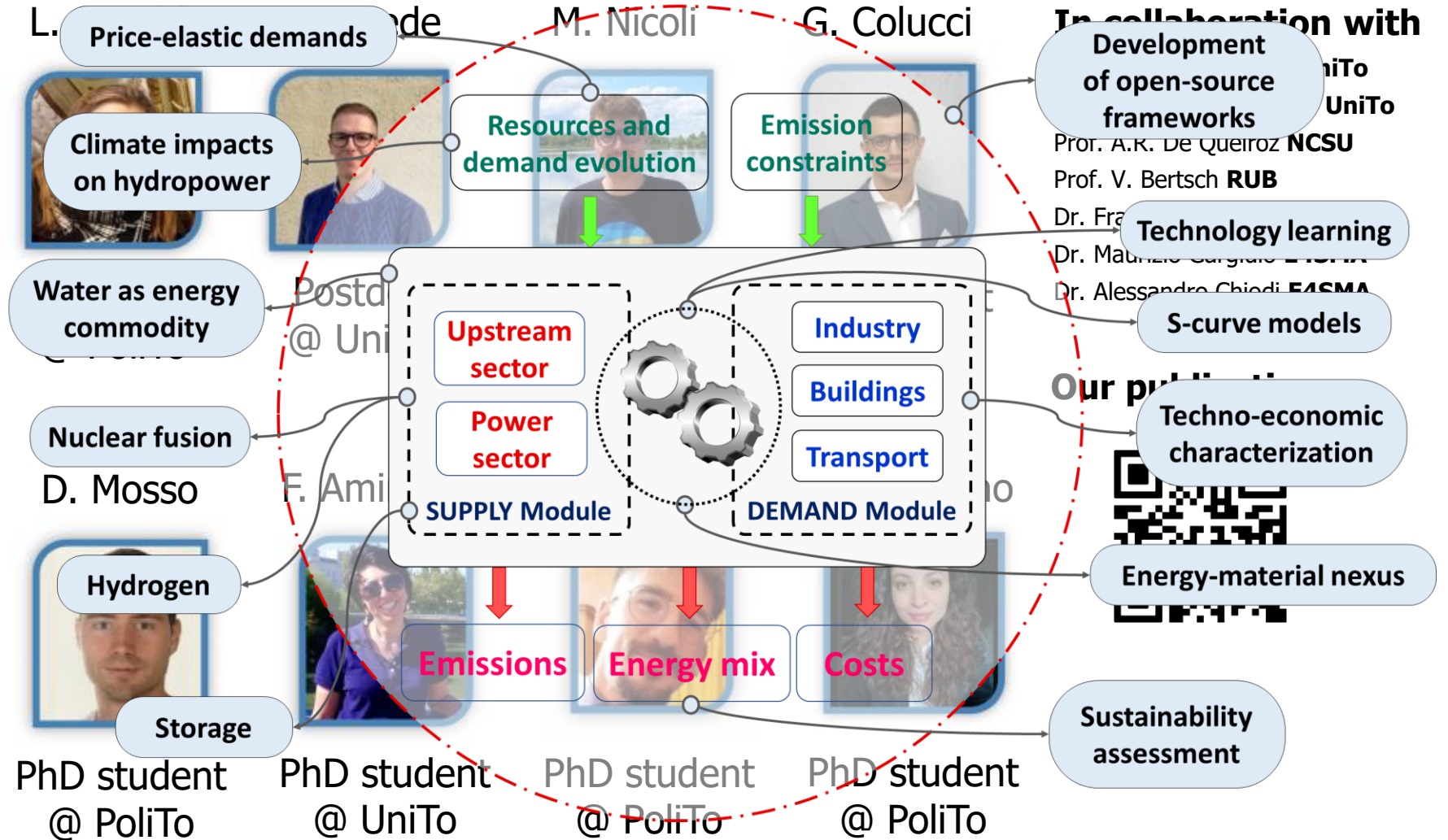


Energy system modeling activities in the MAHTEP Group



Our tools:



Modeling energy storage in TEMOA-Italy



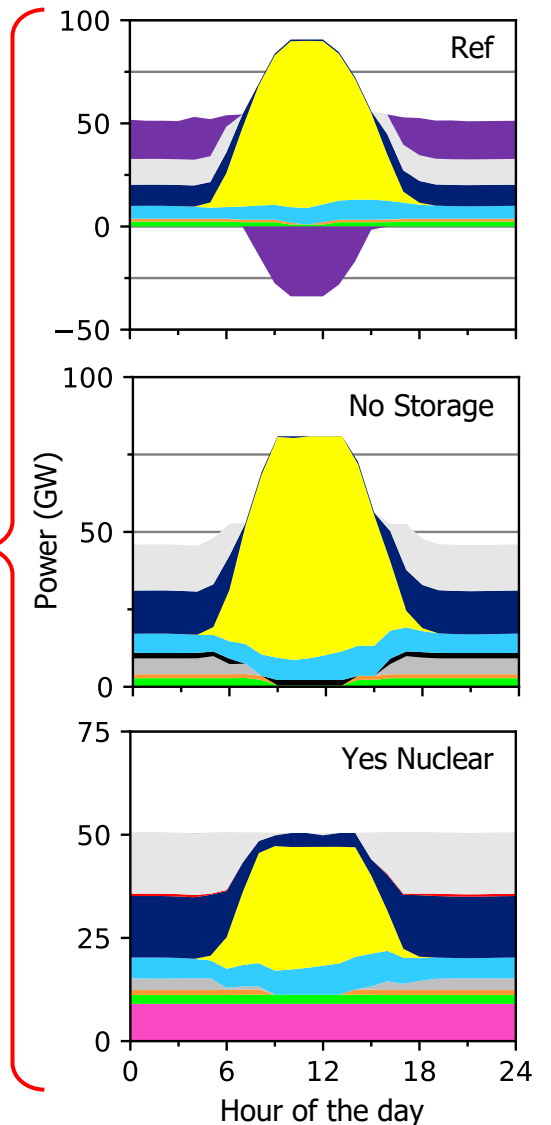
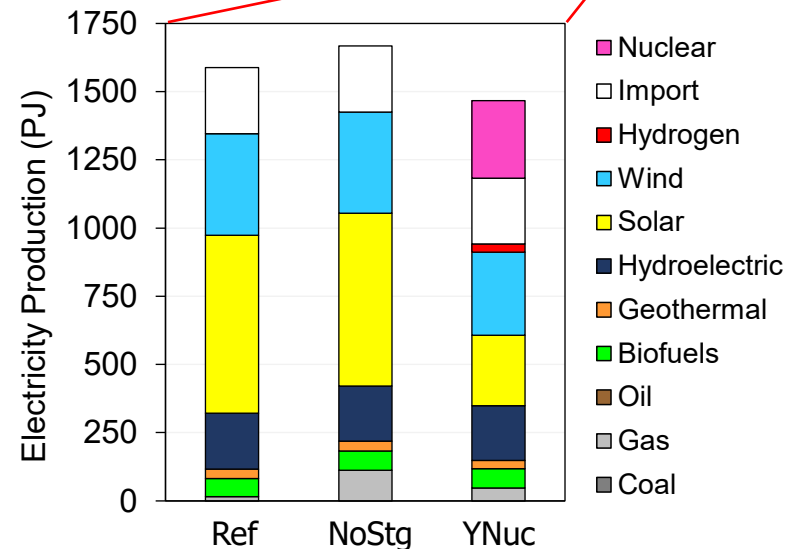
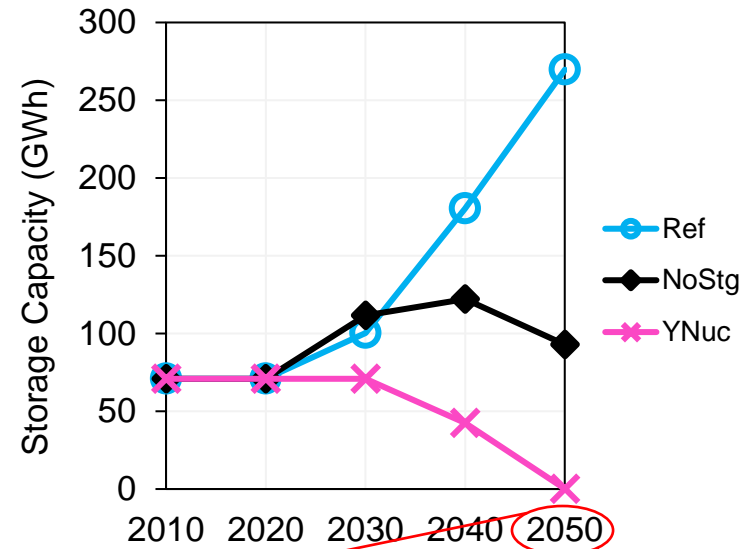
Integration of **storage technologies** and **short-term dynamics** related to the **availability of renewable sources**



Time scale refinement (up to 288 time slices) of **TEMOA-Italy** over the long run (up to 2050)

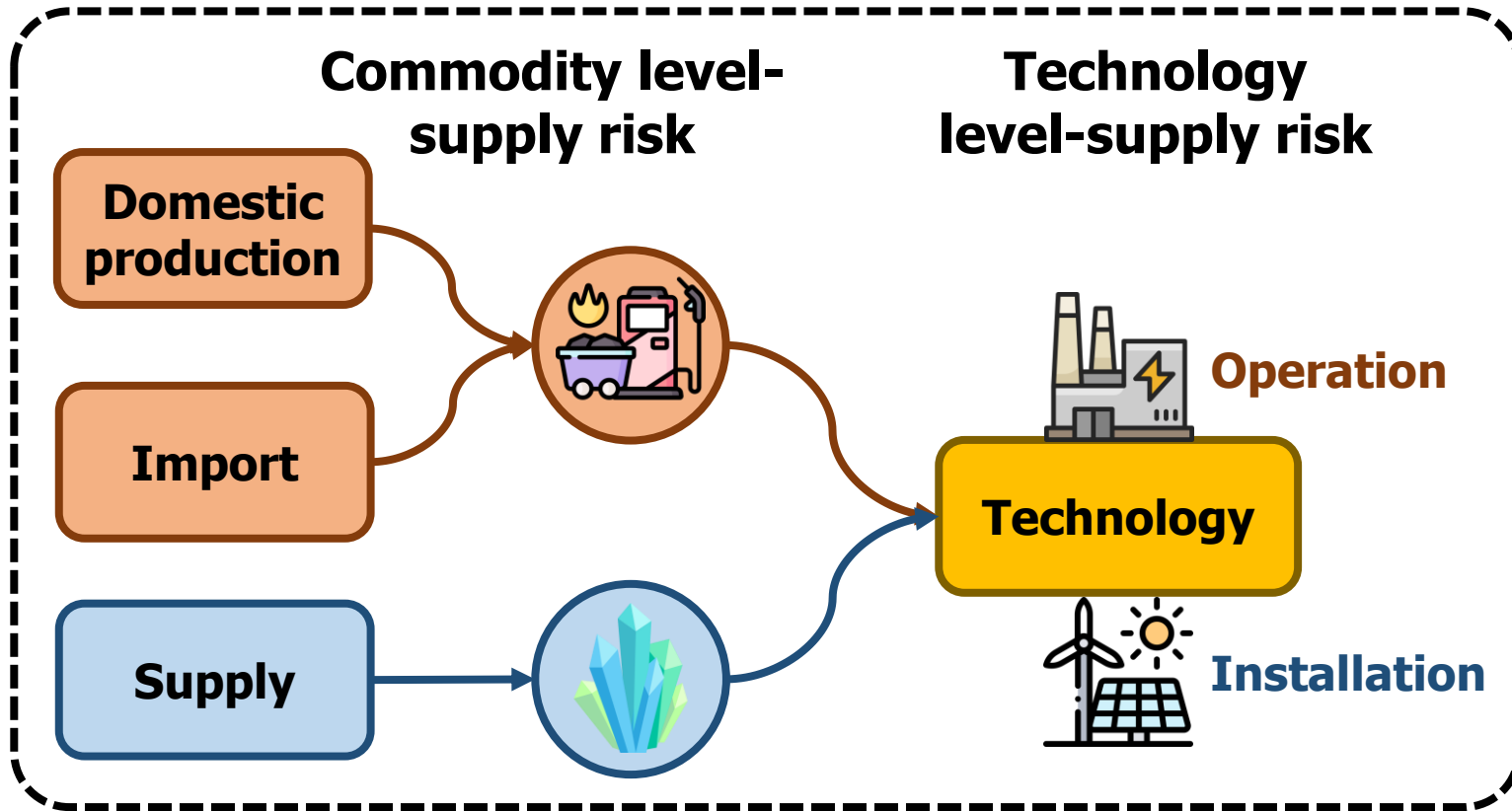
In collaboration with

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Highly **material intensive** energy **transition**
Potential **bottlenecks** along the **supply chain**

How to consider this in ESOMs?



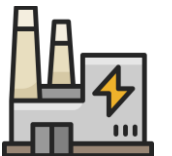
 Energy commodity  Material commodity



Study the **trade-off** between:



Energy supply risk



Material supply risk



In collaboration with

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UNIVERSITÄT
BOCHUM **RUB**