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Climate proof Europe's power grid

current'S SEVEN RECOMMENDATIONS TO POLICY MAKERS



CURRENT

Enabling Network Technology
throughout Europe



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Our Vision

currENT, the trade association for Enabling Network Technology throughout Europe, stands for climate-proof power grids, which we believe are paramount to Europe's Green Deal.

Our vision is a European power network that is the recognised world leader in enabling decarbonisation through the efficient use of modern grid technology.

We believe that renewable generation, coupled with electrification, is the 'first order' solution for the economic decarbonisation of Europe. Renewable-based electricity solutions can meet, by 2050, more than 70% of our total energy needs. As to make the 'can do' a 'will do' we need powerful climate proof power grids. Such grids are already possible today.

Power networks – both transmission and distributions – have to become even stronger enablers and accelerators of the energy transition.

currENT members offer solutions that climate proof existing power networks and add innovative elements to the new ones that are yet to be built. Power networks can be optimised and reinforced through our innovative solutions, and additional networks can start off with the latest state-of-the-art technology.

Our Mission

The members of currENT are united in their commitment to climate proof the electricity grid. Our solutions enable power networks to deliver the energy transition at least cost; in a secure, sustainable and socially responsible manner.

Our Seven Recommendations to Policy Makers

Regulation of electricity network companies plays a key role in enabling the energy transition and achieving the ambitious global targets set out in the European Green Deal.

currENT, launched in June 2020, encourages policy makers both at European and national levels, but also network operators and regulators, to adopt the following seven recommendations.

These recommendations will enable a framework that supports the uptake of new solutions in Europe's power networks.



1. Align regulation with European long term (2050) energy, climate and social policy

There are many new regulatory measures and changes planned for 2020; from the Offshore Communication, to the Smart Grid Indicator, to the revision of the TEN-E Regulation. It is critical that these regulatory measures are aligned with one another and with top-level energy-, climate- and social policy in order to deliver on our one common goal: the European Green Deal.

We want to see an approach that considers what needs to be achieved over the next decades to ensure we reach climate neutrality by 2050. This approach involves looking back from the future and answering the questions:

- What technologies are best suited to deliver the Green Deal and Europe's climate neutrality?
- How can regulation facilitate their introduction and implementation at scale?

Regulation must be treated as a set of measures that work collectively to deliver on top-level policy, rather than separate measures acting independent of each other. For this reason, increased European coordination is needed to support the planning and development of a fit-for-purpose 2050 power grid for Europe. Given the central role of power networks, this holistic approach to regulation must be the starting point for a successful Green Deal.

What it means for regulatory proposals coming forward

We propose that CEER and ACER jointly publish an annual impact assessment report on how regulation across Europe is facilitating/not facilitating progress towards the 2050 climate neutrality target, building on the National Energy and Climate Plans (NECPs).

This should include an explicit section on how each country is addressing the barriers for non-wires or alternative solutions, and how successful they have been at removing the barriers and implementing these solutions.

NRAs could be required to report annually on their country's progress, which CEER and ACER could use to inform their report and identify the best practices.

The wider stakeholder community should be involved in the development of the best practices, particularly stakeholder groups such as ETIP SNET and ENTSO-E who regularly develop recommendations for regulators to implement at national and European levels.



2. Accelerate near-term investments that future proof and strengthen resilience of power grids

Power networks must not delay Europe's green recovery from the unprecedented COVID-19 crisis. The EU's Recovery Plan announced in May 2020 is a roadmap to restart our economy and create a more green, digital and fair future for all Europeans, in line with the Green Deal. To deliver on this plan climate-proof investments in power networks must continue to take place, and the deployment of renewables and use of next-generation solutions must be accelerated.

Rapidly deployable solutions enable network operators to quickly adapt to the changing needs of their grid, and maintain a high standard of security of supply in a cost effective and sustainable way.

These solutions can lead to the quicker release of additional capacity on the existing network, and can often be re-deployed; giving greater long-term flexibility to network operators and increasing the robustness of grids against future uncertainties. Furthermore, solutions that provide pointed support to maintain grid stability and increase overall observability can enhance the preparedness of European power grids towards risks such as climate change and cybersecurity, thus strengthening the resilience of the network as a whole.

Regulation must encourage the use of these solutions to resolve urgent, near-term or short-term network needs, and to improve the robustness and resilience of grids, in order to avoid wasted investment in under-utilised or stranded assets.

What it means for regulatory proposals coming forward

European and national regulators should introduce mechanisms that enable network operators to invest in rapidly deployable solutions that meet their urgent, near-term or temporary needs, particularly as part of the Covid-19 recovery. These solutions should be selected based on the functional requirement (i.e. the network issue to be resolved) rather than specific technical specifications of traditional solutions. Such mechanisms could involve incentives for resolving short-term or temporary needs, or new financial mechanisms for recovering costs of new grid technology solutions such as leases.

The bias towards traditional equipment as more reliable solutions has to be challenged, as many new grid technologies can more effectively and more quickly strengthen the resilience of the power network by providing greater flexibility, controllability and adaptability to changing network conditions and needs. This needs to be fairly reflected in the new regulatory measures and updates planned for 2020, and also in the investment decisions and technology assurance processes at national or European levels. Specifically, the need to consider the use of alternative solutions for resolving near-term/short-term needs, future-proofing the network and strengthening its resilience should be built into the Smart Grid Indicator (SGI), Energy Efficiency Directive (EED) and the recommendations of the 2020 Copenhagen Infrastructure Forum.



3. Optimise existing grids and build new ones where needed

At least €590.2 billion is planned to be invested in power networks in Europe over the Twenties until 2030¹. Regulation must direct this investment towards the best solutions for delivering a carbon neutral network by 2050.

Today, new grid investments are often made before the capacity on the existing grid is fully utilised.

Building new grids requires large amounts of capital investment, and typically takes many years to consent and develop. Public opposition and administrative hurdles make the implementation of approved projects challenging. In this way grids can become a major bottleneck for the energy transition, rather than an enabler.

Regulation must support the optimisation and reinforcement of existing grids as a first step, like the NOVA Principle in Germany². New grid technologies can enable network operators to maximise the capacity on the existing grid, minimise constraint costs, increase network resilience, and create more flexibility on the network.

Utilising this available capacity can deliver earlier benefits to consumers while new infrastructure is in permitting or under construction, and in some cases even defer or eliminate the need for the infrastructure. Furthermore, new grid technologies tend to be more economically efficient than traditional alternatives, and thus save money for end-consumers who are ultimately financing the green energy transition.

Where the existing network is insufficient or non-existent (e.g. offshore grids), investments should be directed only towards those infrastructure projects/new corridors that are identified in a pan-European decarbonisation roadmap as being critical to delivering on the EU Green Deal.

By taking this roadmap approach to network development, we can minimise the risk of inefficient investments, and ensure that the necessary investment decisions and steps are taken over the next few decades to achieve the long-term objectives.

¹ https://ec.europa.eu/clima/sites/clima/files/docs/pages/com_2018_733_analysis_in_support_en_0.pdf

² <https://www.transnetbw.com/en/world-of-energy/nova-principle>



What it means for regulatory proposals coming forward

The need for maximising the use of the existing network must be reflected in the 2020 Copenhagen Infrastructure Forum recommendations, the SGI, EED, and the Offshore Communication.

A principle similar to the NOVA principle of the German regulator, BNETZA, which foresees 'optimisation ahead of reinforcement ahead of new built' needs to be transparently applied and implemented by NRAs across Europe. This should be further supported by ACER and CEER as a network planning 'best practice' for all network companies.

By evaluating investments through the lenses of 'climate', 'efficiency' and 'urgency', the investments that are most essential to meet the near-term network needs and deliver on the long-term European strategy can be prioritised. This evaluation criteria must be included in the updated TEN-E Regulation, as well as the Offshore Communication, but also be part of the investment evaluation checklists of public banks, such as the EIB.

It is important that the necessary steps are taken in the near-term to ensure that the longer-term targets are achievable, particularly for offshore grids which need a more structured investment roadmap for how we get from today to climate neutrality by 2050.

Given that the majority of new wind farms will be offshore, the Offshore Communication in 2020 must support the development of a co-ordinated pan-European roadmap outlining how this offshore wind will be integrated into the European network over the next few decades.

The roadmap will undoubtedly include investment in the development of new offshore grids, and the building-out of capacity to transport the wind energy from the shore to demand centres.



4. Use Social Cost Benefit Analysis when assessing power network investments

The current Cost Benefit Analysis (CBA) applied to most network projects is insufficient³. A CBA should capture the full societal impact of a project, not just the monetary costs and benefits. Such a CBA is referred to as a Social CBA (SCBA) and is already in use for Projects of Common Interest (PCIs). The SCBA used for PCIs could be further improved to capture the value of the below factors and introduced as a mandatory requirement for all cross border and national projects over a certain threshold. Any SCBA or other project evaluation process should include consideration of the following factors:

- Support for the achievement of policy objectives (e.g. the Green Deal)
- Flexibility of the solution (its capability to adapt to changing situations)
- Deliverability of solution and risk of delays
- Disruption to the environment and communities by the works required to deliver the project
- Benefits of early delivery.

While in most cases the SCBA is the best approach, it must be recognised that there are some exceptions. For example, for offshore grid projects it may not often be possible to accurately calculate the benefits of such projects until the allocation/scale of offshore wind generation and associated network is planned, and some investments will need to be anticipatory with reference to a plan or roadmap (per recommendation 2).

What it means for regulatory proposals coming forward

currENT members wish to see a transparent process to update the current CBA methodology to a SCBA that better captures the full societal impact of any solution that is under consideration for a project. The concept of a SCBA for non-PCI projects should be brought to the attention of key industry stakeholders by adding it to the agenda for the 2020 Copenhagen Energy Infrastructure Forum.

In order to present a well-developed SCBA at the Forum, we recommend the immediate formation of a SCBA Working Group (WG) led by ACER and supported by the Copenhagen School of Energy Infrastructure and Florence School of Regulation. This WG has to include key parties and stakeholders such as the EC, EP ITRE, CEER, ENTSO-E, ENTSOG, EUDSO and representatives of EURELECTRIC, WindEurope, Solarpower Europe, SmartEN, T&D Europe and currENT.

We propose that the updated SCBA methodology is included in the provisions of the revised TEN-E Regulation, and that ACER ensure its application through NRAs for non-PCI projects at both a national and European level.

³ 2019 Copenhagen Infrastructure Forum https://ec.europa.eu/info/events/energy-infrastructure-forum-2019-2019-may-23_en



5. Increase transparency in network development and operational procedures

Increased transparency and consultation on network development and operational procedures enables industry stakeholders to share their knowledge and perspective, by identifying and proposing improvements to existing plans. This facilitates the selection of better solutions for all of society, by enabling all stakeholders to contribute their views. Transparency is central to ensuring that new technologies are fairly considered, evaluated and ultimately taken up if they are deemed the best solution.

Transparency and consultation is particularly important for processes that evaluate potential solutions such as the NOVA principle, Technology Readiness reports, or the SCBA. Increasing the transparency in these processes ensures that there is technology neutrality at the initial solution identification phase (i.e. that any solution that meets the defined functional requirements is considered), that alternative options are considered as part of the selection process, and that the criteria for the final solution selection includes whether it contributes to achieving the EU's energy targets. This transparency is also critical to ensuring that the learnings and best practices of innovation projects are shared with the wider energy community, thus avoiding wasting money and resources on duplicating pilots of already proven technologies.

What it means for regulatory proposals coming forward

To address today's information asymmetry, currENT members wish to see a reference to transparency and related mandatory actions integrated in all regulatory measures due to be introduced or updated in 2020. The European annual energy Forums are appropriate places to discuss the state of transparency, and the European Commission should define a process for how transparency can be enforced at national and European levels. We recommend that the multi-stage consultation principles of Australia's Regulatory Investment Test for Transmission (RIT-T) Consultation Process are reflected in this process.⁴

The current TEN-E Regulation requires candidate PCIs to undergo a transparent consultative selection process, which we believe should be applied to non-PCI projects too, especially large national or cross border projects. We also propose the addition of a mandatory provision that stakeholders' responses must be addressed by the consulting party, and that the reasons for selecting one solution over alternatives are published where at all possible.

The Smart Grid Indicator (SGI) due to be implemented by NRAs across Europe in 2021 should also involve a transparency obligation to ensure there is transparency in terms of how it is applied by each NRA/network company, the outcome of the assessment, and the actions to be taken to improve the network company's performance in future years. This information should be disseminated transparently, and stakeholders invited to share their views on how the SGI metrics and results can be improved.

⁴ <https://www.aer.gov.au/system/files/AER%20-%20Final%20RIT-T%20application%20guidelines%20-%20September%202017.pdf>



6. Opt for an output-based regulatory approach, and incentives and obligations for license holders to trial and implement new technologies

Several assessments of European and national regulatory frameworks, such as the Ecorys et al 2019 report for the European Commission⁵, challenge the cost-based regulatory models commonly used across Europe. Such assessments often see these regulatory models creating a bias towards large CAPEX investments that is hampering the uptake of alternative solutions that are less capital-intensive.

currENT members propose that the CAPEX bias is lessened through taking a more output-based approach to regulation, where there is more focus on the target outcomes of network investments, rather than the type of solution chosen and whether it is CAPEX- or OPEX-based.

This approach needs to be reinforced by output-based incentives that support greater investment in trialling new technologies, and ultimately transitioning these technologies to Business As Usual (BAU) investments.

Network companies play a key role in bringing innovation to large-scale implementation, thus they should be incentivised to invest in innovation. However incentives alone are not effective in creating behavioural change, and thus these incentives must be complemented by obligations.

There should be an obligation on network companies to transparently share their innovation experiences, learnings and best practices with the wider energy community, to minimise the risk of wasting research money and duplicating work on proving a technology that has already been proven on another network.

Furthermore, it must be recognised that the private sector and other industry players are at the forefront of developing innovative solutions, and thus should be more involved in the innovation process.

By taking an output-based approach and incentivising network companies to invest in innovation, the regulatory framework can support the wider energy industry in developing and implementing the solutions that are most critical to meeting the near-term and long-term needs of the power network.

The greater involvement of these industry stakeholders also ensures that innovation is being directed towards the right areas and types of research.

⁵ https://ec.europa.eu/info/publications/energy-infrastructure-forum-2019-background-papers_en



What it means for regulatory proposals coming forward

The reference to output based solutions and what it means in tenders has to be taken up in the updated TEN-E Regulation and referred to in other legislative pieces, like the Offshore Communication.

Introduce an explicit category for innovative network technologies in large, R&D demonstrations and scale up funding projects supported by the Innovation Fund⁶.

License holders should be obligated to participate in transmission and distribution R&D via Innovation Fund projects or similar at a measurable rate. This R&D should be focused on certain pre-defined criteria, determined in line with a long-term grid plan (2050+).

In this way, if a feasible project is put forward by industry then the license holder should have to transparently justify the reason for their non-participation, in the context of a rebalanced, long term socio-economic CBA rather than short term project costs. This would ensure that license holders continuously invest in R&D demonstrations that are critical to achieving 2050 targets, and that will deliver societal, environmental and economic benefits in the long-term.

The agreed metrics in the common Smart Grid Indicator (SGI) should be included as part of this output-based regulatory scheme, and incentivised/mandated accordingly. Furthermore, the SGI recommendation to the 2020 Copenhagen Infrastructure Forum, and national legislation, must include suitable incentives and obligations for network companies on trialling and implementing new solutions and a requirement to transparently report on the conclusions.

NRAs should encourage licensed network operators to pilot new technologies e.g. 'regulatory sandboxes' that enable them to pilot new technologies responsibly without penalty under their license conditions.

We also propose that updates to the Energy Efficient Directive (EED) includes an incentive for network companies to meet and exceed the network efficiency metrics when the EED is implemented at national level.

⁶ https://ec.europa.eu/clima/policies/innovation-fund_en



7. Develop a structured, transparent, and collaborative approach to qualification of innovative solutions

Innovative solutions fall into different categories based on their technological maturity, 'Technology readiness', which is measured in Technology Readiness Levels (TRL).

Regulatory frameworks must differentiate between these categories, as low TRL solutions need to be piloted whereas mid or high TRL solutions have already been proven and thus the focus should be on implementing these solutions at scale.

A structured transparent approach is needed for the qualification of new technologies, with a view to enabling qualified solutions to be considered as alternatives to traditional solutions in network planning and operations. The qualification process should be driven by the long-term business needs of the network company and an output-based approach should be taken to which technologies are qualified (i.e. focusing on the network needs not specific types of technology).

In many countries the uptake of new technologies is slow due to long pilot processes, low levels of shared learnings between network companies, and a lack of a structured process for adding new solutions to the technology toolbox. This ultimately results in a high 'cost of delay' for society.

However, this could be reduced by introducing an accelerated process for qualifying and implementing new technologies, which would enable end-consumers to benefit from the technology as early in the process as possible.

This would need to be supported by a greater sharing of learnings between network companies to ensure that all European consumers can benefit from the wealth of R&D, pilot projects and clean tech developments taking place in Europe.

What it means for regulatory proposals coming forward

We propose that a 'best practice' process for the qualification of new technologies is developed, and implemented by NRAs across Europe. We recommend that the process should involve the following steps:

- **Establish a timeline for qualification with milestones.** Progress on technology qualification should be jointly monitored by multiple teams within the network company, including the function responsible for large-scale capital investments that could ultimately implement the technology.
- **Identify the specific needs of technical qualification in advance.** The network company's teams should jointly decide what needs to be proven /demonstrated in the technology qualification process before the technology can be added to their toolkit and placed in wide scale usage on their network.



- **Identify the most efficient way of proving each component.** The relevant teams should decide on the best way to evaluate the technology in order to satisfy their technology qualification needs. This could include a reference from other network operators that have used the technology, site visits, studies (including highly detailed real time simulations), or if necessary, a pilot project.
- **Consider technologies proven in other projects.** The network company should review whether the technology was successfully qualified in other geographies with similar standards, or through R&D projects funded by national governments or the EU. This avoids wasting research money and duplicating work to prove a technology that has already been proven.
- **Consider the need to be solved when identifying which technologies to qualify.** The network company must focus on choosing technologies to qualify that have the potential to deliver long-term value to themselves, their customers and the wider stakeholder community. This minimises the risk of network companies spending their time and resources on qualifying technologies that are of low-value to them, and instead keeps their focus on accelerating the qualification of the most strategically important technologies. Network companies should run regular market surveys and/ or look at market surveys completed by other companies to keep up-to-date on the solutions available to them, and ensure all relevant solutions are fairly considered.

Given the huge advantages of learning from other geographies, we believe that the provisions of the TEN-E Regulation, the Offshore Communication, and other regulatory measures planned for 2020 must refer to this principle of best practice sharing and benchmarking. This should support faster technology assure processes in country B when country A has already successfully piloted the technology, which ultimately benefits consumers earlier than if country B had to duplicate the pilot process.

We believe that the ENTSO-E Technology report (related to TYNDP) could play a guiding role in the qualification of new technologies if it involves sufficient consultation and transparency.

We equally believe that the TEN-E Regulation update, the Clean Energy Package and the PCI selection processes must account for projects that are both the traditional 'big ones' and also the smaller and more innovative ones.

As R&D funds are often over targeted at pilots and demos, we encourage Horizon Europe and other energy innovation funding to be more balanced with respect to the various TRLs. As noted in point 6 above, we also want to see more involvement of industry stakeholders in innovation funding activities.



The way forward

currENT, in sharing these seven core recommendations, wants to contribute to the success of the European Green Deal. We remain at the disposal of policy makers and stakeholders alike for joining forces on work together on next generation grids for the next generation.

Timeframes: It is important that policy makers, for example when developing the Social Cost Benefit Analysis, distinguish between the immediate needs of the short term including COVID 19 and the Green Deal stimulus, the 2030 needs of the medium term, and the 2050 climate neutrality goal of the long term.

It is equally important that policy makers take the timeframe into account when assessing choices: how capable is the chosen technology option to respond to changing needs and future uncertainty, can it be scaled up/down or moved, and how fast can it be deployed?