investment challenge, however, is unprecedented in its size and pace and also means a significant financing challenge. Moreover, the challenge is not limited to Projects of Common Interest (PCIs), as TSOs are also required to deliver other significant and indispensable investments as part of the TYNDP and national development plans. Policy and regulatory focus should therefore not stop at PCIs, but also consider the entire investment portfolio. Initiatives linked to the promotion of PCI projects, e.g. by prioritising or fast-tracking



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them, are useful and important, especially when such projects are more complex and higher risk than the average investment project. However, those initiatives do not tackle the financial challenges relating to

the entire investment portfolio. The focus should therefore be broadened to an optimal coordination of the electricity transmission regulatory framework determining:

- 1. an adequate overall risk-reward balance, appropriate incentives and sustainable transmission tariffs; and**
- 2. good access to capital markets to enable appropriate financing; and**
- 3. the incorporation of transmission investment needs which drive EU policy goals.**

Today, in most EU-countries this coordination is not sufficiently enabled by the current regulatory frame-

works which largely focus on cost efficiency. Without serious consideration of the important ‘financeability’ issue, Europe may find itself in a ‘regret’- scenario, rather than attaining the EU policy goals.

To foster the necessary infrastructure investments and make the associated tariff evolution sustainable, the regulatory toolkit should focus on a fair, long-term predictable and stable risk-reward balance to provide more certainty to capital markets. It should also ensure that the framework is adequate to meeting the size and pace of the investment challenge. In this policy brief, ENTSO-E proposes a toolkit of possible regulatory instruments from which policy makers can select when creating the framework for TSOs willing to provide the required transmission infrastructure. In this way ENTSO-E wishes to enable transmission investments, which in turn deliver increased welfare for the EU community.



REACHING EU POLICY GOALS = INVESTMENT CHALLENGE

Electricity transmission infrastructure investments are a precondition to attain European policy goals in the field of climate and energy:

- **Sustainability:** The generation fleet will experience a major shift by 2030 and beyond, with the replacement of much of the existing capacities with new ones, most likely located differently and farther from load centres, and involving high RES (renewable energy sources) development. This transformation of the generation infrastructure is a major challenge for the high-voltage grid, which must be adapted accordingly.
- **Security of supply:** Maintaining high levels of system reliability and ensuring security of supply, facilitating European solidarity to withstand short-term disturbances and providing for long-term primary resource diversification requires strong transmission grids, in particular in the changing context characterising the future of the energy system.
- **Competitiveness:** Achieving a truly interconnected and integrated energy market, enabling market opening and enhancing competition can only be met by further investing in the underlying transmission backbone.

As also acknowledged by European policy makers (e.g. Oettinger (2012)), unlocking the welfare pursued by these policy goals will require massive transmission infrastructure investments. Indeed for the projects identified in the 2014 ENTSO-E Ten Year Network Development Plan alone about € 150 billion investment will be required. As illustrated in Figure 1, the investment needs are significantly larger than the TYNDP. While transmission infrastructure policy mainly focusses on the Projects of Common Interests, it is important to realise that those projects are only a subset of the TYNDP. But all projects, not just PCIs and TYNDP, are needed to deliver the policy goals in a timely and efficient way.

CAPEX/TYNDP investments – past vs. future

CAPEX: capital expenditures

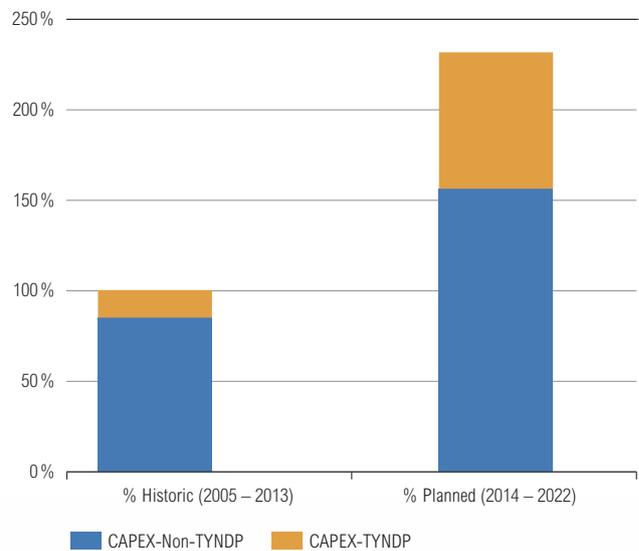


Figure 1: Transmission investment volumes in Europe: past versus future (Source: TSO survey conducted by ENTSO-E)

TRANSMISSION INVESTMENT CHALLENGE = TSO FINANCING CHALLENGE

Figure 1 clearly shows a 140 % capital requirement increase over the next 8 years. Thus the required investments cannot be funded alone from business as usual, and additional capital is required. Regulatory systems determine how much capital a TSO needs and whether it is feasible to attract that capital. This is an important observation which should trigger a careful review of the mechanisms by which TSOs are financed and whether those mechanisms can ensure the ‘financeability’ of the investment challenge.

TSOs are regulated monopolies whose regulatory framework is determined by the national regulatory authorities (NRAs). This framework determines how they are financed as it defines how risks and rewards are allocated between investors and society (i.e. grid users) by means of transmission tariffs. It determines the remuneration for capital providers and sets incentives to ensure TSOs behave efficiently.

Today’s regulatory frameworks are mostly backward-looking and focused on efficiency incentives, with no or little attention paid to investment incentives. It is almost as if the overall context and the expected future were ‘business as usual’. This means that cash inflows provided by network tariffs are today mostly determined by the depreciation of existing investments. A financeability issue arises when a discrepancy emerges between the cash outflows of the TSO as a result of investments, and current cash inflows resulting from tariff income. Today’s investment challenge clearly requires investment levels (i.e. cash outflows) which are significantly higher than the depreciation of existing investments. Therefore, backward-looking regulatory frameworks are ineffective at meeting the existing investment challenge and result in increasing pressure on TSOs financial sustainability.

A political commitment to reach EU policy goals necessarily also implies a financial commitment i.e. that grid tariffs will increase to implement the needed investments. A continuous mismatch between cash-in and cash-out flows would lead to deteriorating key metrics used in defining credit risk and could therefore put TSOs’ financeability at risk, thus increasing the cost of capital. An increased cost of capital for TSOs would, in turn, result in increased costs for the society. The investment challenge thus also implies a financing challenge.

In light of this challenge, the regulatory framework needs to be reconsidered so that future tariff increases are kept to a reasonable level and remain sustainable over the long term. ENTSO-E’s proposals explained in this policy brief (and position paper) support such sustainable evolution.

THE CHALLENGING STATUS QUO

If the current transmission regulatory framework remains without adapting to the present context, the consequences can be serious in terms of RES deployment, market integration and security of supply. Europe would confront a ‘regret scenario’.

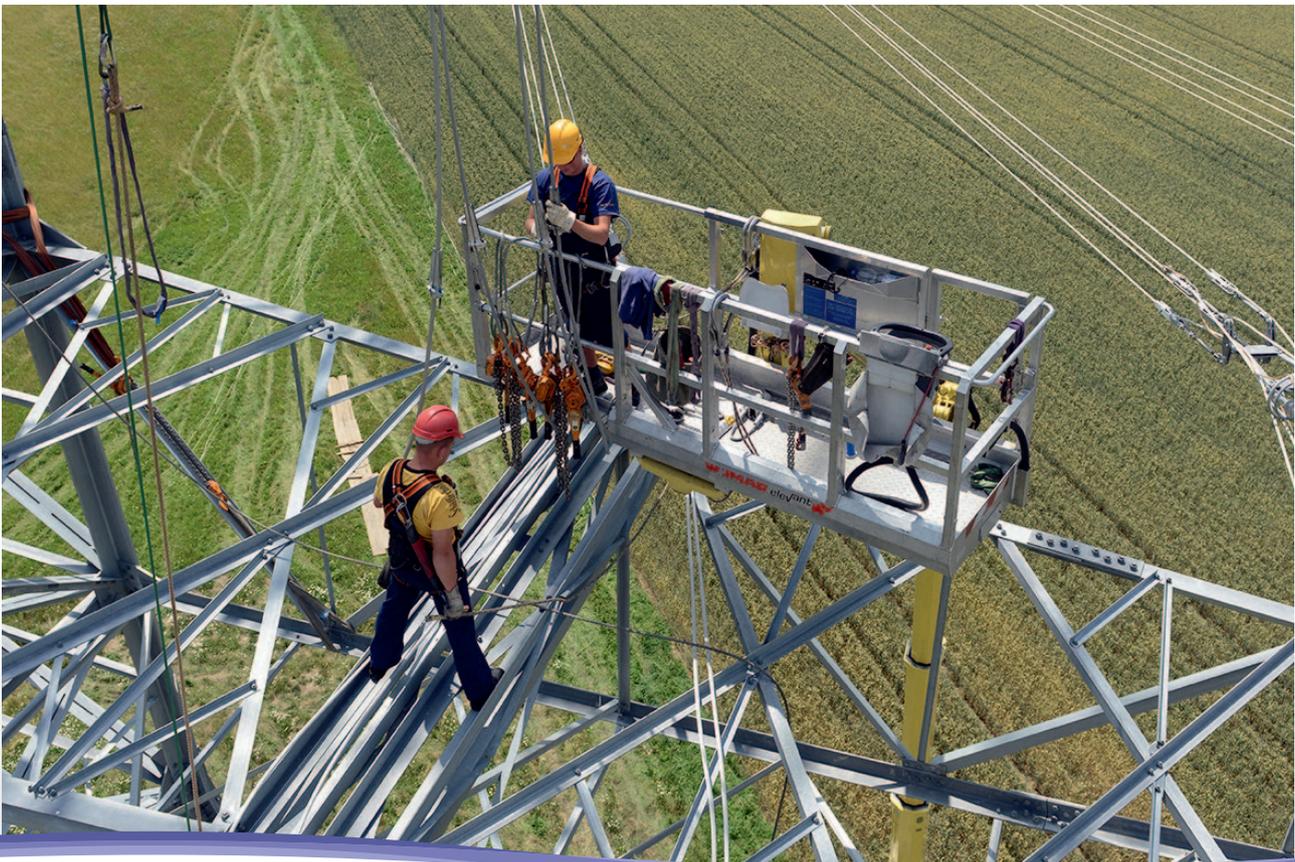
A recent study from the Florence School of Regulation has shown that the level of investment achievable with existing tariff levels is much lower than needed.

ENTSO-E believes the challenging long-term goals of a sustainable, secure, and competitive European energy system are unlikely to be achieved if TSO regulatory frameworks remain unadjusted to reflect the new context of required investments. Europe’s electricity industry will find itself in a ‘regret scenario’.

Of course, adapting TSO regulatory frameworks to a context of huge investment needs will lead to increased network tariffs. But this tariff rise will be in exchange for a larger net increase in welfare for the

European economy. ENTSO-E TYNDP and regional development plans along with national investment plans ensure that grid reinforcements globally increase the socioeconomic welfare for all EU countries. The enhanced market integration will reduce bulk power prices by 2 to 5 €/MWh, enable the mitigation of 20% of power sector CO₂ emissions by 2030 and enable the expected major shift in the generation pattern due to increase in RES (ENTSO-E, Ten-Year Network Development Plan 2014).

It follows therefore that if TSO regulatory frameworks are not adapted to the investment challenges lying ahead, it will imply a welfare loss.





HOW TO AVOID THE REGRET SCENARIO? AN ENTSO-E PROPOSAL FOR A REGULATORY TOOLKIT.

The regulatory framework sets out the general conditions for TSOs to run their business. Regulation has a direct influence on the capability of TSOs to carry out activities efficiently while properly rewarding shareholders and reimbursing debts as they mature. Therefore, an adequate design of the TSO regulatory framework must be at the heart of any sustainable solution aimed at avoiding the negative outcomes of the described ‘regret scenario’.

ENTSO-E believes that, in order for the long-term European energy policy goals to be achieved, a new holistic approach for regulating transmission businesses is required. Given the present energy scenario and the investment challenge ahead, TSOs’ regulation should move on from the narrow focus on cost efficiency towards an innovative regulatory approach focused on ‘global efficiency’ that has a better trade-off between efficiency incentives and investment incentives.

THE FOLLOWING PRINCIPLES ARE IMPORTANT TO ADHERE TO:

1 Providing a fair risk-reward balance to TSOs:

The trade-off between risks borne by investors and those borne by society should result in fair remuneration for TSOs. TSO regulatory frameworks should provide clear rules on cost recovery and, where considered appropriate, be complemented with incentives steering TSOs towards a desired outcome.

2 Granting long-term stability and commitment to the regulatory arrangements:

For long-lasting investments the risk-reward balance should be stable and predictable for investors during the whole asset lifetime.

3 Ensuring that the regulatory framework is fit for purpose (appropriate TSO cash flows to invest in the context of Europe’s energy and climate policy goals):

Regulatory frameworks should fit with existing policy goals, which require massive investments from the TSOs.

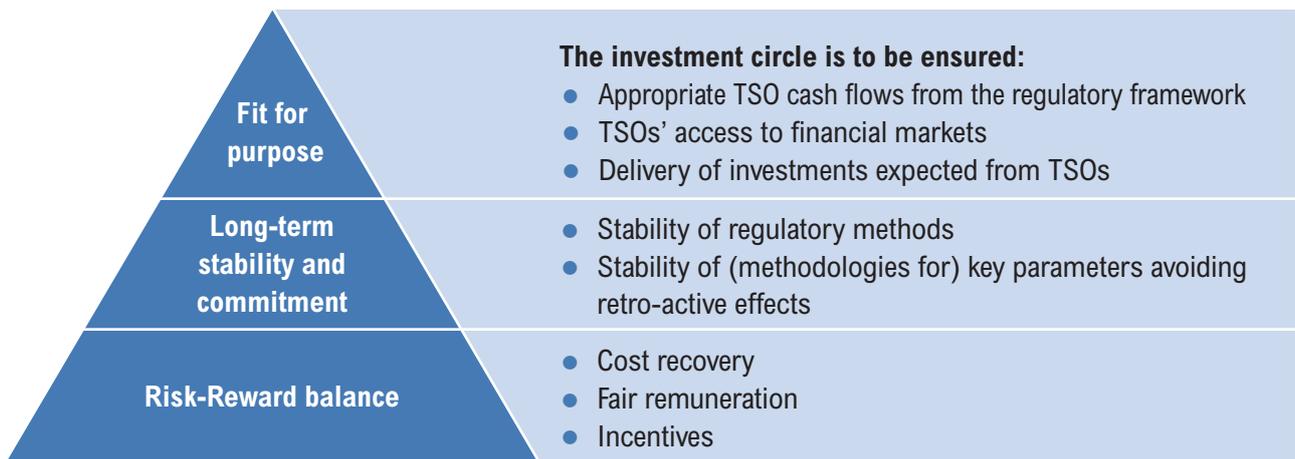


Figure 2: The package of regulatory principles
(Source: own illustration)

All three key principles for regulatory frameworks described above should be used in any re-design of the regulatory framework, and should very much be treated as a package.

It is also important to note that in considering the measures and the range of their applicability (i. e. does the measure apply to the entire investment portfolio or to a specific subset such as PCIs?), a distinction

should be made between prioritisation and financeability. Prioritisation ensures that projects entailing a higher direct benefit for Europe are given precedence. In a context of mainly balance-sheet financed TSOs, prioritisation is necessary where projects exist that exhibit higher complexity and risks compared to the average, but are nevertheless highly desired by policy makers. Financeability concerns the challenge of safeguarding TSOs' ability to finance their activities, as explained above.

REGULATORY TOOLKIT

The abovementioned principles should be used to derive concrete actions. It does not suggest that all regulatory frameworks should become identical. The principles can be met in different ways and leave sufficient freedom to be tailored to the context of national regulatory frameworks. At the same time, it does not exclude initiatives at the European level to promote these principles.

ENTSO-E suggests a toolkit of different possible measures that help address the funding gap¹⁾:

- Reimbursement of capital expenses during construction
- No time lag for remuneration
- Investor-attractive rate of return (general)
- Rate of return (priority premium)
- Predictable returns
- Regulatory approval of transmission investments
- Stable efficiency incentives
- Remuneration of depreciated assets
- Regulatory treatment of investments funded by grants
- OPEX allocation

¹⁾ For a detailed description and interpretation of any of these tools, please consult the 2014 ENTSO-E position paper

RECOMMENDATIONS FOR POLICY MAKERS

RECOMMENDATIONS

NRAs control the regulatory environment in which TSOs operate and therefore remain a key party in achieving Europe's energy goals. Therefore, regulatory authorities should actively set up regulatory frameworks fostering investment and thereby enabling TSOs to overcome the investment challenge, by using some of the measures from the toolkit suggested by ENTSO-E. Policy makers, both at national and European level, should be aware that only by creating a fair and correct investment climate transmission infrastructure can emerge at full strength and contribute to the policy goals.

FURTHER READING

- ENTSO-E position paper 2014 'Fostering electricity transmission investments to achieve Europe's energy goals: Towards a future-looking generation'
- Henriot, Arthur: 'Financing investment in the European electricity transmission network: Consequences on long-term sustainability of the TSOs financial structure.' Energy Policy 62 (2013): 821-829. (<http://www.sciencedirect.com/science/article/pii/S030142151300654X>)
- ENTSO-E (2014), Ten-Year Network Development Plan 2014, Full Report, 10 July 2014, public consultation document: <https://www.entsoe.eu/major-projects/ten-year-network-development-plan/tyndp-2014/Pages/default.aspx>
- Oettinger, Günther (2012): Connecting Europe Facility, p3 (available on [2014 09 15]: <http://ec.europa.eu/energy/mff/facility/doc/2012/connecting-europe.pdf>)

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