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INVESTMENT FOR A COP21 COMPLIANT GRID: RECOMMENDATIONS FOR THE EC ENERGY INFRASTRUCTURE FORUM 2019

DELIVERED BY THE EUROPEAN DISTRIBUTION SYSTEM OPERATORS (E.DSO) AND EUROPEAN NETWORK OF TRANSMISSION SYSTEM OPERATORS FOR ELECTRICITY (ENTSO-E) IN THE FRAMEWORK OF 2019 INNOGRID CONFERENCE

- 1) RECOGNIZE THE ROLE OF NETWORKS IN DELIVERING ON THE PARIS AGREEMENT
- 2) FURTHER ADVANCE TRANSMISSION-DISTRIBUTION COOPERATION: ACTIVE SYSTEM MANAGEMENT
- 3) EASE THE WAY FOR NEW GRID TECHNOLOGIES THROUGH APPROPRIATE RD&I SUPPORT, IN LINE WITH THE MISSION INNOVATION¹⁾ 2021 OBJECTIVE
- 4) ENHANCE RD&I EFFORTS ON SECTOR COUPLING AND DIGITALIZATION
- 5) PROVIDE FOR INNOVATIVE REGULATION: ENABLE SAND BOXES
- 6) LINK EU FUNDING PROGRAMMES: PROJECTS OF COMMON INTEREST (PCI) AND HORIZON 2020

1) Recognize the role of networks in delivering on the Paris Agreement

The development of a low carbon economy will be based on the electrification of the energy system. As the main production and integration of variable renewable energy sources is taking place in the power sector, the electricity networks have a central role to play in the facilitation of the energy transition.

Investments are necessary to ensure the roll-out of the smartest possible solutions, as well as to ensure the necessary extensions and reinforcements of the grid, thereby enabling more efficient markets, reliable system operation and lower renewable curtailment rates.

2) Further advance transmission-distribution cooperation: Active System Management

Flexible power systems are necessary to optimize the integration of variable RES. Investments in "hardware" can be complemented by the enhancement of smart and digital grid solutions through a set of key strategies. The Transmission System Operators (TSOs) and Distribution System Operators (DSOs) have together begun to work on the development of a toolbox which will allow the management of the system to access flexibility sources: the **Active System Management**. As a result, a coordinated approach for Active System Management, espe-

cially for **non-frequent congestions**, could be an alternative to grid reinforcements.

The **right coordination mechanisms** between the market actors and network operators need to be put in place and **appropriate data exchanges between TSOs, DSOs, customers and market players should be developed**. Digitalisation is a prerequisite for smart grid operations and for making flexibilities available through market mechanisms.

3) Ease the way for new grid technologies through appropriate RD&I support, in line with the Mission Innovation 2021 objective¹⁾

Achieving the energy transition requires that innovation becomes an integral part of system operators' activities. Over the last few years, TSOs have on average spent 0.6% of their revenues on RD&I activities, while DSOs have spent more than 800 million euros on smart grid projects. **Tracking RD&I expenditures** is paramount and enables TSOs and DSOs to demonstrate their commitment to innovation and the clean energy transition. The tracking will help identify strengths and potential synergies for cooperation. ENTSO-E and E.DSO can support the improvement of data collection in cooperation with the JRC and ETIP SNET.

The R&I efforts should be put at the service of the continuous implementation of an affordable and reliable power system

based on **new technologies and services such as grid scale storage and demand response**. They should also ensure the transition from an AC system to a **hybrid AC/DC system** which will accommodate high level power electronics. The **HVDC combined with DC grids and novel control concepts benefiting from digital technology** will be used to increase the efficiency and controllability of the grid.

To accelerate the innovation process and achieve the decarbonization objectives, system operators are committed to enhancing their RD&I efforts. **With adequate regulation in place, TSOs and DSOs could follow a Mission Innovation¹⁾ approach, committing to strengthening their RD&I efforts.**

4) Enhance RD&I efforts on sector coupling and digitalization

Electrifying sectors such as transportation, industry or heating are important stepping stones in the transition towards a low carbon economy. Using electricity rather than other fuels is often more efficient. With this in mind as well as the increasingly competitive prices of renewable energy, electrification contributes to enhanced energy efficiency as well as an affordable energy transition. Digitalization is key to this process, as data analytics, the use of open source models, and automation will

facilitate the integration of different sources, the development of open market places and platforms, and the integration of other energy systems.

RD&I project calls should encourage cooperation between the different sectors to further the exploration of synergies that benefit the energy transition.

5) Provide for innovative regulation: Enable sand boxes

Sand boxes have recently appeared as a tool for providing exceptions in the current regulation for the testing of innovative projects. By providing a temporal exception, **the Sand Boxes allow for a test-based execution of innovative solutions in a careful and organized way**, bringing knowledge about the requirements for a wider deployment of the invention. Sand boxes can help boost the agility of policy-making and regulatory design to adapt to new technologies by establishing a

confined environment for learning about best practices which could consequently be adopted more widely.

Participation of the system operators together with regulatory authorities would enable a holistic analysis. This would allow for an evaluation of the impact on physical security of the grid as well as the reliability of supply, while still ensuring the effectiveness and cost efficiency of the grid operations.

6) Link EU Funding Programmes: Projects of Common Interest (PCI) and Horizon 2020

H2020 have financed a wide portfolio of promising European RD&I projects on electricity networks. These projects have researched options and developed new solutions for the power system of the future. To make the most of these RD&I efforts, a link should be made between H2020 and the TEN-E framework which guides the list of electricity and smart grid PCI.

The PCI list should equally encourage **cross-border projects contributing to the completion of the internal energy market as well as innovative projects enhancing energy efficiency and the integration of renewable sources**, thereby contributing to the European energy transition.

1) Mission Innovation (MI) is a global initiative of **23 countries and the European Commission (on behalf of the European Union)** working to reinvigorate and accelerate global clean energy innovation, with the objective of making clean energy widely affordable. MI members have committed to four objectives to be delivered through to 2021:

1. Seek to **double their governmental and/or state-directed clean energy research, development and demonstration (RD&D) investments over five years.**
2. **Work closely with the private sector** as it increases its investment in the earlier-stage clean energy companies that emerge from government programmes.
3. Build and improve technology innovation roadmaps and other tools to help in our innovation efforts, to understand where RD&D is already happening, and to identify gaps and opportunities for new kinds of innovation.
4. Provide, on an annual basis, transparent, easily-accessible information on their respective clean energy RD&D efforts