Improved funding facilities needed to take Europe to the Net-Zero Age

8 February, Brussels - On 9-10 February the European Commission communication on "A Green Deal Industrial Plan for the Net-Zero Age" will be discussed at a special summit for EU Leaders. The Communication is right to point out that Europe needs to urgently scale up the sectors crucial to reaching net zero and that an acceleration of the green transition is needed to ensure European consumers have access to abundant, indigenous and affordable renewable energy.

currENT agrees that those who develop and manufacture the technology that will form the foundation of tomorrow's economy will have the greatest competitive edge as we further progress towards a full Energy Union to achieve our dual objective of European energy sovereignty and climate neutrality, agreed by the European Council on 20-21 October 2022. Furthermore, we agree that our common approach must be anchored in EU policies and instruments.

To achieve these objectives, currENT believes there are several aspects this plan needs to consider. First, while there is a strong focus on funding for innovation in the Communication, there needs to be more attention on the rapid deployment of innovative grid technologies that are already commercially available. Secondly, the existing funding opportunities for innovation need to be thoroughly reviewed.

The Commission's Communication on a Green Deal Industrial Plan includes a section on the Innovation Fund. It mentions that the Innovation Fund supports the development and first-of-a-kind deployment of a long range of technologies. It correctly points out that "numerous funds are thus available, mostly geared to innovation and deployment".

However, currENT wants to bring to the Commission's attention a challenge that many of our member companies and research institutions are having applying for funding under the EU Innovation Fund. It is our hope that the Commission's services, as part of its future proposals, would agree on undertaking a review of the Innovation Fund's and other vehicles' appropriateness in advancing some crucial, innovative enabling technologies to support the acceleration of renewable energy. These are technologies that do not seem to fit the current eligibility criteria on greenhouse gas reductions of the Innovation Fund, but that are vital for delivering on Europe's carbon mitigation and energy independence efforts.

CURRENT
Enabling Network Technology throughout Europe

currENT companies and researchers are currently leading European efforts to develop subsea superconducting cables for power transmission, together with other organisations throughout Europe. Conventional HVDC (High Voltage Direct Current) copper-based electricity transmission technology can only carry 1 GW per cable. Transmission technology based on superconductors can transfer several times more electricity, with zero electrical losses, using less space and far fewer materials. To carry one kiloamp of energy one metre, conventional copper-based power cables require 150 times more raw material than superconducting cables. A US-based company backed by Bill Gates' Breakthrough Energy is developing similar technology based on superconductors.

Wind and solar will form the backbone of Europe's energy independence and decarbonisation efforts. Europe has its best wind resources in the North and best solar resources in the south, while its major demand centres lie in Central Europe. The dual challenge of overhead line planning on land and technology deficiency of underground cable technology means that, there is a strong and urgent need for new innovative grid technologies to facilitate efficient, long-range transmission of onshore and offshore renewable electricity that can match overhead lines' power capacity.

The European companies and researchers working on realising this ground-breaking, new and innovative transmission technology based on superconductors, received a statement of feasibility – a world first – from the world's leading certification body, DNV in 2020. The partners are now in the process of demonstrating the superior economic performance of superconducting DC power cables compared to conventional HVDC cables, through improved cryostat heat performance, new materials, design, manufacturing, and subsea installation methods.

For small companies, submitting a proposal for a demonstration project under the Innovation Fund is a very big undertaking. Over the past couple of years, our members have engaged with the European Commission to understand if the technology fits the criteria established by the Emissions Trading Directive and the Delegated Act on the Innovation Fund. Clarity on how these criteria will be applied to innovative transmission technology is a precondition for deciding to apply.

Jointly, the companies have already invested and committed tens of millions of Euros to develop the technology to the point where a demo project can go live around 2025 (Technology Readiness Level 6), with expected commercialisation before 2030. A demonstration project would cost in the excess of €100 million and would be the first

sub-sea superconducting cable for transmission of bulk offshore renewables in the world if installed in 2025 as planned.

The technology promoters have investigated the EU Innovation Fund for grant funding as well as funding opportunities outside Europe. They have engaged with the European Commission and the European Investment Bank to understand how and if the technology fits the funding criteria. It is a big challenge for companies that design and develop enabling technologies such as innovative transmission cables, that the legal basis of the Innovation Fund is (the ETS Directive) exclusively targets greenhouse gas reductions in technologies that emit carbon. It makes evaluating enabling technologies' eligibility very complex.

The eligibility criteria have article 23 of the ETS Directive as legal basis and are established by the Commission Delegated regulation 2019/856 on the Operation of the Innovation Fund. It establishes that "the major part of the Innovation Fund support should depend on verified avoidance of greenhouse gas emissions". It also establishes (Article 11) the five selection criteria of the Innovation Fund, of which two out of five criteria for funding relates to avoidance of greenhouse gas emissions (GHG), which is difficult to assess for enabling technologies such as electricity transmission cables.

Last year, with REPowerEU, it was decided to double the funding available for the 2022 Large Scale Call of the Innovation Fund. It was also agreed to introduce a specific REPowerEU window "to support hydrogen uptake and electrification in industrial sectors". The window included €300 million in support for "mid-sized pilot projects for validating, testing and optimising highly innovative solutions," which is reflected in the European Commission's third call for Large Scale projects announced on 3 November 2022. This has somewhat reduced the importance attached to carbon mitigation in project evaluation, but not eliminated the problem experienced with potential applicants for innovative transmission technology demo projects and other enabling technologies.

The European Commission's EU Strategy on offshore renewable energy (COM72020/741) correctly points out that "it will be important to facilitate the testing of new technologies for future offshore grids," and that "the increasing amount of energy generated offshore by these offshore technologies must also be supported by further development of innovative infrastructure and grid technologies." However, there seems to be significant uncertainty among technology developers because the two carbon mitigation criteria of the Innovation Fund do not fit well with enabling technologies such as innovative transmission technology.

CURRENT
Enabling Network Technology throughout Europe

As part of the discussion on the Green Deal Industrial Plan, and within the framework of a Net-Zero Industrial Act and the Critical Raw Materials Act, currENT would like to suggest that the Commission includes innovative transmission grid technologies such as long-range superconducting Cable Systems for offshore and terrestrial applications in its ongoing investment needs assessment. Moreover, we suggest that the Commission takes initiative to review the appropriateness of the Innovation Fund, 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.

Rue de Wallonie 11, B-4460 Grâce-Hollogne, Belgium • info@currenteurope.eu • **www.currenteurope.eu**