



**Position on incentivising smart investments to improve the efficient use of
electricity transmission assets**

November 2021

The Challenge

The European Green Deal is targeting a 55% reduction in greenhouse emissions by 2030 and net neutrality by 2050. As published by the European Commission¹, getting to such ambitious targets means a massive change of scale for the sector in less than 30 years, at a speed unparalleled by the past development of other energy technologies.

Such ambitious targets require action from all stakeholders. As electrification is a key facilitator of this clean energy transition, vast investments in the electricity network are inevitable and estimated at more than EUR 500 billion. This means doubling grid investments compared to those of the last decade. The immediate question one might ask is how EU will accomplish this with the existing hurdles in our way, such as delays, financing issues, etc.

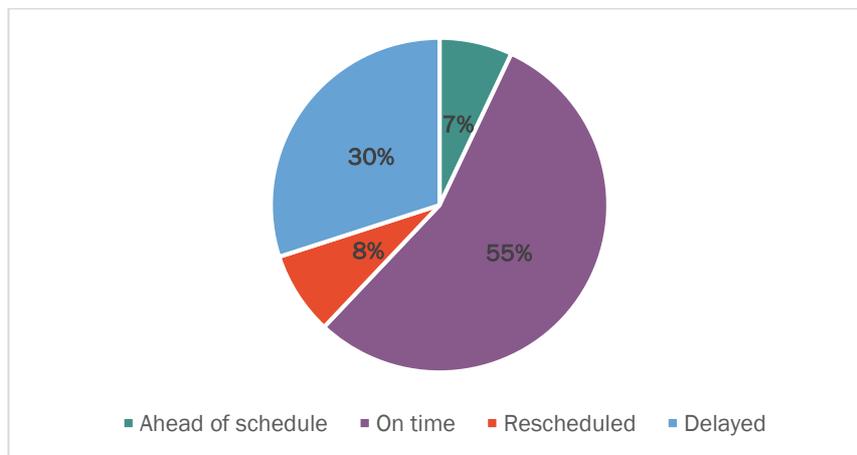


Figure 1: Almost 40% of Projects of Common Interest are being delayed or rescheduled

Facing these challenges, the EU Agency for the Cooperation of Energy Regulators (ACER), turns its focus to efficient use of existing (and new) infrastructure. Ensuring infrastructure is efficiently used constitutes a key priority to promote overall welfare. Here, the national regulatory authorities (NRA) could play a pivotal role, improving, where needed, their regulatory frameworks to properly incentivise smart investments towards optimally efficient use of electricity grids, thus lowering the overall costs of the transition ahead.

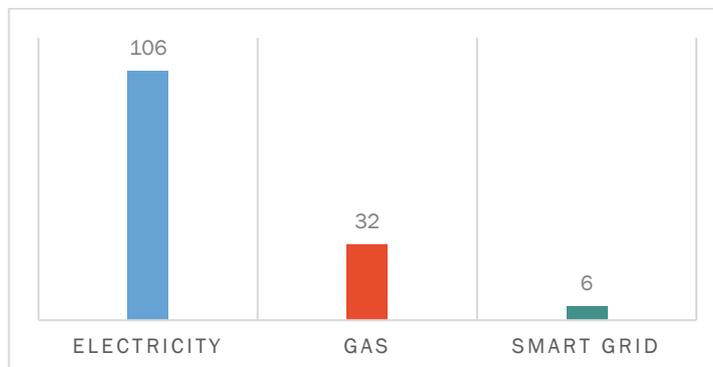


Figure 2: Comparing the number of projects from the 4th list of Projects of Common Interest

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0741&from=EN>

Our Findings

Recent years found a lot of research focusing on regulatory frameworks and how they should stimulate innovation²⁻³⁻⁴. These findings concluded that innovation can be influenced by the regulatory environment. Currently, innovation is mostly promoted indirectly via the general regulatory framework and/or some specific features regarding incentives for network performance (e.g. output-based regulation). Stakeholders offered different proposals on incentivising innovation, such as setting a fixed amount of Transmission System Operator (TSO) revenues to be used for innovation, or the establishment of “sandboxes” to help test innovative solutions. In ACER’s opinion, although such proposals could facilitate TSOs to innovate, they do not sufficiently address the lack of wide-scale deployment of innovative (yet sufficiently mature) solutions.

This ACER paper focuses on incentivising the efficient use of infrastructure, which can be considered as one of the measurable effects of innovation. By properly incentivising efficiency, ACER believes the regulatory environment would create new opportunities for innovation to prosper. In addition, the aim of increasing efficiency would trigger a wide deployment of efficient and often innovative solutions, bringing their benefits to consumers and other network users.

In this regard, ACER considers two aspects of current regulatory settings in need of improvements:

- the capital expenditure (CAPEX) bias⁵,
- incentives for TSOs to opt for less costly investments.

ACER investigated these issues through targeted surveys run within both the NRA and TSO communities, focusing on the treatment of innovative investments in the current regulatory national practices and how one of their measurable objectives, i.e. improving the efficiency of use of existing infrastructure, is or could be incentivised.

The findings indicate that despite the fact that the majority of TSOs⁶ have already deployed innovative solutions in most fields of their work, the implementation of innovative investments is still not extensive enough to unlock their entire potential to network users and society in general. This seems to be the case even though 35% of the responding NRAs deploy monetary incentives to their regulated TSO(s) for advanced and innovative solutions that reduce total expenditures (TOTEX) compared to traditional solutions achieving the same benefit.

However, as the TSOs’ expected profit is many times higher⁷ for a conventional infrastructure investment (e.g. an overhead line) compared to an innovative solution achieving the same benefit (e.g. dynamic line rating), the gap between the compared profits seems too wide to be bridged by existing incentives.

² <https://op.europa.eu/en/publication-detail/-/publication/6700ba89-713f-11e9-9f05-01aa75ed71a1/language-en/format-PDF/source-96288082>

³ <https://www.ceer.eu/documents/104400/7006065/Status+Review+Report+on+Regulatory+Frameworks+for+Innovation+and+Security+of+Supply+in+Gas+Transmission+Infrastructure+-+21+December+2020/dee0bbd8-59db-0992-574a-94cede1623ff>

⁴ <https://www.ceer.eu/documents/104400/-/-/8c2aace7-5601-8723-4d45-337073af38d5>

⁵ CAPEX bias is a result of differently remunerating operational (OPEX) and capital expenditures, creating a favourable environment to invest in CAPEX heavy solutions.

⁶ For 7 out of the 12 categories of innovative solutions, most of the TSOs replied that they have already deployed such solutions (ranging between 56% and 72%). For the remaining 5 categories, a considerable level of deployment was also identified, but with lower involvement ranging between 30% and 47%.

⁷ In the example provided in the ACER survey, the Return on Investment was more than 7 times higher for conventional infrastructure investments versus revenue from innovative solutions.

The reason for TSO profits on conventional infrastructure solutions being several times higher than those coming from smart solutions is the difference in their costs. With “rate of return” regulation, where the remuneration principle is based on repaying regulated entities for the incurred costs plus a rate of return reflecting the cost of capital, solutions with a higher cost generate bigger profits.

When addressing a need to invest, lower cost solutions seem unattractive compared to the higher profits of higher cost solutions. This goes beyond the previously mentioned, and already widely investigated, CAPEX bias⁸. In general, the attractiveness of innovative solutions, which are usually of lower (total) costs and often more operational expenditure (OPEX) intensive, is currently far from optimal for the TSO and needs to be adequately increased.

For TSOs, an additional side-effect of investing into smart, innovative solutions which increase the efficient use of existing assets is that as the utilisation of the system increases and the system approaches its actual physical limits, more attention to all system parameters (i.e. further sophisticating the system operator tasks) is required. The resulting increased risk of faults and the need to mitigate them further discourages TSOs from implementing efficiency oriented solutions.

Conclusions

Each of the above reasons is sufficient to tip the scale in favour of classical infrastructure investments. To create an environment fostering a wide-spread implementation of innovative, efficient solutions, which may compete with classical investments, NRAs need to first consider existing regulatory tools, such as setting the appropriate rate of return.

If existing regulatory tools are insufficient, lower cost investments could be incentivised by granting project promoters a fair share of the monetised benefits which the specific investment brings.

Linking the incentive directly to the measurable benefits of the investments guarantees that innovation is focused where its effects are determinable. Such incentives should be set in a way to ensure the investment’s value to the network user (i.e. not increasing the overall electricity cost). Their rules and parameters should be defined ex-ante to avoid any potential dispute and to allow predicting economic impacts and, as far as feasible, avoid exogenous parameters impacting the results. Further, a part of monetised benefits an investment brings to society could be shared ex-post with the TSO, i.e. after they are achieved (e.g. increased congestion income or reduced energy not served).

In order for the incentives to be implemented, ACER recommends that such projects are accompanied with either a full Cost-Benefit Assessment (CBA), clearly establishing and monetising (to the extent possible) the project benefits, or a standardized model/template approach, which would aim at simplifying the CBA process for smaller investments.

In addition, such incentives should be reassessed over time and the newly achieved performance, once structurally achieved, should become a standard expectation, at which time the benefit sharing would stop.

ACER also recognises the potential contribution of network key-performance indicators (KPIs) in measuring the impacts and the benefits of TSO investments and consequently of KPI-based incentives.

⁸ In most regulatory regimes, CAPEX is remunerated with rate-of-return while OPEX is remunerated on a current basis or capped over a pre-defined period, earning no such return.

Some major KPIs could be implemented in all Member States to facilitate harmonised setting of metrics and to allow, to a certain degree, comparable results⁹.

ACER plans to continue facilitating NRAs' discussions on overcoming the identified hurdles, such as the CAPEX bias¹⁰ and the general lack of appeal of low cost solutions along Europe's path to reach the Green Deal objectives. In light of the findings of this position paper and with the aim to share best practices, ACER proposes to also include TSOs and other stakeholders in these discussions.

⁹ Taking into account the inherit differences between individual Member States.

¹⁰ E.g. through fixed-OPEX-CAPEX-share (FOCS) or other solutions.