

Efficient electricity grids are key for a Net-Zero Industry and managing demand for Critical Raw Materials

currENT welcomes the package of proposals that was presented by the European Commission on 16 March, including the Net Zero Industry Act and the Critical Raw Materials Act. While the importance of grid technologies is now widely recognized, there needs to be more emphasis on increasing the efficiency of the electricity grid, both by making better use of the existing electricity infrastructure, as well as using new grid technologies to expand the grid where needed.

Include a reference to grid optimisation

currENT welcomes the recognition of both mature (technology readiness level of at least 8) and emerging grid technologies (technology readiness level lower than 8) as a respectively 'net-zero technology' and 'innovative net-zero technology.' However, while there is a frequent reference to smart grids, it gives the impression to be referring only to demand-side solutions that "help the EU reduce and control its energy consumption" as stated in paragraph 7. Also in paragraph 8, innovative grid technologies refer to a whole range of technologies related to demand-side flexibility. While extremely important, this overlooks an entire range of commercially available grid technologies, such as dynamic line rating, advanced power flow control systems, and smart sensors that can optimise the use of the existing electricity grid and increase its capacity to integrate renewables at both the transmission and distribution level. A reference in these paragraphs to optimising the existing grid would be an important signal to use all technologies at our disposal to reach net-zero and keep the costs of the energy transition as low as possible.

Improve access to EU funding for enabling technologies

While the proposal states in paragraph 46 that the "*Innovation Fund also provides a very promising and cost efficient avenue to support the scaling up of manufacturing and deployment of renewable hydrogen and other strategic net zero technologies in Europe,*" currENT believes that a thorough review is needed in order to make the Innovation Fund suitable to finance innovative grid technologies. Many currENT

member companies and research institutions are having trouble applying for funding under the EU Innovation Fund. While innovative grid technologies, e.g. new transmission technologies based on superconductors, are crucial to support wind and solar as the backbone of Europe's energy independence and decarbonization efforts, these enabling technologies do not fit the current eligibility criteria on greenhouse gas reductions of the Innovation Fund. We would suggest that the Commission takes initiative to review the appropriateness of the Innovation Fund, as well as the REPowerEU, InvestEU, and other EU funding vehicles such as the Important Projects of Common European Interest, with regards to innovative transmission technology based on superconductors.

Manage demand for critical raw materials as much as possible

While the Critical Raw Materials Act identifies lists of strategic and critical raw materials, there should be a greater emphasis on how to manage the demand for these materials. In the context of electricity grids, this means reducing the vast amounts of copper that are going to be used for transmission and distribution cables.

One of the four main objectives of the regulation is “*ensuring a high level of environmental protection, by improving their [critical raw materials] circularity and sustainability*”. The proposal suggests measures on how to increase the environmental impact of increased extraction, processing and recycling of critical raw materials. currENT supports such measures, however, suggests that these are complemented by measures targeted at specific sectors to identify and promote technology options with lower environmental impacts and raw material use in line with the energy efficiency first principle.

In the electricity transmission sector, European companies are currently preparing superconducting transmission technology that would be commercially available from around 2030. These would reduce the materials use of energy transmission dramatically. To carry one kA one metre, superconducting cables requires 150 times less raw material than conventional, copper-based power cables. Superconducting transmission technology will be able to transfer 5 or 6 times as much energy as conventional HVDC technology at a given voltage level.