



Brussels, 20<sup>th</sup> September 2018; for immediate release

## No time to lose: Equipping the future electricity grid

**What will the future grid look like? What are the most promising technologies for increasing transmission capacity and flexibility? How can we integrate more energy from remote wind and solar farms? At the conference 'Renewing the EU electricity grid: the Best Paths towards energy transition' experts presented their research on technical solutions for efficient and powerful electricity transmission – from underground cables for offshore wind farms and superconducting links, to new converters and modernised overhead lines.**

Energy experts came together today in Brussels at the final conference of the EU project **Best Paths** to discuss with policy makers how to upgrade and improve the European electricity grid. The conference, which was organised by Greenovate! Europe, brought together around 120 experts from all over the continent.

"The technologies developed in Best Paths will have a significant role in the evolution of the transmission grid, ensuring the grid is ready to cover the market actors' requirements in the new energy paradigm at an affordable cost. Investment today in the future grid is mandatory to accelerate the transition process. All relevant actors: policy makers, regulatory authorities, transmission system operators and utilities, manufacturers, researchers and citizens should understand that there is no time to lose if Europe wants to continue leading the transition process worldwide", says **project coordinator Vicente González López from Red Eléctrica de España**.

**Best Paths** is the largest research project in the energy field financed by the European Union's 7<sup>th</sup> Framework Programme for Research, Technological Development and Demonstration (FP7) for research and technological development. The project ends in September 2018 after four years, having united 38 partners around five large-scale demonstrations to validate the technical feasibility, costs, impacts and benefits of the tested grid technologies. The focus of the demonstrations is to deliver solutions for the transition from High Voltage Direct Current (HVDC) lines to HVDC grids, upgrading and repowering existing Alternating Current (AC) parts of the network, and to integrate superconducting high power DC links within an AC meshed network.

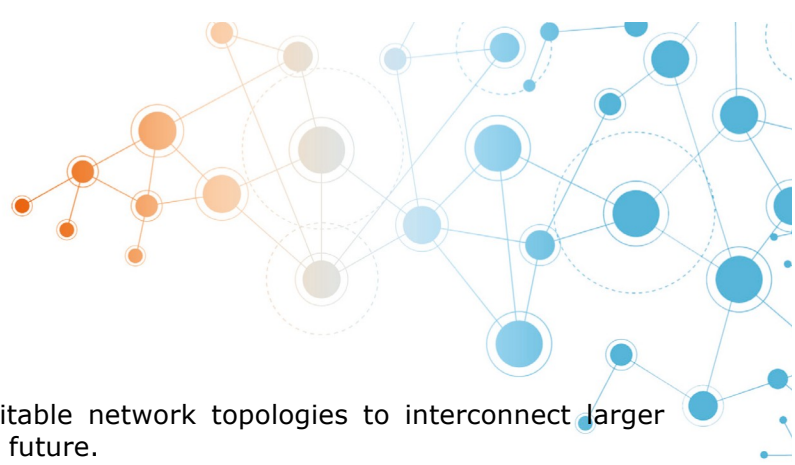
**Three parallel workshops showed the latest breakthroughs in transmission technologies from the project.**

### **WORKSHOP 1: HVDC Converter technologies**

**What are the main interoperability problems? What are the recommendations of the project partners to overcome them? How can converters be adapted for offshore windfarms?**

Within **Demo 2** of Best Paths, the **interoperability issues** of multivendor converters have been systematically assessed and adaptations have been suggested. Recently the Best Paths partners demonstrated the results of pioneering tests about the interoperability of high-voltage AC/DC converters supplied by different HVDC manufacturers.

For the **operation of offshore windfarms** three different converter prototypes in the 50kW power range designed to emulate the modular multilevel converter technologies have been tested within **Demo 1**, led by the Spanish utility Iberdrola. The results from the



demonstration shed light on the most suitable network topologies to interconnect larger offshore wind farms that will be built in the future.

Within **Demo 3**, an industrial-size innovative converter has been realised from concept to design, realisation and testing. Furthermore, system studies for multi-terminal operation have been thoroughly investigated, aiming at smart control strategies and cost benefit analysis of completely revamping an Italian existing link.

**Session Chair: Olivier Despouys, RTE Réseau de Transport d'Électricité**

### **WORKSHOP 2: Cable technologies**

**What are the most promising cable technologies? What are the best performing materials for HVDC cables? What is the potential of superconducting cables for electricity transport?**

The workshop presented novel technological solutions to **upgrade multi-terminal HVDC links**. Within **Demo 3**, the Italian transmission system operator Terna identified as real case reference and chose the "SACOI" link that connects Sardinia, Corsica and Italy as the laboratory for investigating with success up to qualification tests improved extruded submarine and land cables for very high voltages and depth.

Within **Demo 5**, project partners designed a **superconducting cable system** that includes high-voltage insulations and terminations. The wires are able to carry 500 times more electricity than copper wires and can transport up to 3.2GW of electric power. For the first time, a high-voltage superconducting cable system capable of operating in direct current has been designed, while all the existing projects only deal with alternating current. The cable is manufactured using magnesium diboride as a superconductor, which is very economical to produce.

**Chair: Christian-Eric Bruzek, Nexans**

### **WORKSHOP 3: Overhead lines**

**What are pioneering technologies to repower and improve the design, operation and maintenance of existing high voltage power lines?**

While new conductor technologies have been explored in the project, existing overhead power lines also need to be improved and repowered. Within **Best Paths' Demo 4** new features and repair works for those conventional cables have been explored, such as insulated cross-arms, high temperature low sag conductors, a composite tower, dynamic line rating as well as live-line working methods.

Within **Demo 3**, first-of-a-kind high performing HVDC conductors for overhead lines as well as innovative insulators have been developed and successfully tested on field application.

**Chair: Matthias Müller-Mienack, GridLab for 50Hertz**



### What will come after Best Paths?

**What kind of incentive schemes could help these new grid technologies? Where do we need new standardisation procedures for interconnected grids and grid components and what will these procedures look like? What overall recommendations do the partners of Best Paths have?**

At the event, **Antonio Iliceto, representing Terna** as Chairman of the Best Paths Consortium, presented a set of recommendations, aimed to facilitate the deployment of the grid technologies that have been developed within Best Paths.

You can find here the [agenda of the workshop](#).

The key findings of the Best Paths project, including videos as well as results of previous workshops, and project recommendations can be found at: [www.bestpaths-project.eu](http://www.bestpaths-project.eu)

#####

### Contacts for press and media inquiries

Best Paths project: Davide Gianluca Vaccaro, Greenovate! Europe:  
[d.vaccaro@greenovate-europe.eu](mailto:d.vaccaro@greenovate-europe.eu), +32 (0)2 400 10 07

Demo 5: Nina Schwab, IASS Potsdam:  
[Nina.Schwab@iass-potsdam.de](mailto:Nina.Schwab@iass-potsdam.de), +49 (0)331-28822-479

**BEST PATHS** stands for 'BEyond State-of-the-art Technologies for rePowering Ac corridors and multi-Terminal HVDC Systems'. It involves 38 partners from 11 European countries and with a budget of 63 million Euros that will be 56% co-funded by the European Commission under the 7<sup>th</sup> Framework Programme for Research, Technological Development and Demonstration under grant agreement no. 612748. It is coordinated by Red Eléctrica de España (REE), and is set to run until September 2018.