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ANNEX 4

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to the

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE, THE COMMITTEE OF THE REGIONS AND THE EUROPEAN
INVESTMENT BANK**

Third Report on the State of the Energy Union

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Annex 4 - Progress in Accelerating Clean Energy Innovation

The Communication *Accelerating Clean Energy Innovation*¹ was adopted in November 2016, as part of the Clean energy for all Europeans package. It presents the European Union's strategy to boost Research and Innovation in clean energy solutions and to bring results to the market quickly and successfully. Progress achieved in a number of key actions over one year of implementation are summarised below.

EU funding for clean energy research and innovation and its market adoption has increased well above the minimum target figures.

The Horizon 2020 Work Programme 2018-2020 includes over EUR 2 billion for programmable actions addressing the four interconnected priorities flagged in the Communication (decarbonising the EU's building stock by 2050, strengthening EU leadership in renewables, developing affordable and integrated energy storage solutions, and electromobility and a more integrated urban transport system). Accounting for bottom-up activities, the total amount may rise to EUR 3 billion, well above the EUR 2 billion minimum target figure. Additional clean-energy inducement prizes and a pioneer mission-driven approach have also been introduced to foster disruptive innovation in clean energy technologies.

Cohesion policy funds for the 2014-2020 period are also supporting energy research and innovation, based on smart specialisation, with at least EUR 2.6 billion of EU funding available to research and innovation in low-carbon technologies. Five interregional smart specialisation partnerships on bioenergy, marine renewable energy, smart grids, solar energy and sustainable buildings have been launched. Currently, the work on them is advancing, with most of them being at the stage of mapping of the regional innovation capacities and challenges to identify common value chains and possible work on common demonstration projects.

The InnovFin Energy Demonstration Projects (EDP) facility, a financial instrument that supports first-of-a-kind projects has been enlarged both in terms of scope and budget in order to better meet the increased demand for financing the market uptake of new innovative low-carbon energy technologies. Its budget has doubled from EUR 150 to EUR 300 million using Horizon 2020 funds and it is now also able to channel a part of undisbursed revenues from the NER² 300's first call, which will represent around an additional EUR 456 million. Its scope now covers the four above mentioned priorities, and related innovative manufacturing processes.

Example of project: WAVEROLLER – a first-of-a-kind project unveiling the untapped potential of wave energy
WaveRoller is an innovative device, produced by a Finnish company, converting ocean waves into energy. In 2012, a grant from the EU Framework Programme for Research and Innovation supported the development of the first operational prototype, and since 2016, a loan provided by InnovFin EDP supports the preparation of a commercial scale demonstration, producing 350 kW of electricity, in Portugal. In 2017, the device was the first one of its kind to receive a design appraisal certificate by the Lloyd's Register (a recognised maritime classification society), guaranteeing its functionality and reliability. This certification is key to exploiting results, and gets WaveRoller a step closer to the market. The global market potential for the WaveRoller technology is high – estimated at over 200 GW based on feasible sites.

¹ COM (2016) 763 final

² NER 300 is a funding programme for innovative low-carbon energy demonstration projects. It is funded from the sale of 300 million emission allowances from the New Entrants' Reserve (NER) set up for the third phase of the EU emissions trading system

More projects have taken off. The Cleaner Transport Facility was launched in December 2016 to accelerate the deployment of cleaner transport vehicles and their associated infrastructure needs. Currently four European Fund for Strategic Investments (EFSI) projects³, representing an investment of approximately EUR 552 million, are ongoing within the scope of the facility, tackling urban transport challenges with low-carbon solutions.

Dissemination and exploitation of research results towards investors gained effectiveness. A first set of close-to-market innovative clean energy projects have been brought to the attention of investors. Based on this initial experience conceived in function of investor's needs, a more systematic process for dissemination and exploitation of results is being implemented and will be mainstreamed across Horizon 2020 and past EU Framework Programmes for Research and Innovation.

Example of project: **Broadbit** – fast-charging green battery technology

Broadbit, a Slovak project, started with a grant from the EU Framework Programme for Research and Innovation to develop a software for estimating remaining battery energy, and is now developing a longer term solution to mobility: a sodium-based battery technology. This project was awarded the European Commission's Innovation Radar Prize in 2015. In 2016, it secured a loan from the Finnish government, and now it is developing with the Fraunhofer IWS institute the manufacturing process for a high power and low cost battery that can be recharged in 5 minutes. Short-term target applications are batteries for aircrafts and electric bikes; mid-term are electric cars, buses and trucks.

Member States are increasingly mobilised towards low-carbon technology targets. The Strategic Energy Technology Plan (**SET-Plan**) community has made good progress in developing and adopting implementation plans for its ten priority actions to reach the strategic targets agreed with EU Member States, European industry and research organisations to speed up the energy transition. Out of 14 implementation plans being prepared, three have been adopted in 2017, and their implementation is expected to mobilise up to EUR 7 billion until 2030 from both public and private sector. The Strategic Transport Research and Innovation Agenda (**STRIA**) adopted in May 2017 proposes an integrated approach addressing the decarbonisation and digitalisation of transport. In addition, the Transport Research and Innovation Monitoring and Information System (**TRIMIS**), launched in September 2017, supports the design and implementation of the transport research agenda, as it monitors the effectiveness of transport research programmes and provides feedback to decision makers.

EU's global leadership in the clean energy arena is being reinforced. The EU's role and co-operation on international clean energy initiatives has seen a boost with its active participation and leadership in Mission Innovation, a major global initiative on clean energy innovation. Calls for proposals addressing Mission Innovation priorities are included in the Horizon 2020 Work Programme 2018-2020 amounting to more than EUR 150 million. The African Union – European Union Research and Innovation Partnership on Climate Change and Sustainable Energy is due to be endorsed during the November 2017 African Union – European Union Summit. The objectives of this partnership complement and reinforce the activities being implemented under Mission Innovation by ensuring that innovative and affordable clean energy technologies are brought to developing countries.

³ <http://www.eib.org/projects/sectors/transport/cleaner-transport-facility>