

Feedback to the Guidelines on State aid for Environmental protection and Energy (EEAG)

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1. Context: Political ambition requires bold measures

The European Union intends to become climate-neutral by 2050. This will only work if we do everything we can right now to bring new energy-transition technologies onto the market **on a scale that's relevant to industrial applications. This won't work without a more targeted framework for state aid that facilitates the innovation and implementation of climate-neutral technologies.**

Becoming carbon-neutral is technologically feasible, but market and regulatory conditions will be decisive in order for these technologies to compete. Climate technologies still face significant market failures because the market doesn't give meaningful signals to support their uptake. This market failure also becomes apparent in companies' internal budget allocations: Improving the outlook of a business case leads to an immediate shift toward new climate technologies. **Therefore, industrial scaling and demonstrating technological feasibility require more focus and tailored political frameworks, including state aid rules. In fact, the legal clarity and scope of state aid rules need to match Europe's determination to become climate-neutral by 2050.**

Otherwise, Europe won't just fail to achieve its goals, it will also lose the race for global leadership in implementing new climate technologies. Creating the right framework *now* will allow industry to start operating industrial-scale demonstrators in three years; and it will take another two years to learn, redesign, and modify before commercial industrial deployment with manageable risks can begin. With **political leadership now, the European Union can translate state aid modernization into tangible industrial results by the end of the Commission's mandate.**

2. The example of Power-to-X: A key enabler of a carbon-neutral economy

In the areas of wind and solar energy, Europe has already embarked on the energy revolution. The largest wind turbine generated 30 kW in 1980: In May 2020 Siemens Gamesa launched its 14 MW offshore wind turbine. Nearly 30 percent of the electricity in Europe comes from renewable sources, and the two largest offshore wind-turbine manufacturers in the world come from Europe. Europe can repeat this industrial policy success with Power-to-X and hydrogen technologies like electrolyzers and H₂ gas turbines. These technologies are indispensable to decarbonizing

transportation, including road, aviation and shipping, and industrial processes, and to providing fossil-free security of the electricity supply. The amount of renewable energy needed will be massive: The DENA Leitstudie estimates in its technology mix scenario for Germany that achieving decarbonization of 95 percent will reduce the import of conventional primary energy by 2,446 TWh, while 744 TWh of climate-neutral energy carriers will need to be imported. This is almost four times the volume that Germany generated from renewables in 2018. The hydrogen roadmap described by the Joint Fuel Cell and Hydrogen Undertaking suggests that 5.4 million new jobs could be created throughout the EU.

The German Reallabore

In this context, Germany initiated the very ambitious Reallabore program to support the scaling-up of climate technologies, in particular Power-to-X and hydrogen technologies.

However, the program is unlikely to reach its full potential due to the limited funding scope:

- Funding is limited to €15 million per project partner, and it's spread out over five years
- The funding rate for companies is capped at 45 percent
- No OPEX funding is available

These funding rates and the lack of OPEX funding impose very high hurdles to testing new climate technologies at an industrial scale, like the **Siemens – RWE GET-H2 Project** in Lingen. The Lingen project could reduce CO₂ emissions by between 113,000 and 261,000 t, depending on the mix of the off-takers. The funding of operational costs – including the question of whether the supply of electricity will include taxes and levies – is a paramount factor in the competitiveness of Power-to-X technologies.

To turn renewable hydrogen technologies into the next gigawatt industry after wind, regulatory frameworks must be adapted so that using these technologies makes economic sense over the long run for all parties involved. **This also includes a provision requiring that Member States provide sufficient financial resources to test these technologies on an industrial scale along with a variety of new applications involving the entire value chain, including the off-taking sectors.**

The European Commission should use the review to turn the state aid system into a meaningful enabler so that Member

States support the transition of their economies to climate-neutrality.

3. Setting new standards with a climate-neutrality chapter

Siemens Energy proposes to create a new chapter for climate-neutral technologies and applications that's consistently included in the General Block Exemption Regulation and the Guidelines on R&D and on Energy and Environmental aid. This new chapter should significantly increase the legal transparency of state aid and complement Europe's ambition to achieve climate-neutrality by 2050.

At present, neither the General Block Exemption Regulation nor the Guidelines on R&D or Energy and Environmental Aid set rules that provide a sufficiently clear and reliable framework. This undermines the provision of the financial support necessary to innovate and implement technologies on an industrial scale that are critical for achieving climate-neutrality by 2050. Among others, unclear definitions (for example, of industrial research vs. experimental development), a lack of references to new energy carriers (for example, renewable fuels of non-biological origin, renewable hydrogen), and vagueness about scope and eligibility significantly contribute to legal uncertainty. Some of the provisions in the state aid framework also fall short of addressing the climate challenge, and this requires adjustments.

4. Our proposal for a new chapter on climate-neutral technologies and applications

- **Increase the aid intensity to 100 percent for climate-neutral technologies in first-of-their kind large-scale installations.** The General Block Exemption Regulation, the R&D Guidelines, and the Energy Aid Guidelines limit the aid intensity for large companies to 50 percent for national industrial R&D and/or Energy Aid programs. This is insufficient to trigger investments in industrial-scale demonstration plants that achieve full carbon-neutrality.
- **It's the competition with fossil fuel that matters:** The current state aid rules primarily stick to a traditional eligible-cost approach. More than 80 percent of emissions in Europe are energy-related. To achieve climate-neutrality, the European Union must therefore derive its energy from CO₂-neutral sources. This can only work with a

massive switch from fossil fuels to renewable energy sources without damaging the competitiveness of industry. The transition to climate-neutrality must become a business case: The cost difference between kWh from renewable vs. kWh from fossil fuel must be positive. Member States should have the opportunity to fully subsidize this cost difference in demonstration plants over the entire lifecycle and create a cost competition with fossil fuel-based solutions. **We therefore also propose to allow the maximum aid to be calculated based on a reasonable financing gap analysis rather than just on a rigid eligible-cost approach.**

- **Strengthen OPEX support:** Investments in the energy sector often have very long lifecycles. Some assets have a lifespan of more than 20 years. Having its long-term operating costs funded is often decisive for a project's realization. Because the fight against climate change is a collective task, the risk can't be completely passed on to the operator. **Therefore, the funding of operational costs along with capital investment need to be strengthened substantially in the new state aid framework.**
- **Faster and simpler notification procedures:** When aid can't be granted under the General Block Exemption Regulation, aid needs to be notified. Notification procedures are often too lengthy and burdensome to match the level of urgency required to tackle climate change. The procedures also add to legal uncertainty. **We therefore recommend establishing a fast-track procedure for projects in the new climate-neutrality chapter.**
- **Make sandboxing a permanent tool in the state aid toolbox:** New technologies often need different legislative frameworks in order to gain a foothold in the market. The current political process is often too slow and rigid to take into account the urgency of climate change or the speed of global competition among digital technologies like grid edge solutions. Sandboxing allows project partners to significantly reduce the operational risk of new technologies on an industrial scale and to test the feasibility and social benefits in a geographically and temporally well-defined framework. At the same time, this approach allows project participants and decision-makers to acquire detailed knowledge of the optimal regulatory framework needed to fully exploit the societal benefits of the new technologies and avoid potential pitfalls. In fact, we believe that regulatory sandboxes can also contribute to speeding up the coordination of legislation at the European level, but for this to be achieved coordination at the European level, especially with regard to the communication of the results, is needed. **We recommend that**

the Commission issues clear and ambitious provisions on sandboxing that cover, inter alia, a state aid exception that create more legal clarity about how industrial-scale sandboxes can be implemented.

- **Increase notification thresholds:** The General Block Exemption regulation currently sets very low notification thresholds. The key challenge for new climate technologies is not so much fundamental research but industrial scaling. In this regard, notification thresholds are too low. **We recommend increasing notification thresholds for climate-neutral technologies to €200 million with the option for an ex-post control mechanism for the European Commission.**
- **Supporting the transition away from coal.** The current block exemption regulation and guidelines allow an increase of 15 percent in aid intensity for outermost regions that have extremely unfavorable economic situations. However, to realize climate-neutrality by 2050, regions with a strong economic and social footprint in coal and lignite activities will face major challenges of a social, political, economic, and technological nature. **Therefore, we recommend that regions with an adopted plan to phase out coal in line with the European climate targets should benefit from more favorable aid conditions: for example, an increase in aid intensity of 10 to 15 percent.**
- **Include clear and straightforward procedures for the cumulation of aid:** Technologies like wind power and combined and heat power (CHP) plants receive state support from, for example, the German EEG and KWK laws. The climate performance of CHP could be significantly improved with a fuel switch to renewable hydrogen. However, this requires the project partners of a first-of-its

kind demonstration plant to first apply for CHP support and then for additional aid for the fuel switch to green hydrogen. The current rules are insufficiently clear about the conditions under which the cumulation of aid is possible. **We therefore suggest streamlining and clarifying the existing rules for the cumulation of aid, including a provision that generally allows the cumulation of aid for climate-neutral technologies.**

- **Refinancing the energy system transformation shouldn't undermine climate-neutrality:** Wind and solar energy are a great success for industrial policy, because the costs of the transition were socialized. However, some Member States like Germany saw a massive increase in electricity prices, because the costs of the transition were entirely refinanced through electricity bills. This has led to declining competitiveness with fossil energy sources, which is in sharp contradiction to the climate targets; these can only be achieved if the energy demand is met directly or indirectly from renewable sources. The exposure to high network charges and electricity levies is a fundamental barrier to the competitiveness of Power-to-X technologies that convert renewable electricity into renewable hydrogen. **Therefore, exempting producers of renewable electricity-based hydrogen from network charges and environmental taxes should be compatible with the EEAG. The European Commission should also proactively pursue a dialogue with Member States to ensure that national refinancing mechanisms for the energy system transformation are fair and transparent, and most importantly, that they don't undermine the EU's long-term climate goals.**