



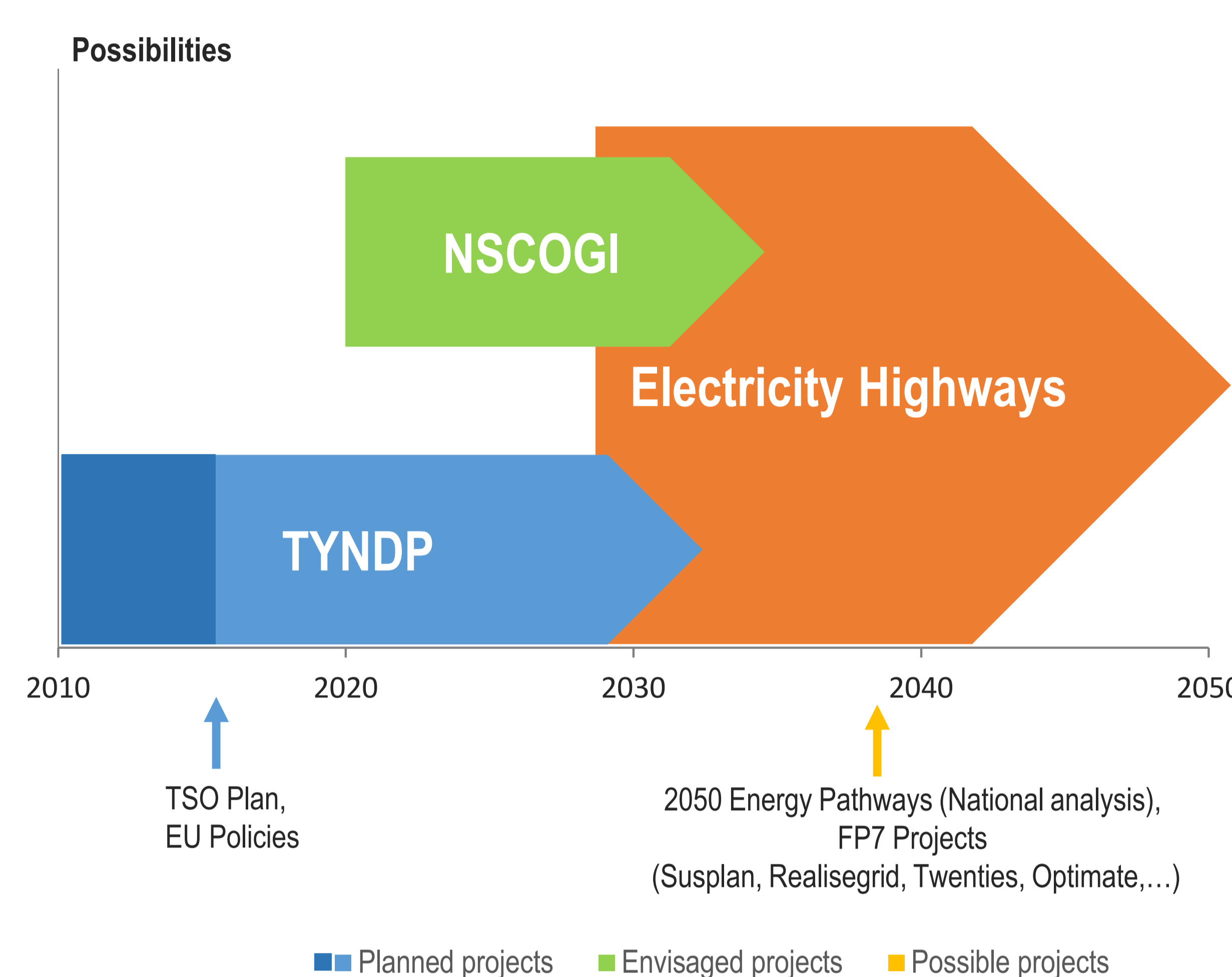
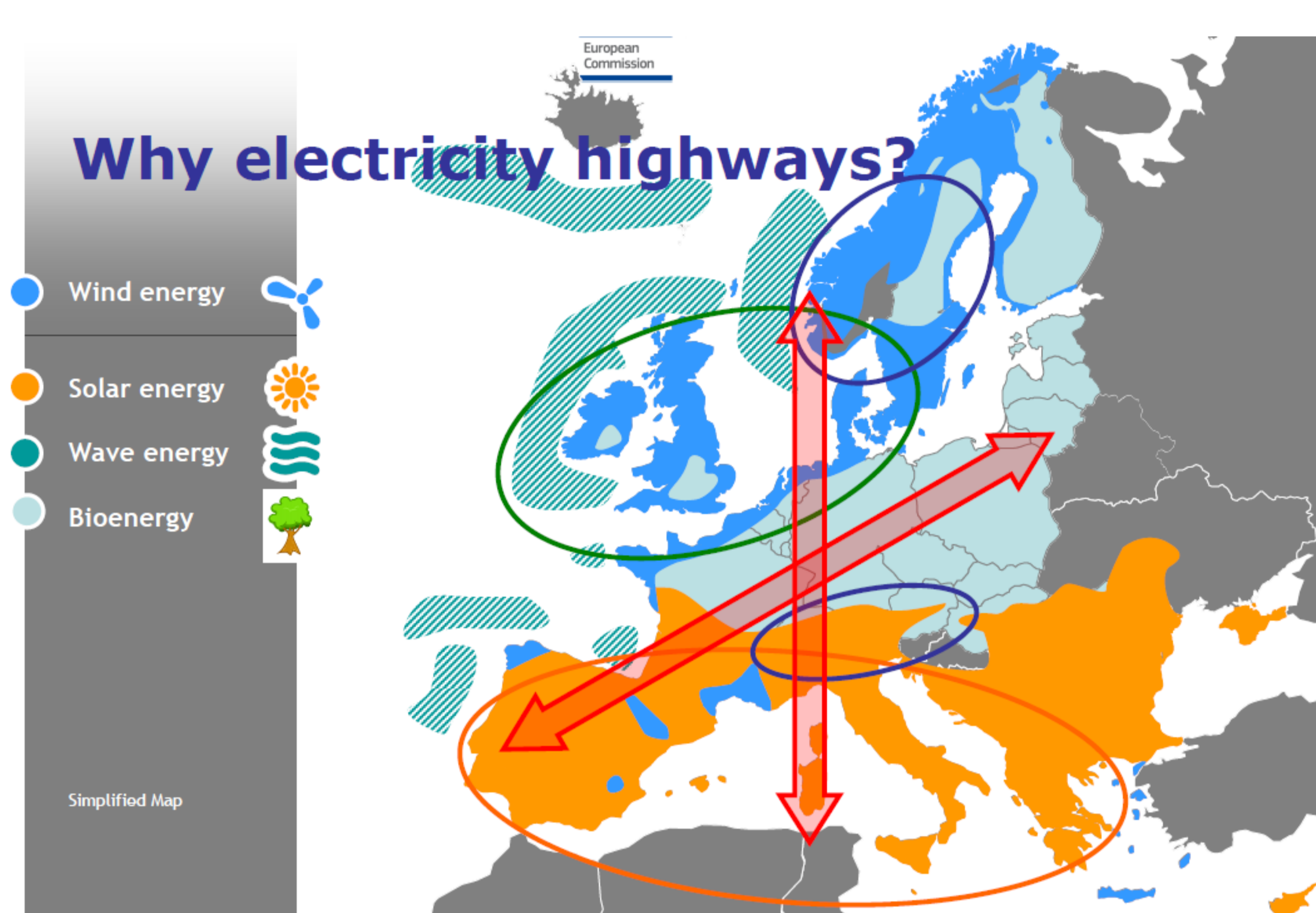
e-Highway 2050

Modular Development Plan

of the pan-European Transmission System for 2050

Objectives:

- The project aims at developing a new planning methodology able to deliver, within forty months, a first version of coherent Modular Development Plans of the pan-European power transmission system, going from 2020 to 2050
- The resulting pan-European grid is supposed to enable electricity market integration and the 2050 decarbonization goals of the electricity system, therefore integrating large quantities of renewables to be transported over long distances from production sites to load centers

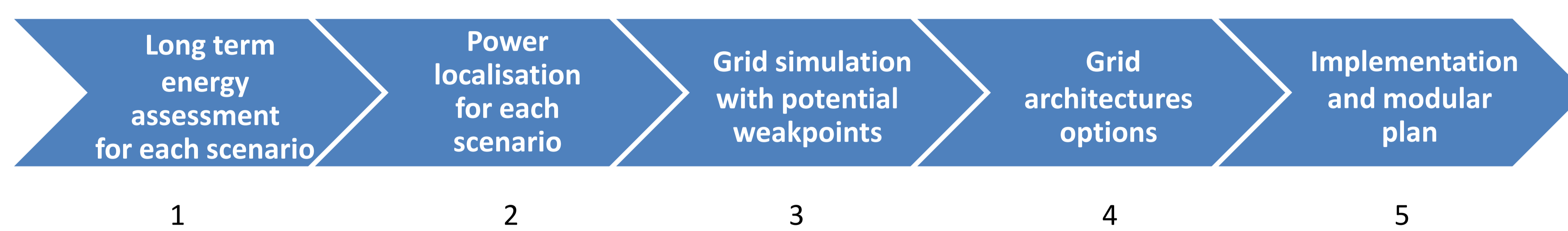


Workflow

The newly developed **top-down, modular, long-term planning approach** follows five main steps, within which stakeholders from all over Europe are invited to discuss assumptions, intermediate and final results during external workshops and consultations:

1. The development and use of an approach to generate different **long-term energy scenarios** (generation, exchanges and consumption), set on the basis of macro-economic data, where the energy adequacy between generation, exchanges and consumption is ensured at the European level whatever the energy scenario studied;
2. The development of **scenario quantification**, using the assumptions about the generation mix, exchanges and consumption by area;
3. The use of **market and power flow simulations** to identify feasible and efficient pan-European grid architectures under each of the above chosen energy scenarios by 2050;
4. A verification that the selected **reinforcement options** and **novel network architecture options** alleviate critical issues focusing on overload problems, and possible voltage and/or stability problems for a given level of system reliability, which in turn allows some of the successful architectures to become part of the final modular development plan over 2020 to 2050;
5. The development of **implementation routes** from now to 2050 of the pan-European transmission system, covering each of the studied scenario, and optimized by taking into account social welfare, environmental constraints, as well as grid operations and governance issues.

In parallel, the possibility to mathematically formalize such long-term planning methods is investigated using enhanced optimization and advanced simulation tools.



Consortium

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