

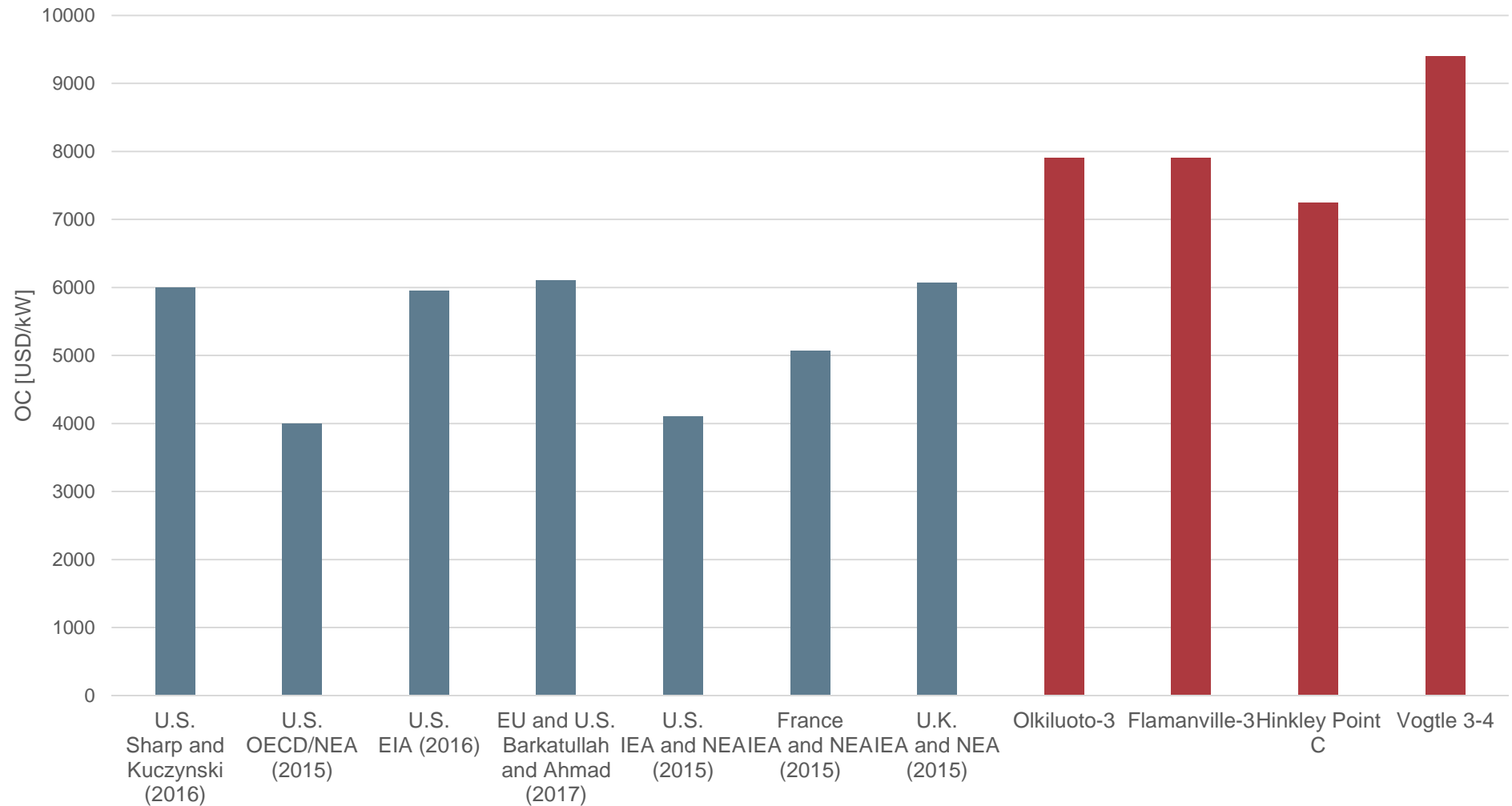
German-Japanese Energy Transition Council (GJETC) - 4th Council Meeting

Nuclear Power in Europe is not competitive nor required

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Cost estimates for Gen III/III+ reactors in the US and Europe and cost estimates for current new build projects



As always all these cost figures omit costs for decommissioning and waste disposal.

Determining cost-effective pathways in the electricity sector

dynELMOD:

Linear program to determine cost-effective development pathways in the European electricity sector

Model:

33 European countries
 31 conventional or renewable generation and storage technologies
 9 investment periods, five-year steps 2020 – 2050
 Good storage representation (including reservoirs, DSM)
 Approximation of loop-flows in the HVAC electricity grid
 CCTS and CO2 storage constraints

1. Investment

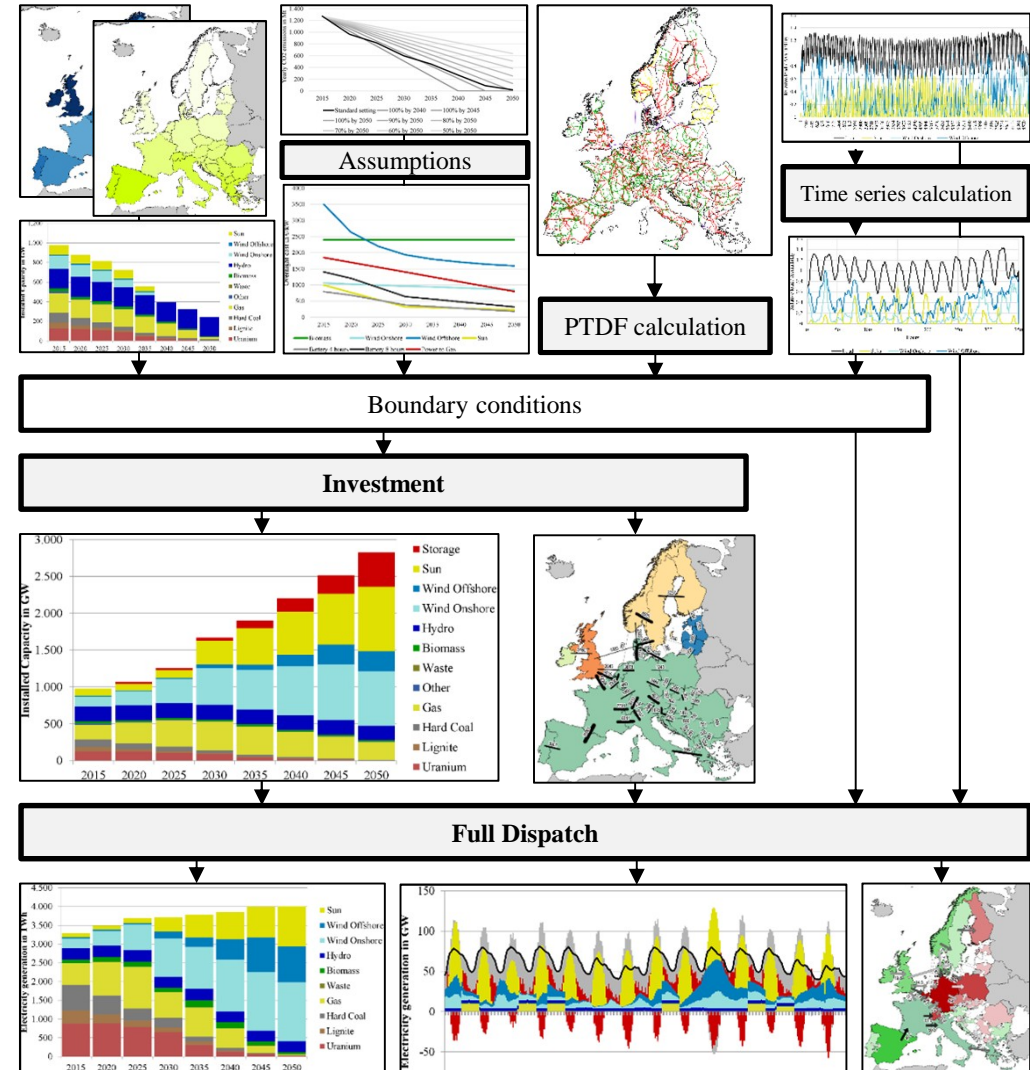
- Investment into Conventional and renewable generation, cross-border capacities
- Reduced time series used

2. Dispatch

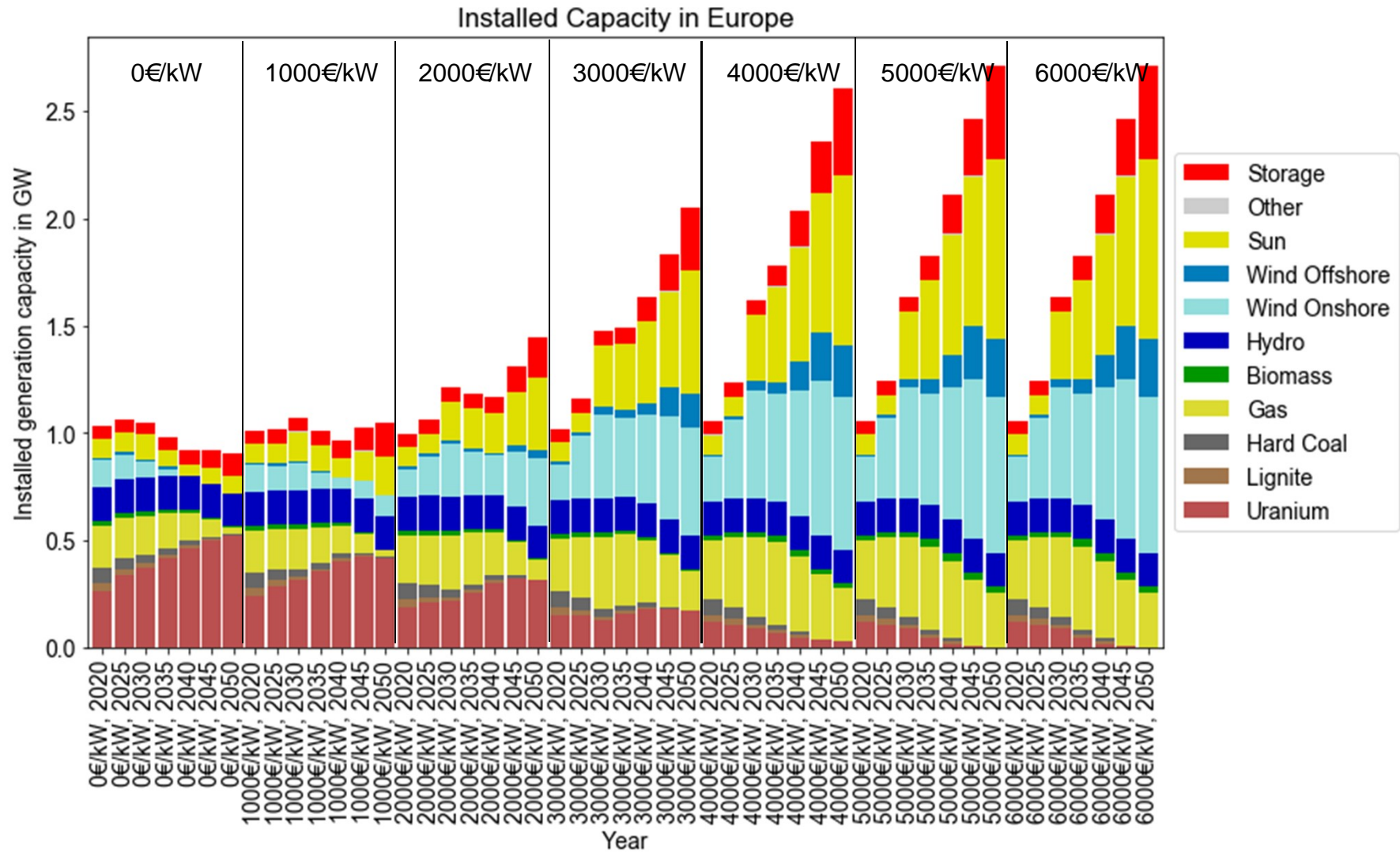
- Investment result from step 1 fixed
- Time series with 8760 hours (validate result adequacy)

Outputs

- Ø Investment into generation capacities, storage, transmission capacities
- Ø Generation and storage dispatch
- Ø Emissions by fuel
- Ø Flows, imports, exports



Nuclear power installation cost variation from 0€/kW to 6000€/kW



Conclusion: Nuclear power is not competitive in Europe

- **Investment costs for nuclear power plant have significantly increased in the western hemisphere over the last decades and no learning effects could be seen**
- **Supply chain for the reactor pressure vessel is very constraint**
- **Decommissioning cost of about 1000 €/kW are neglected most of the time and further reduce profitability**
- **Comparing the LCOE of nuclear power plants to other renewable and fossil technologies, competitiveness is far from being in sight**

- **Analyzing the system value of nuclear power plants due to higher availability and reliability than fluctuating renewables does not change this picture**
- **The holistic model shows that nuclear power plants are not competitive and therefore not part of the cost minimal generation portfolio for a decarbonized European electricity system**

- **The cost for the disposal of nuclear waste and its risk are not included, which would further reduce the competitiveness of nuclear electricity generation**

Questions?
