European Commission



Energy

Overview of the SET (Strategic Energy Technologies) Plan

Europe's energy system is changing. In Brussels, the final negotiations on the 'Clean Energy for all Europeans' legislative package are taking place, setting the legal framework for the most comprehensive and deepest transformation of energy systems in Europe since the industrial revolution. This is a transformation that affects all citizens. Transitioning to a sustainable energy system means clean air and water, safer cities, and affordable and secure energy for Europe's many communities.

Along with new legislation, new technologies and mass-scale public and private investment are needed for a successful clean energy transition. Since 2007, the European Strategic Energy Technology Plan (SET Plan) has been accelerating the development and deployment of low-carbon technologies.

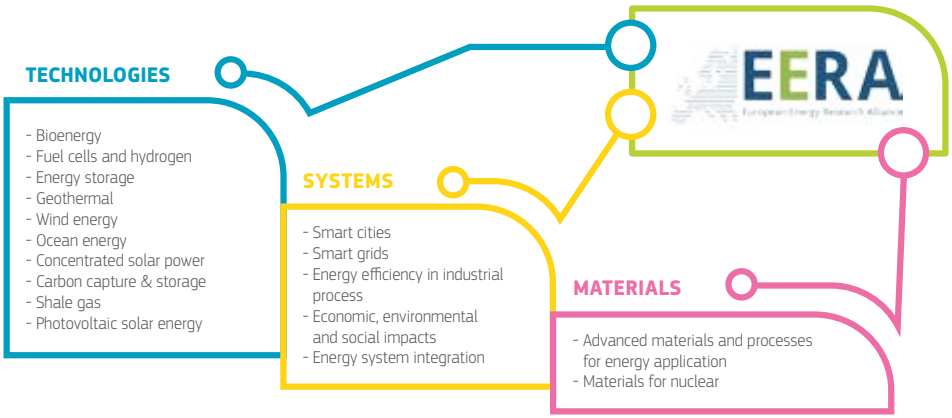
Together with industry and research institutes, mainly represented via the European Innovation and Technology Platforms and the European Energy Research Alliance respectively (see Figure 1 and 2), the SET Plan is now bringing together public and private stakeholders in order to mobilise more investment to make the clean energy vision a reality on the ground. Research breakthroughs can be brought to market with the help of a range of financial instruments, such as the InnovFin Energy Demo Projects[1].

1 InnovFin Energy Demonstration Projects provides loans, loan guarantees or equity-type financing typically between EUR 7.5 million and EUR 75 million to innovative demonstration projects in the fields of energy system transformation, including but not limited to renewable energy technologies, smart energy systems, energy storage, carbon capture and storage or carbon capture and use, helping them to bridge the gap from demonstration to commercialisation. The product is deployed directly by the EIB.

Figure 1: List of the European Technology and Innovation Platforms



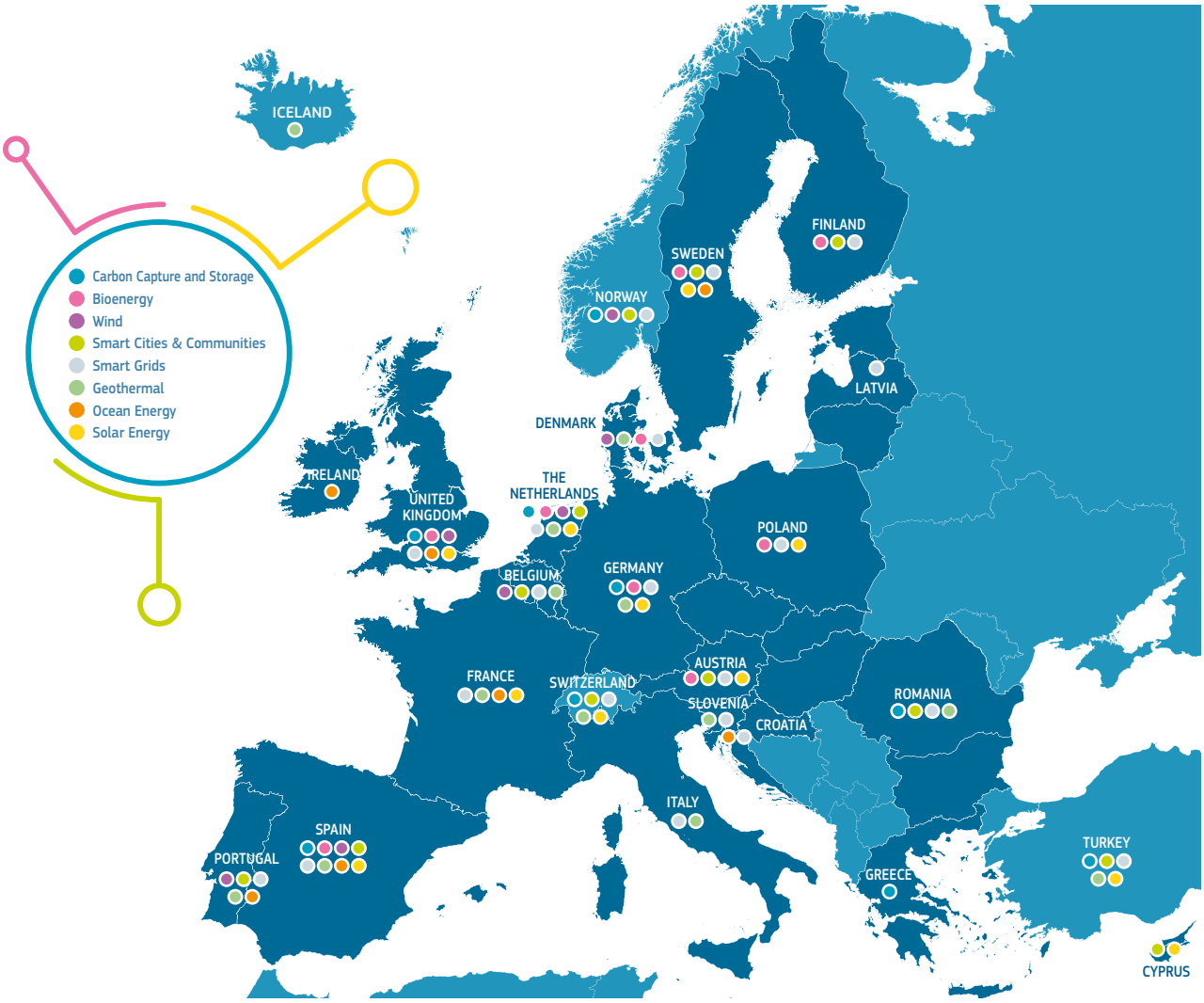
Figure 2: List of the Joint Programmes of the European Energy Research Alliance (EERA)



The SET Plan also facilitates coordination and partnerships amongst national research programmes, for example through the Horizon 2020 ERA-NET Cofund. The map in Figure 3 shows the various ERA-NETs launched under Horizon 2020, which correspond to the SET Plan priorities. Each colour represents an ERA-NET in which various SET Plan countries collaborate under the same technology area.

The Integrated SET Plan defines the new European agenda for **energy-related research and innovation** covering the whole energy system. It places Europe at the forefront of the next generation of low-carbon energy technologies and creating jobs, economic growth and benefits for all.

Figure 3: Cooperation of SET Plan countries in priority areas



The SET Plan aligns its research and innovation priorities for clean energy technology development and investment with the priorities identified in the Energy Union Strategy, including No. 1 in Renewables (that includes technologies such as Solar/PV, Offshore Wind, CSP, Ocean and Geothermal), Smart Solutions for Consumers and Smart Cities and Communities, Smart Resilience and Secure Energy System, Energy Efficiency in Buildings, Energy Efficiency in Industry, Batteries and e-mobility, Renewable Fuels and Bioenergy, Carbon Capture Utilisation and Storage and Nuclear Safety. For each of these technology areas, starting from identifying common R&I objectives for the next decade, the current focus is now on drafting the Implementation Plans, proposing concrete research and innovation actions backed up with many millions of public and private investments.

For example, one Implementation Plan will ensure that Europe is competitive in the global battery market and support e-mobility and energy storage. The plan sets out targets and identifies flagship research and innovation activities for developing the next generation of lithium-ion batteries. Meeting these targets would result in **doubling the electric vehicle driving range while keeping costs at today's values.** Development of the required materials and cell designs would also open strong manufacturing capabilities in Europe.

Another Implementation Plan – Carbon capture and storage (CCS), in which carbon dioxide (CO_2) from industry is captured and injected into an underground storage site – is promoted under SET Plan as a means to mitigate climate change. This IP is particularly relevant to Poland where energy demand runs at near twice the EU average and where the country is still heavily dependent on coal as its primary energy source. Despite recent efforts to move towards cleaner, renewable energy, the continued reliance on fossil fuels has meant that the country still lags behind the rest of Europe in terms of carbon efficiency. Poland is, for example, the fifth largest emitter of CO_2 emissions in Europe. Advanced technological solutions such as CCS could enable Poland to further reduce its CO_2 emissions while maintaining energy security and economic growth. In addition, the country could continue to develop renewable energy without having a detrimental impact on the economy.

- On 24 June 2019 in Warsaw, Poland, the European Commission's Directorate-General for Energy in partnership with the Ministry for Energy held a SET Plan workshop. Participants had the opportunity to learn more about SET Plan as an innovation and research guidance platform and ask questions in an informal discussion session.

