

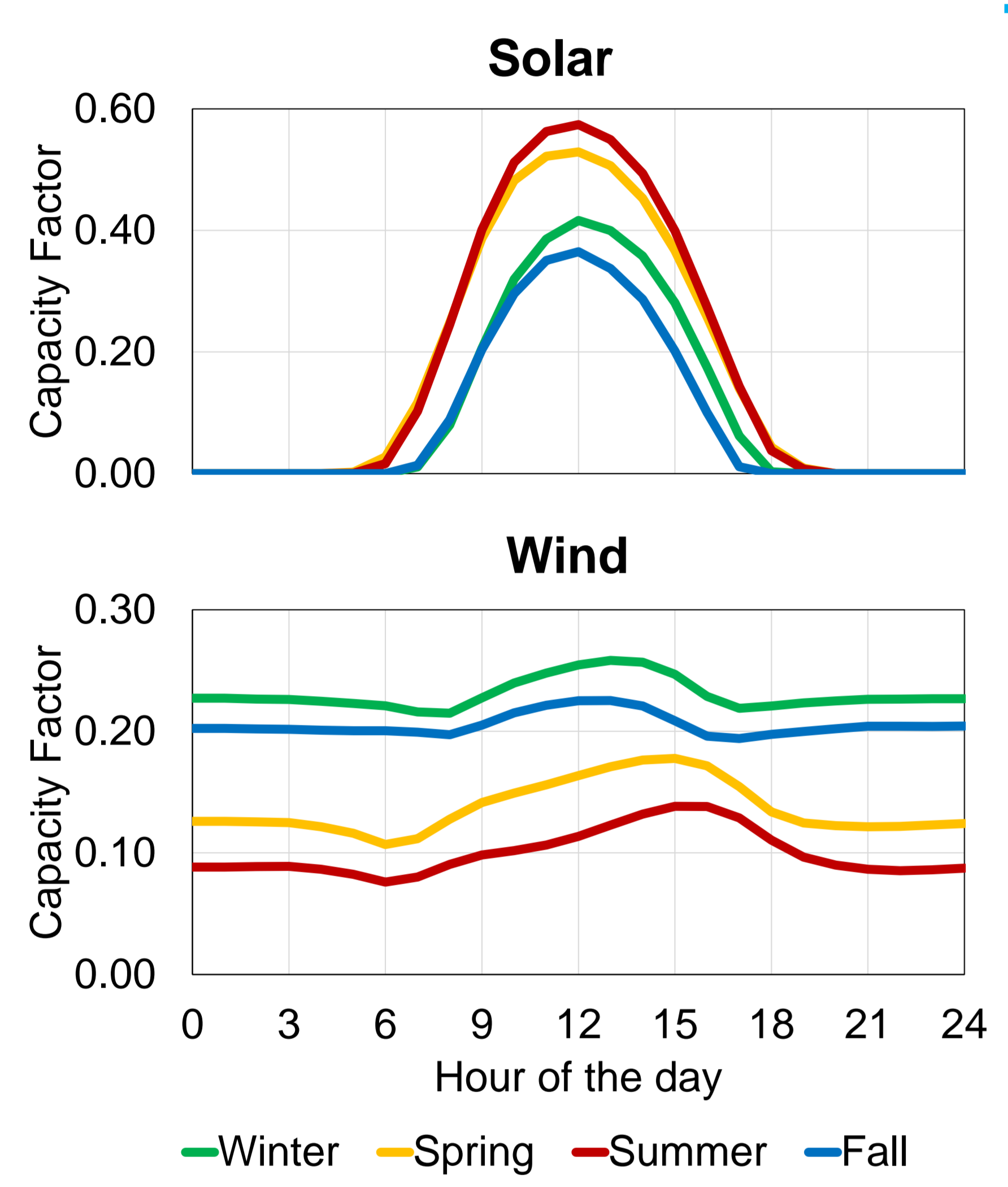
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Background

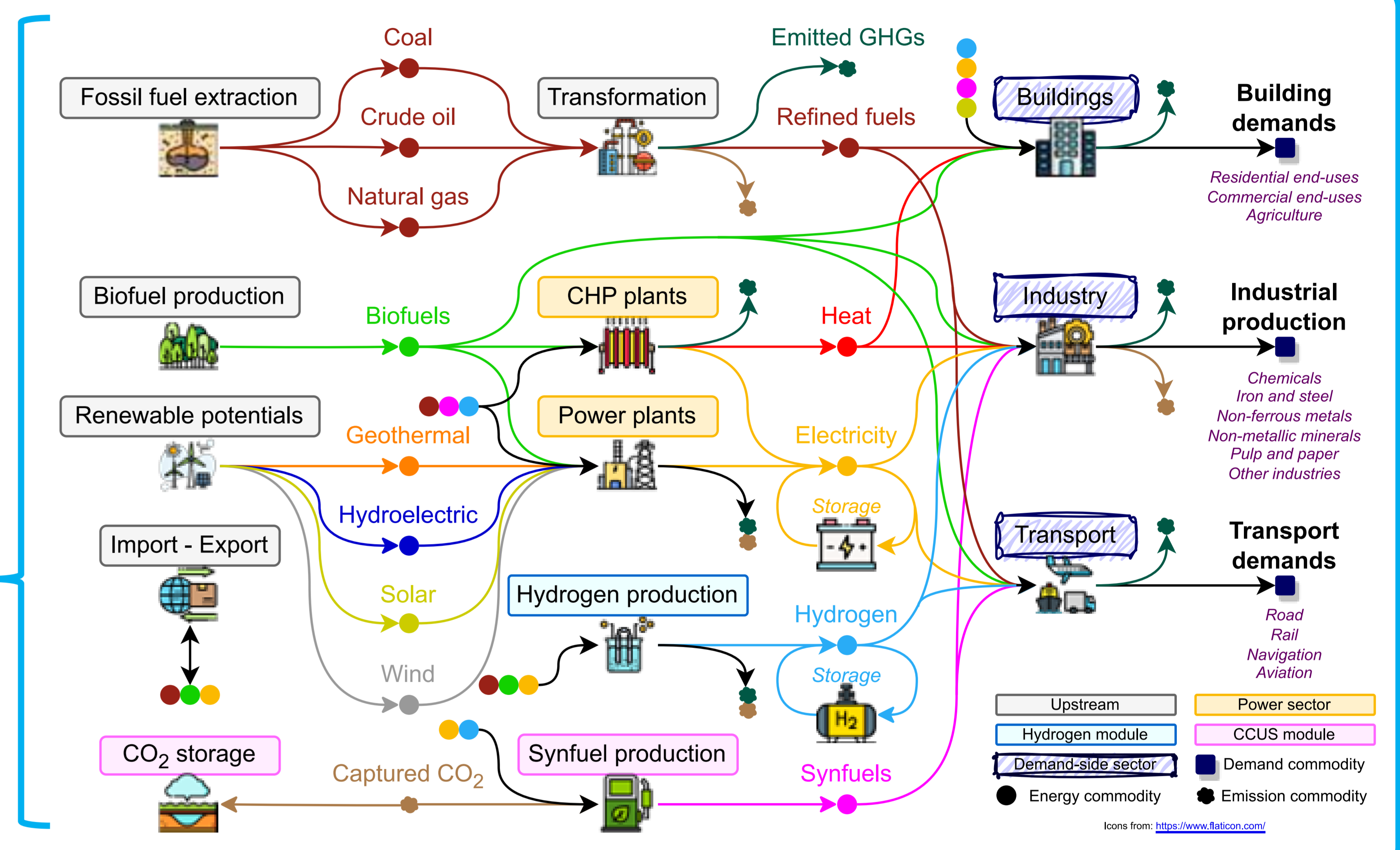
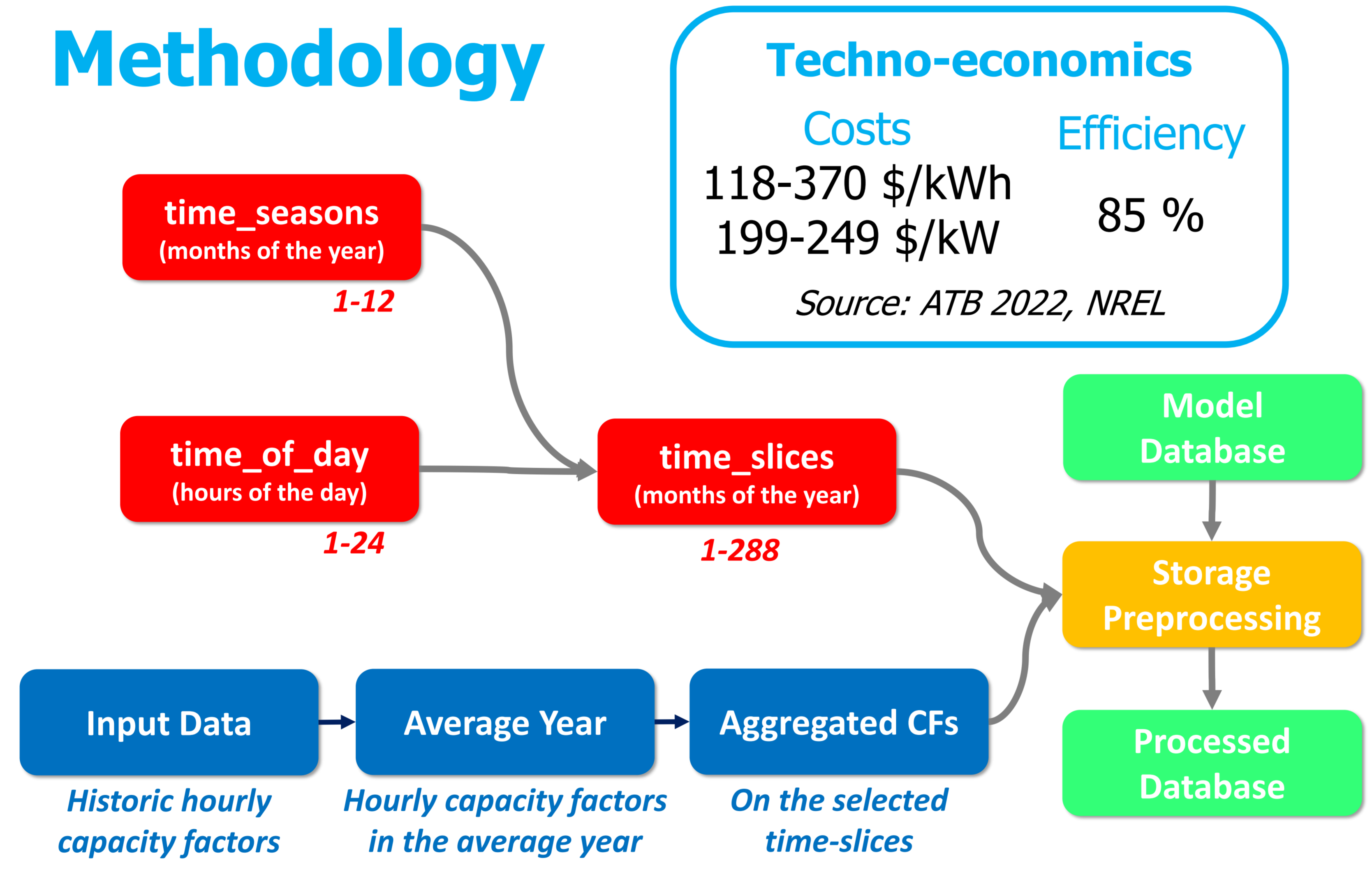
- ❖ **Energy system** and **capacity expansion models** do not consider in detail **short term dynamics**
- ❖ **Energy storage** is expected to play a role in the future energy system **combined with renewable energy**

Aim

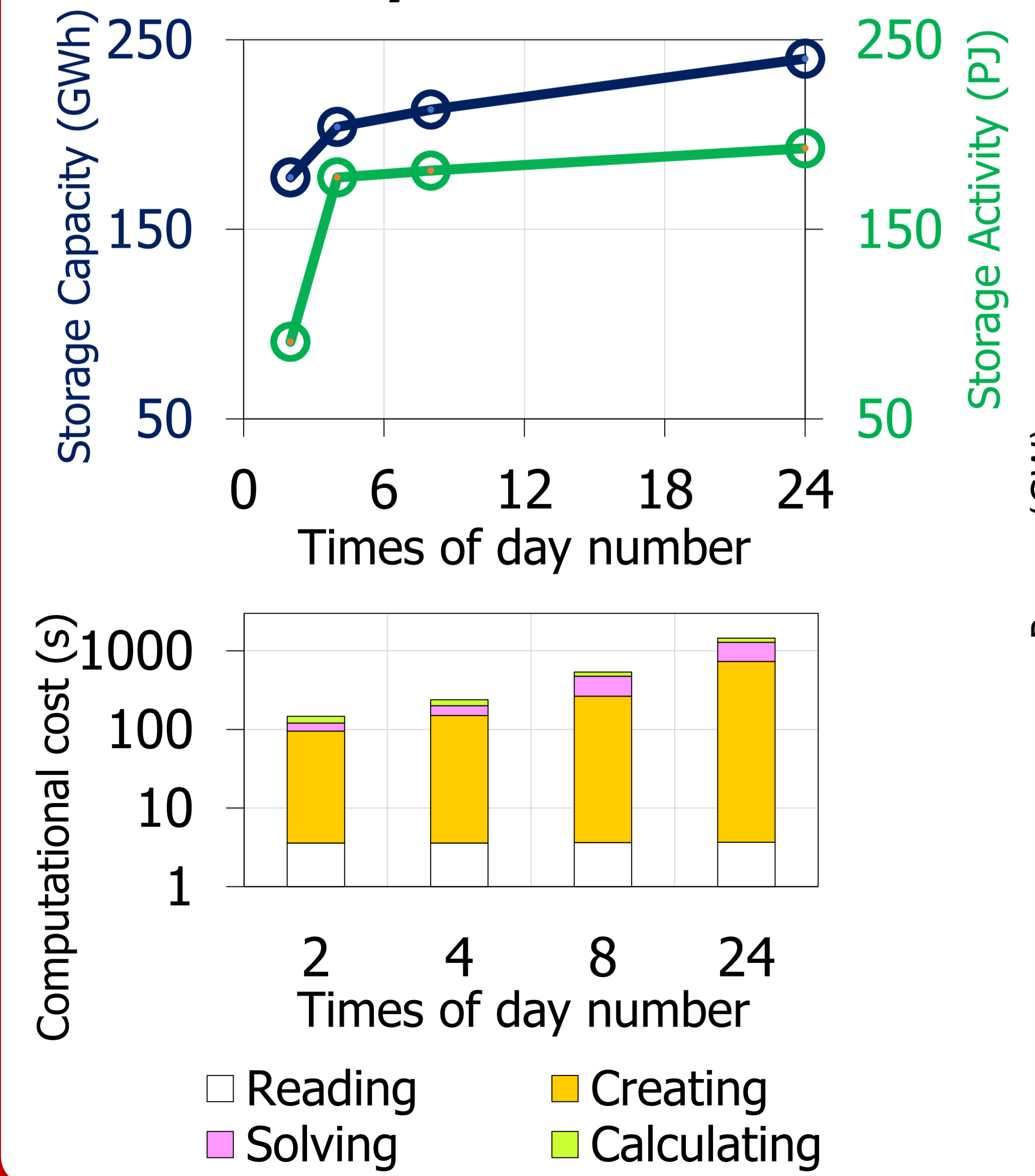
- ❖ Include average **renewable dynamics** and **storage options** in **capacity expansion models** and investigate the time scale role
- ❖ Application to decarbonization scenarios for the Italian energy system



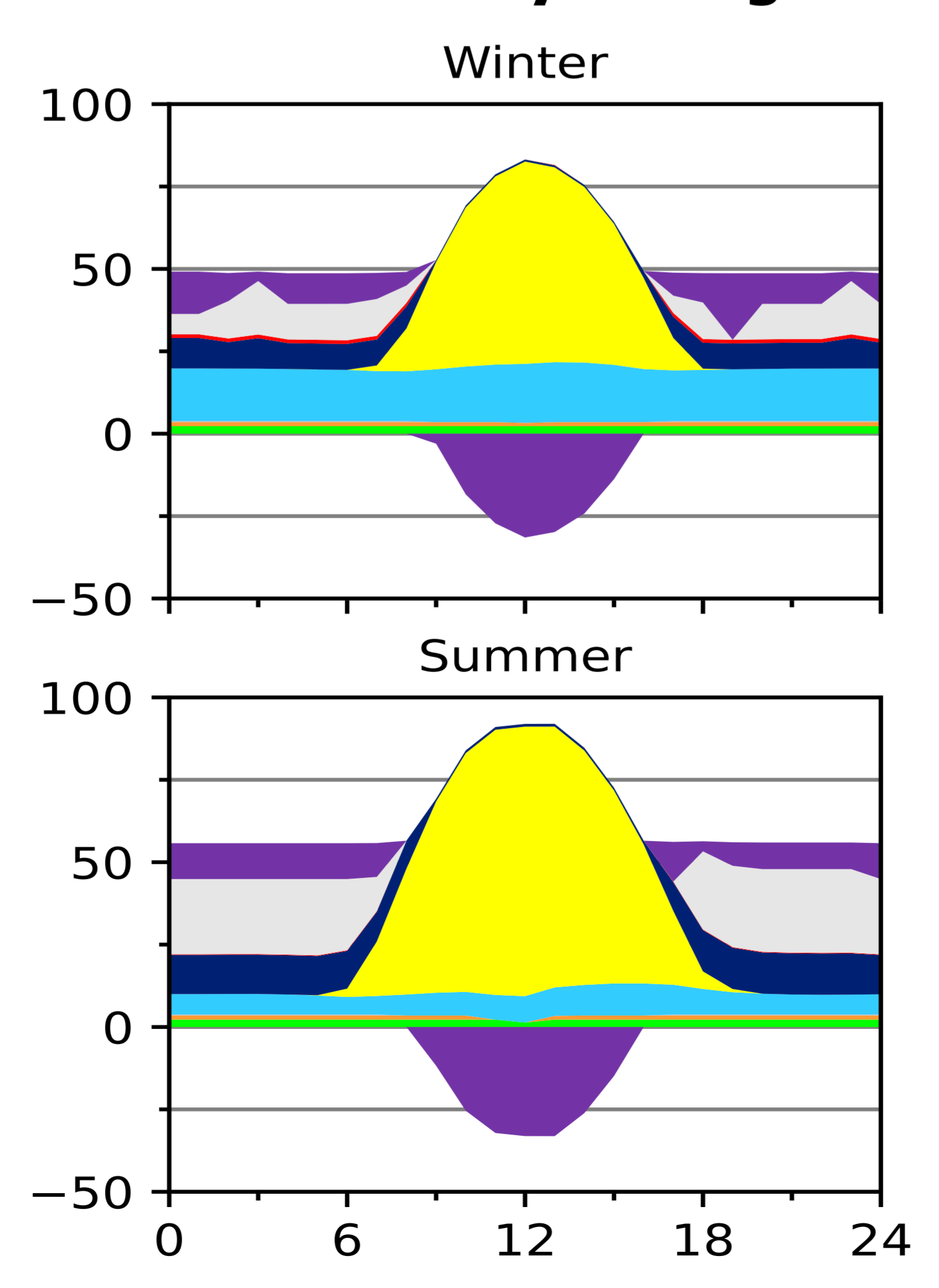
Methodology



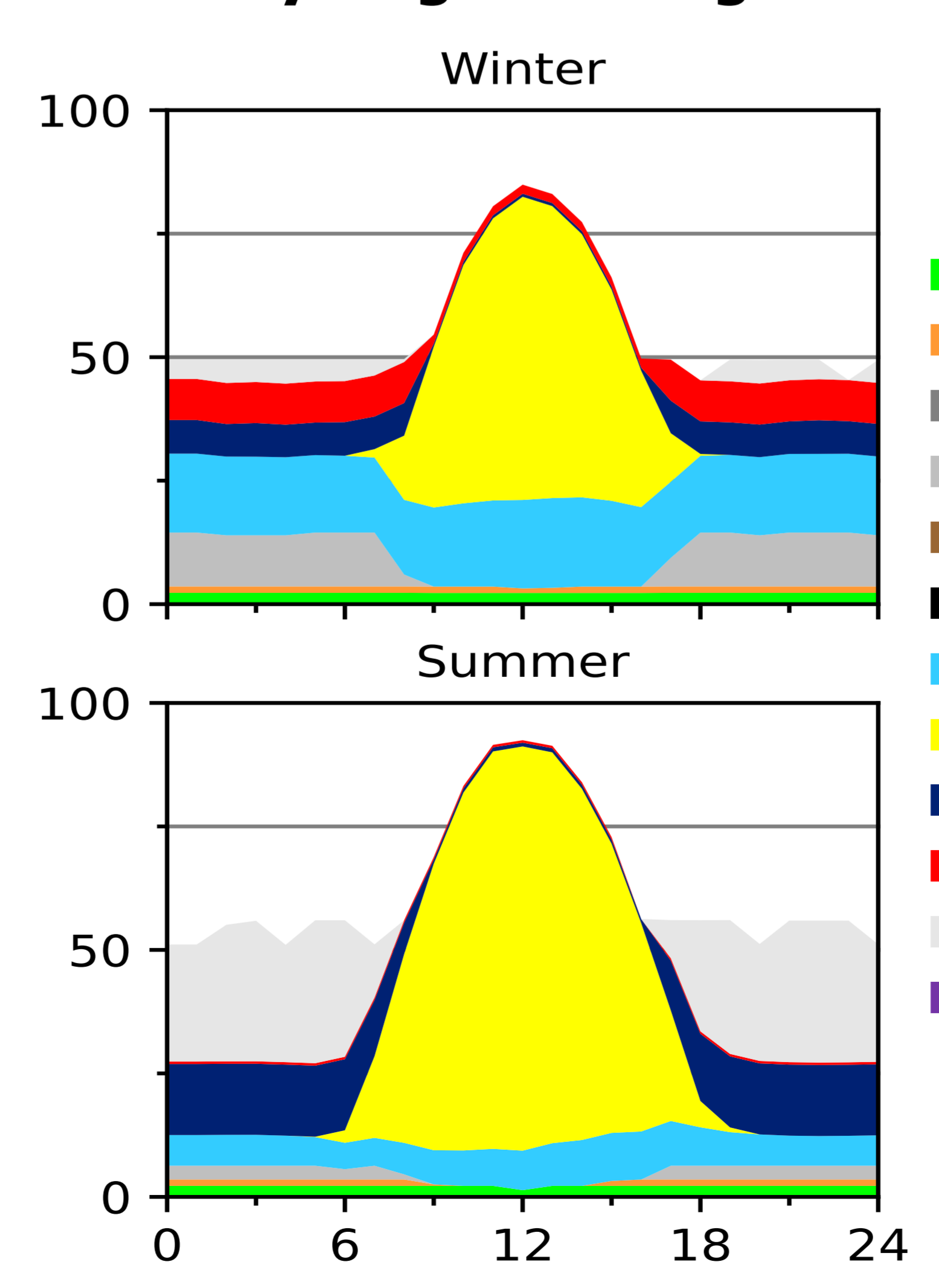
Sensitivity on the time slices



Electricity Storage

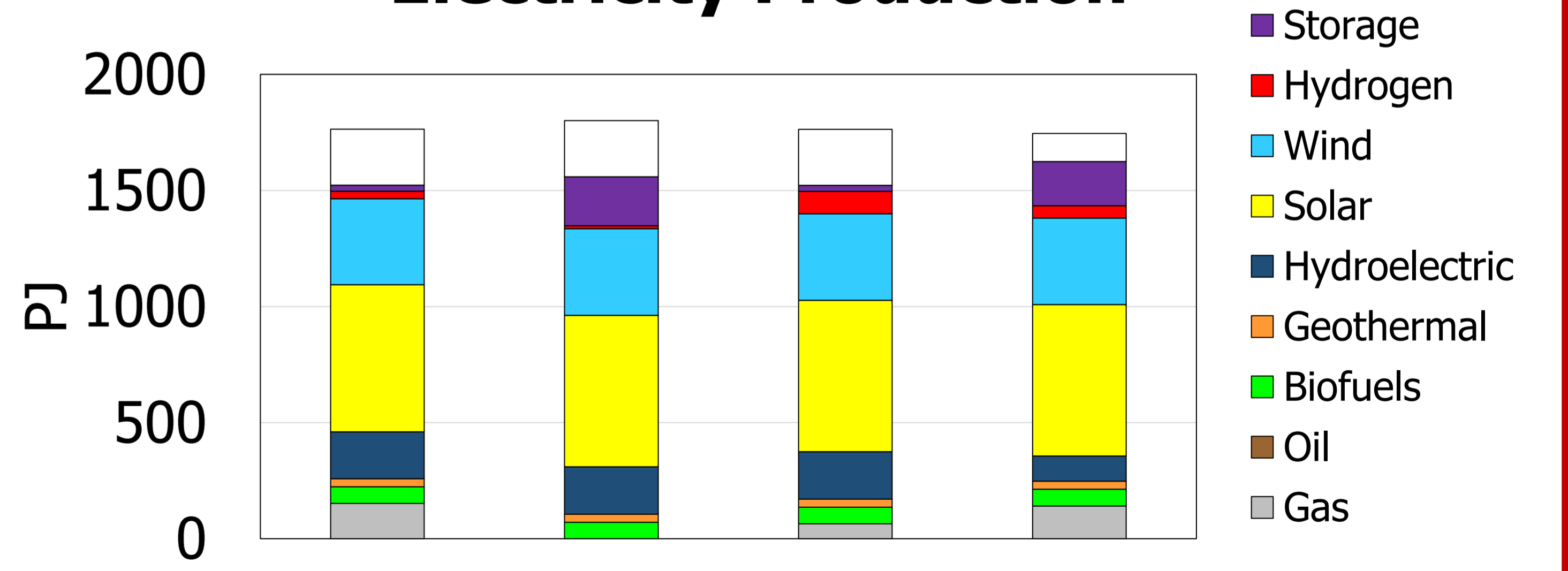


Hydrogen Storage



Results

Electricity Production



Remarks

- ❖ **Energy storage plays a role** in capacity expansion models.
- ❖ Energy storage **competes** with **hydroelectric and import** in satisfying the demand **during the night**.
- ❖ Electricity storage **enables complete decarbonization** of the Italian power sector in 2050.