

LINKING GCAM WITH SPECIALIZED POWER SYSTEM MODELS (WORK IN PROGRESS)

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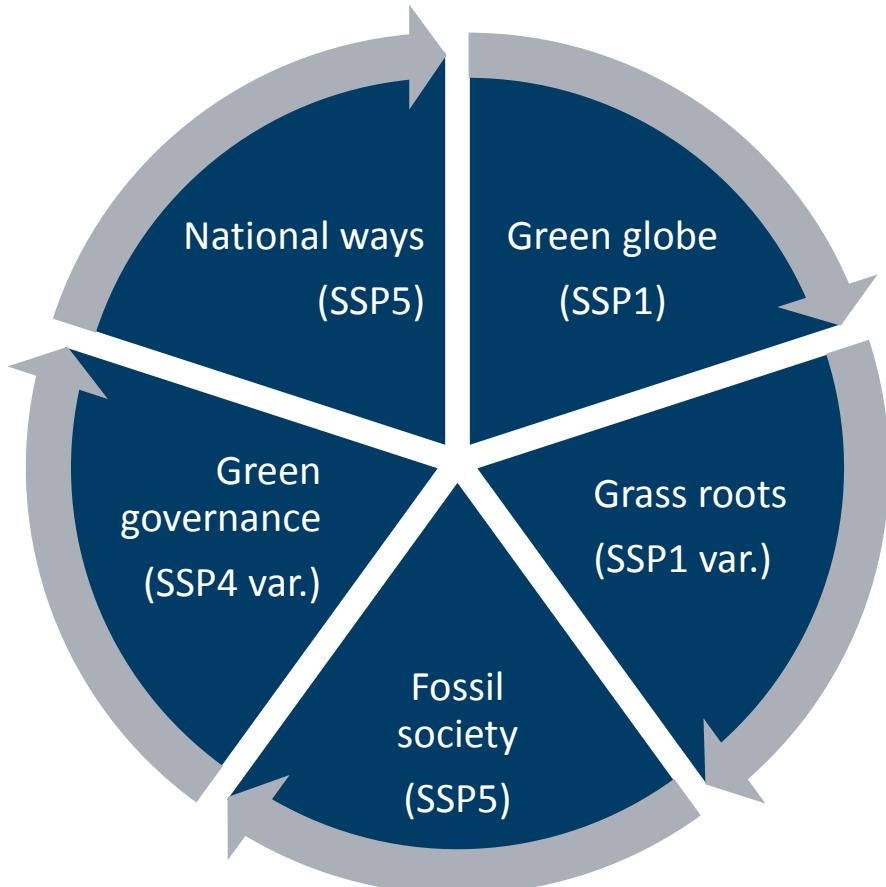
Contents

- Scenarios: futures and strategies
- The models: short introduction
- Linking methodology : GCAM-EMPIRE-EMPS
- Initial results: linking GCAM-EMPIRE
 - Iteration 1
 - Iteration 2, added CO2 constraints and bio constraints
- Further work

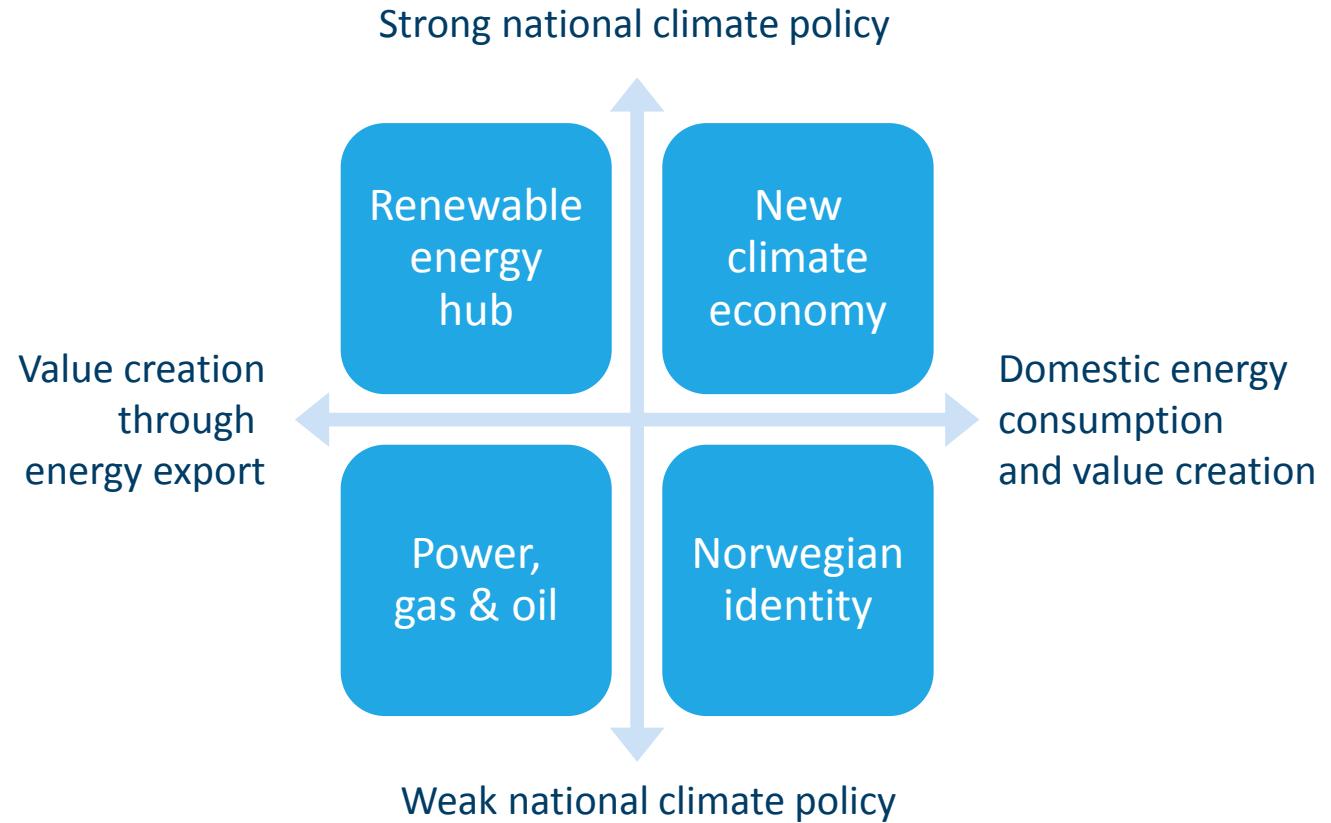


Energy scenarios CenSES

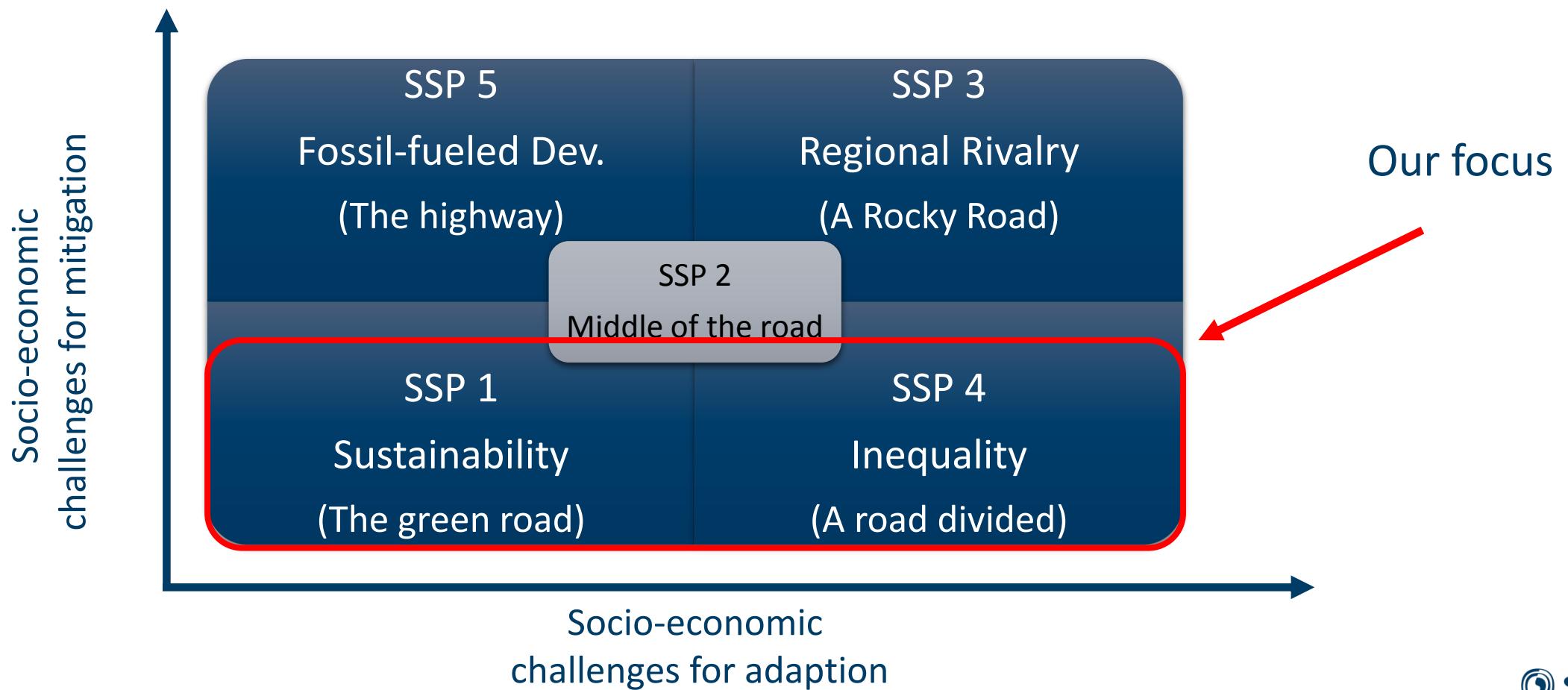
Futures

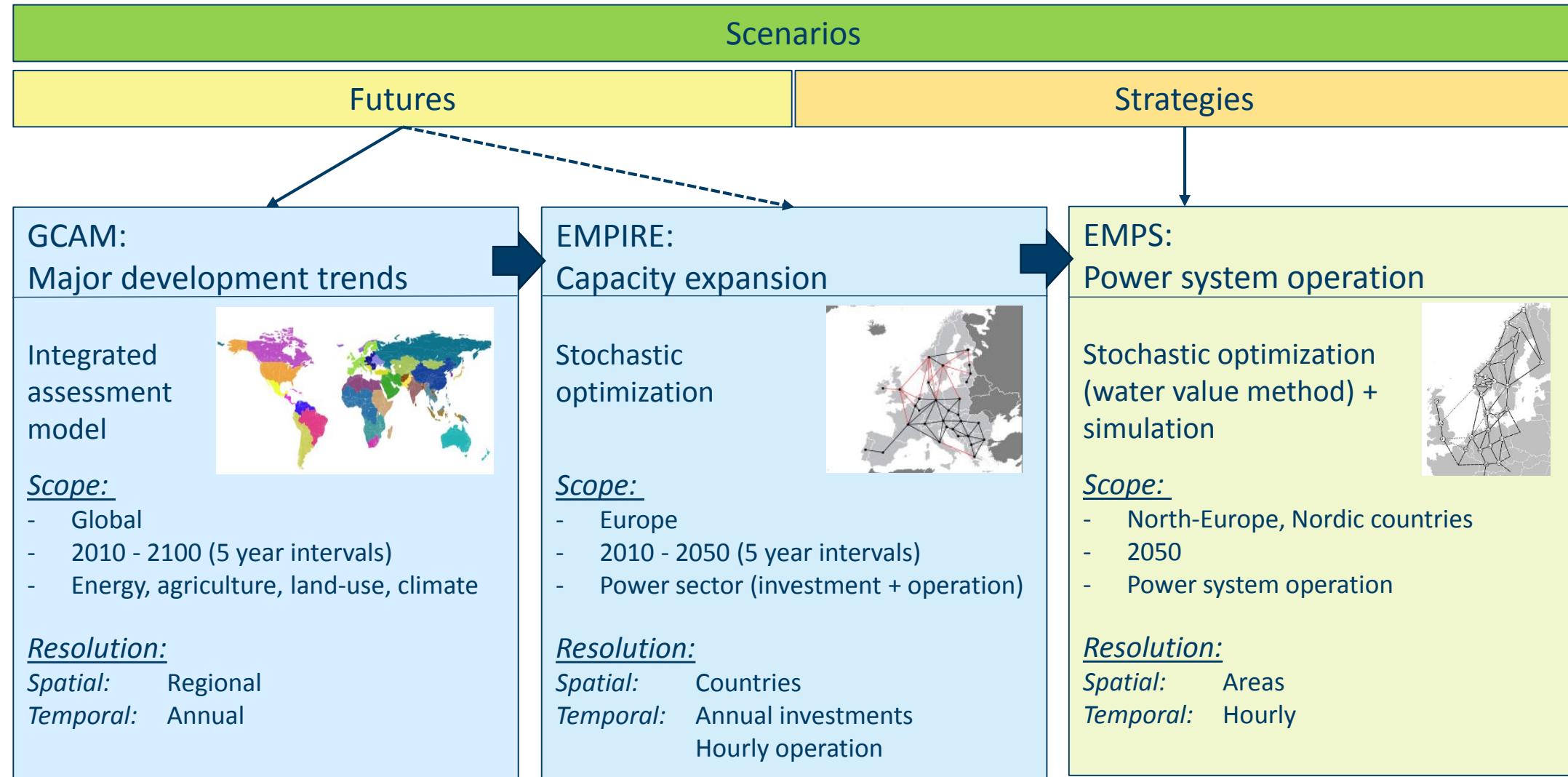


Strategies



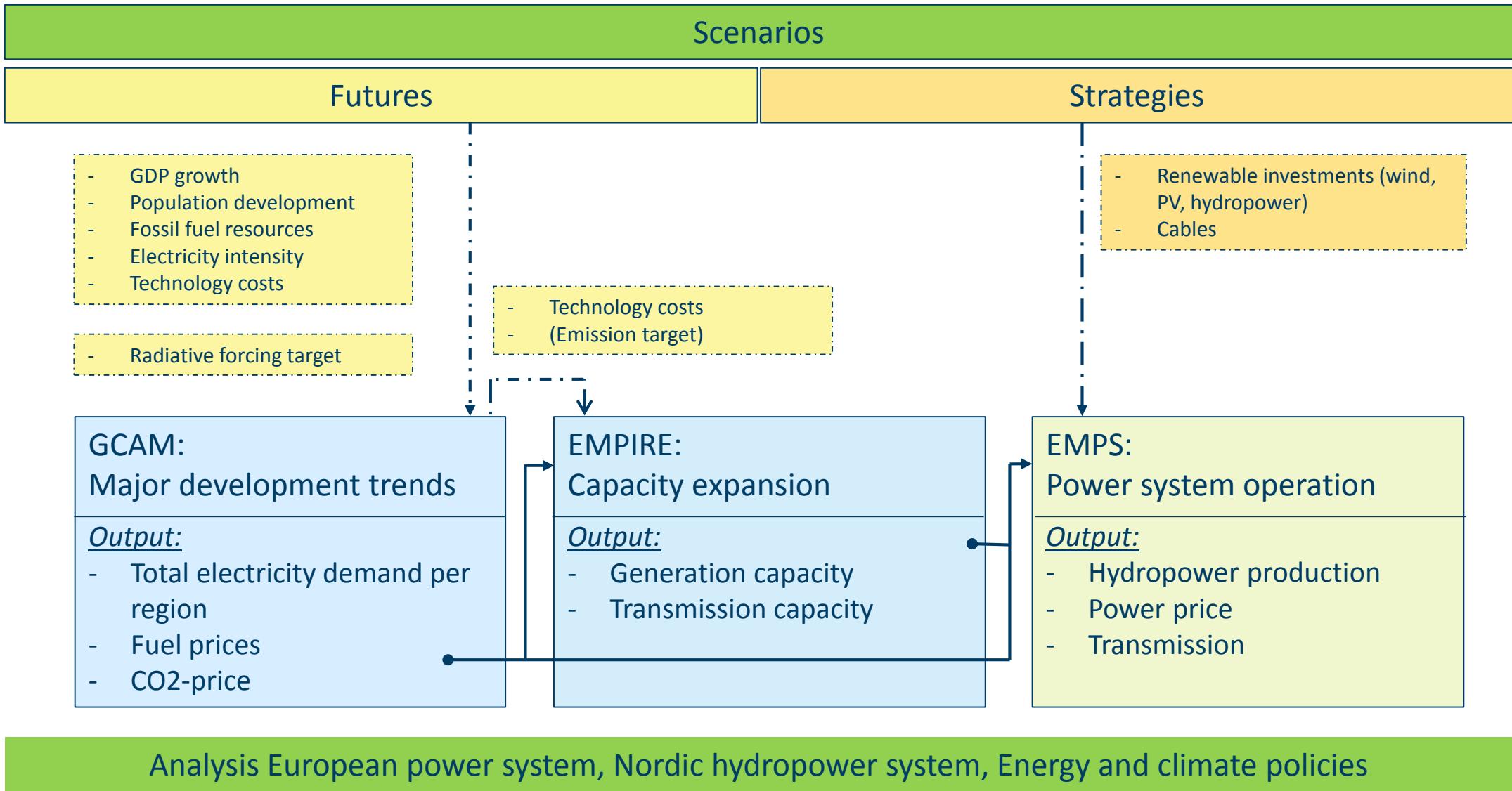
Futures - 2nd generation Shared Socio-economic Pathways (SSPs)



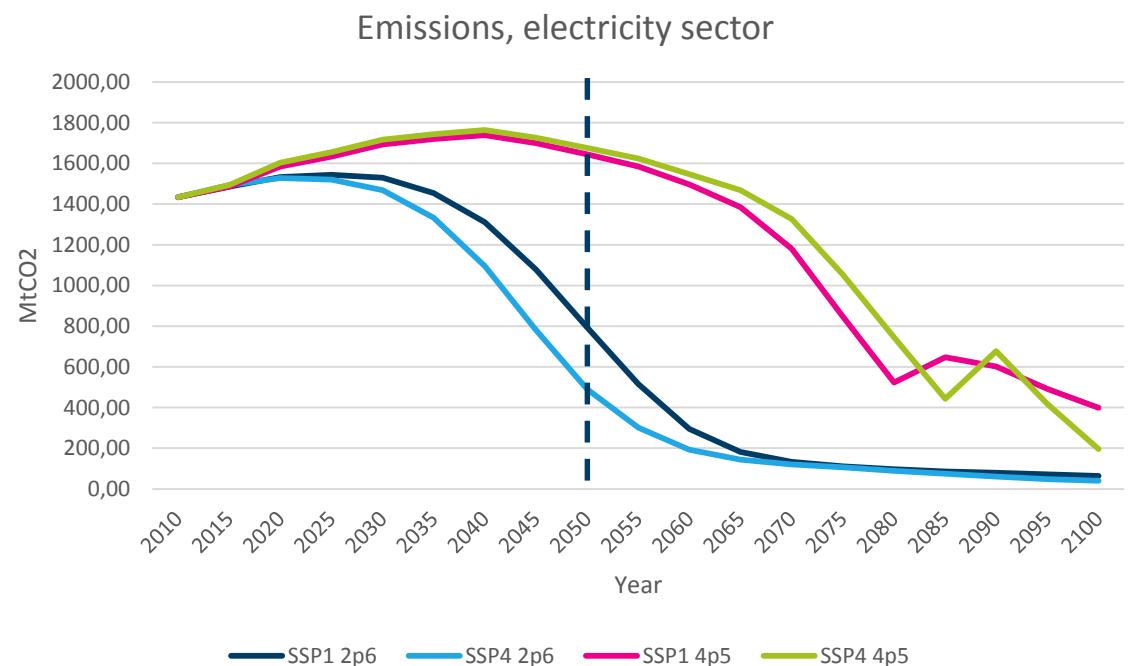
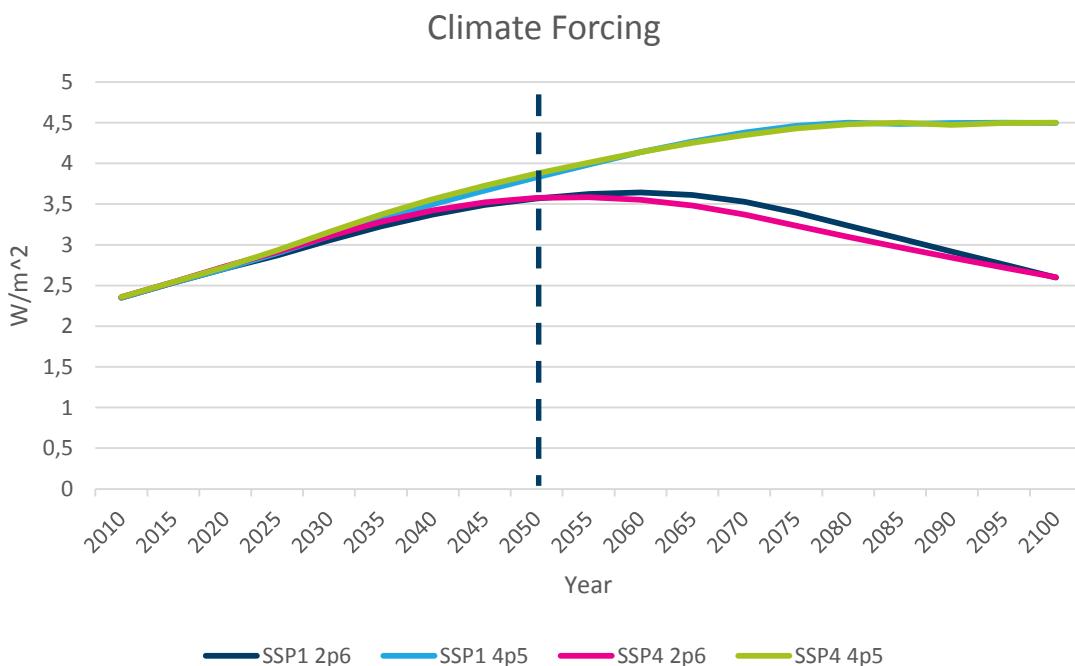


Analysis: European power system, Nordic hydropower system, Energy and climate policies

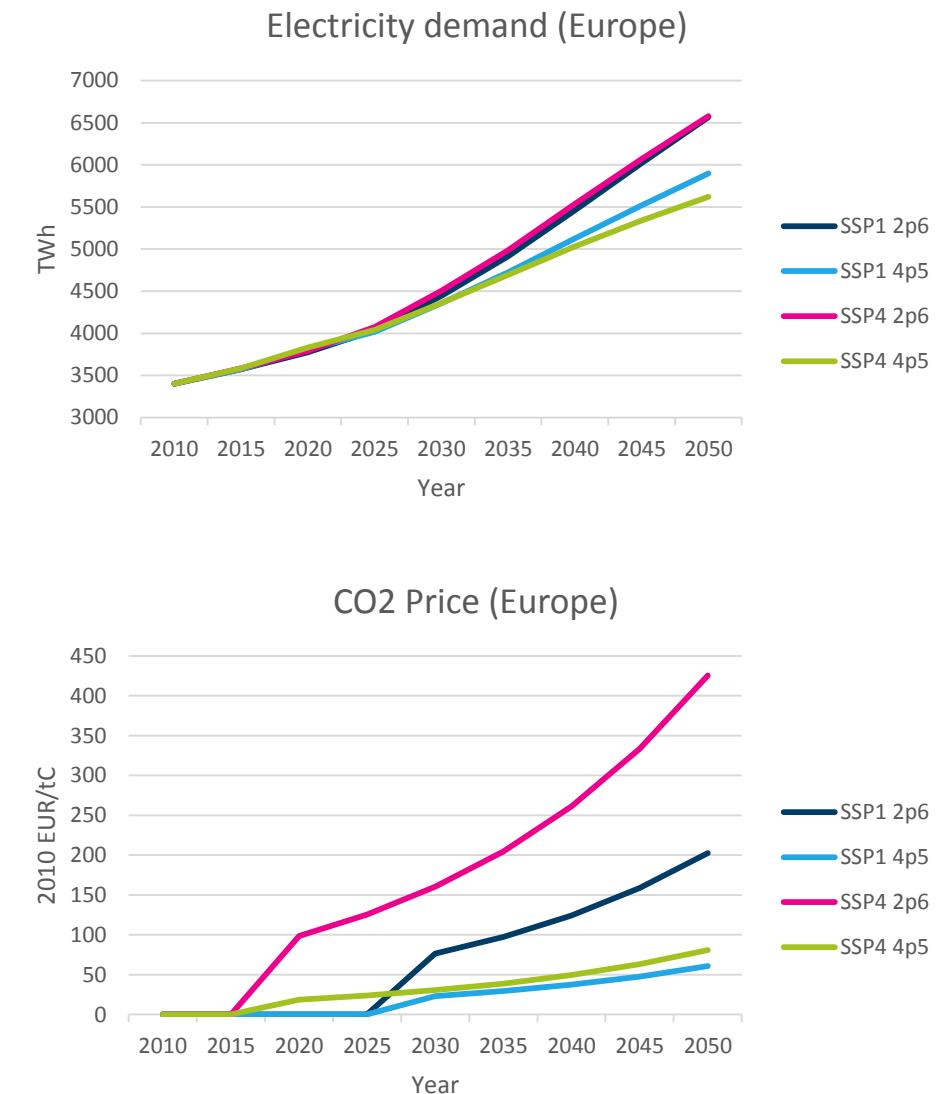
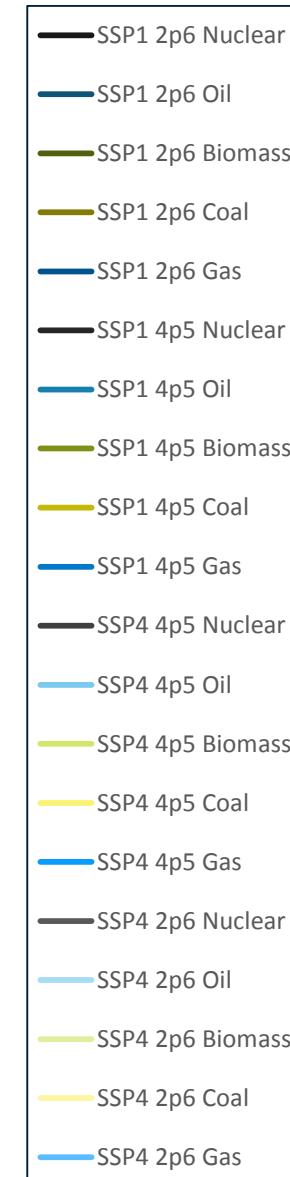
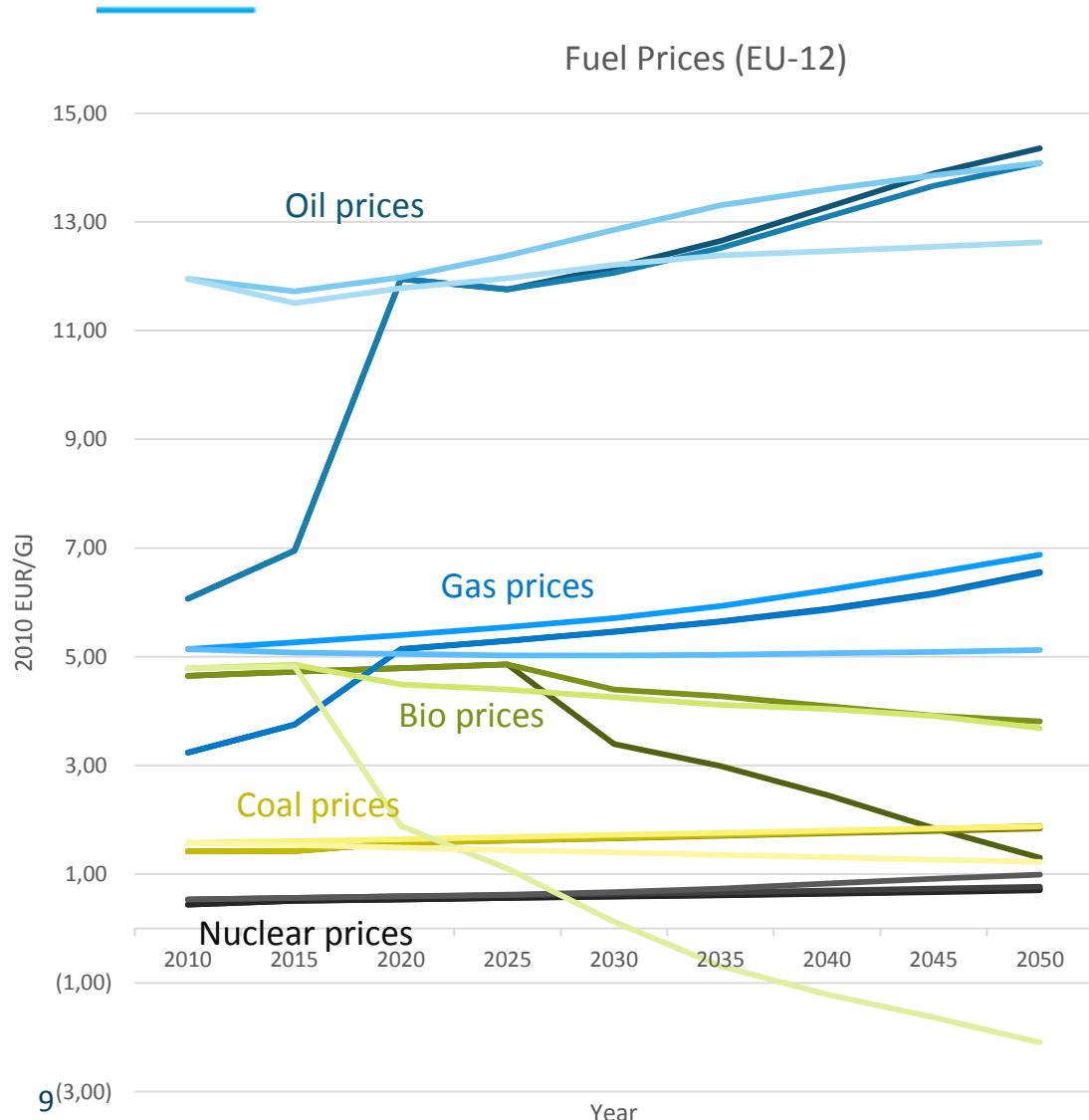
LINKING METHOD



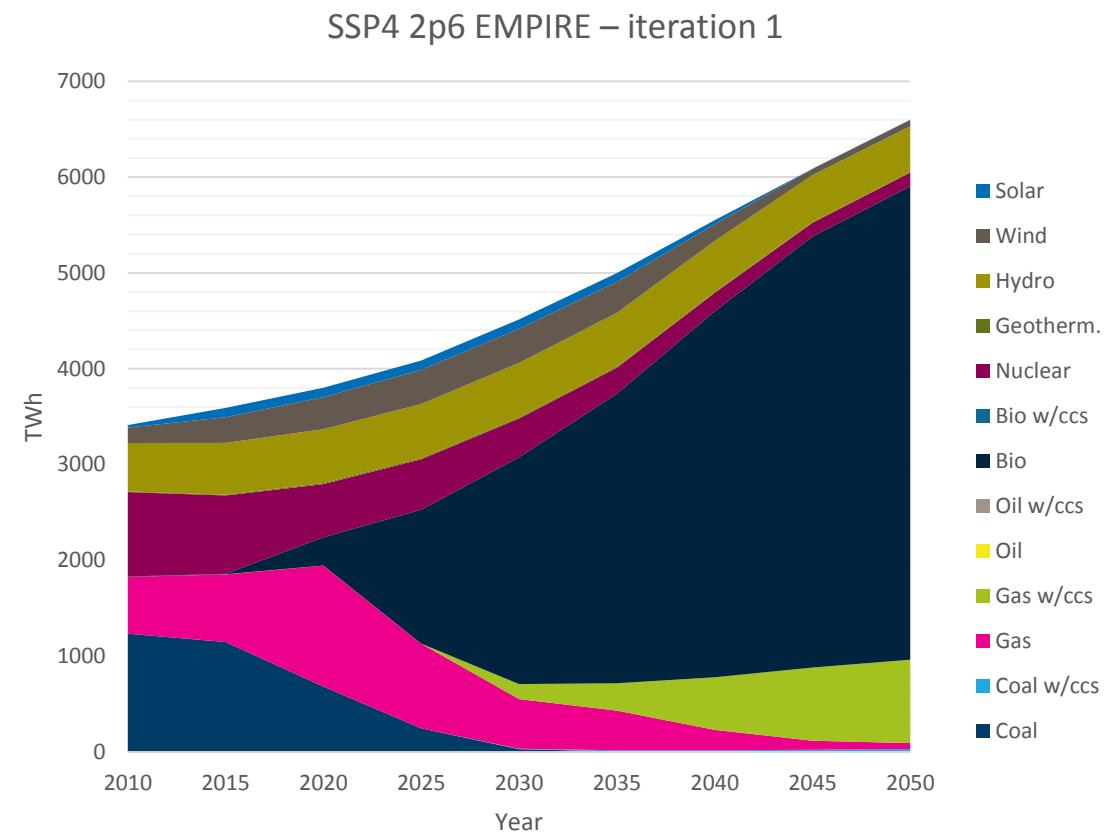
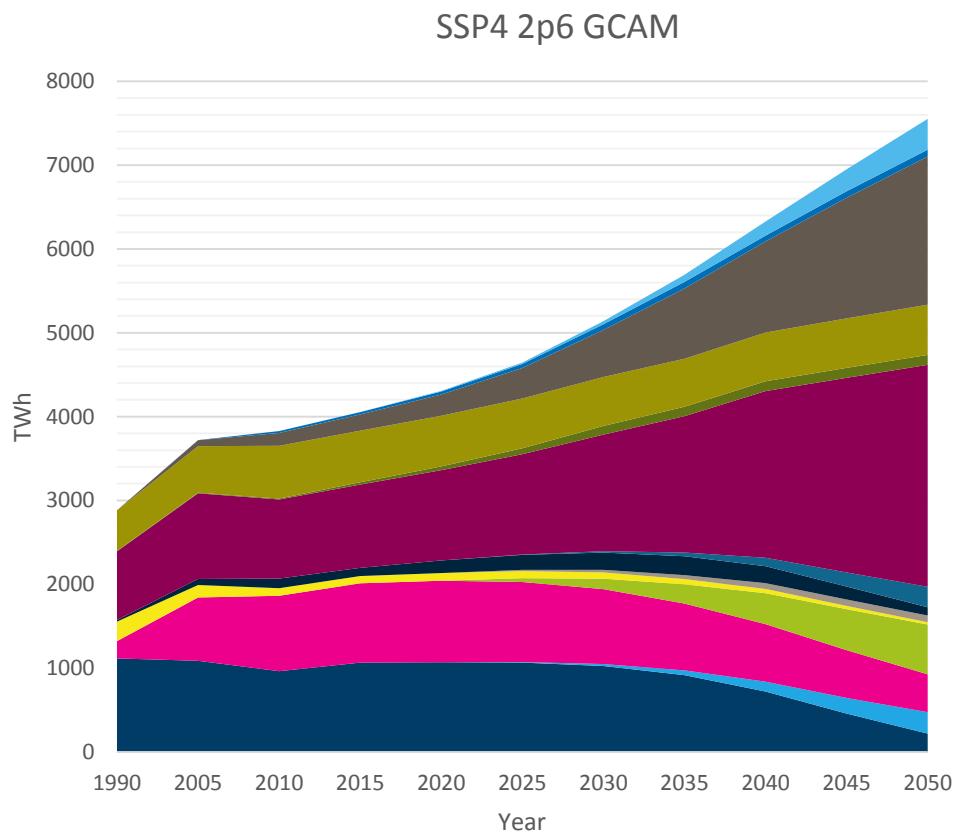
GCAM emissions (Europe)



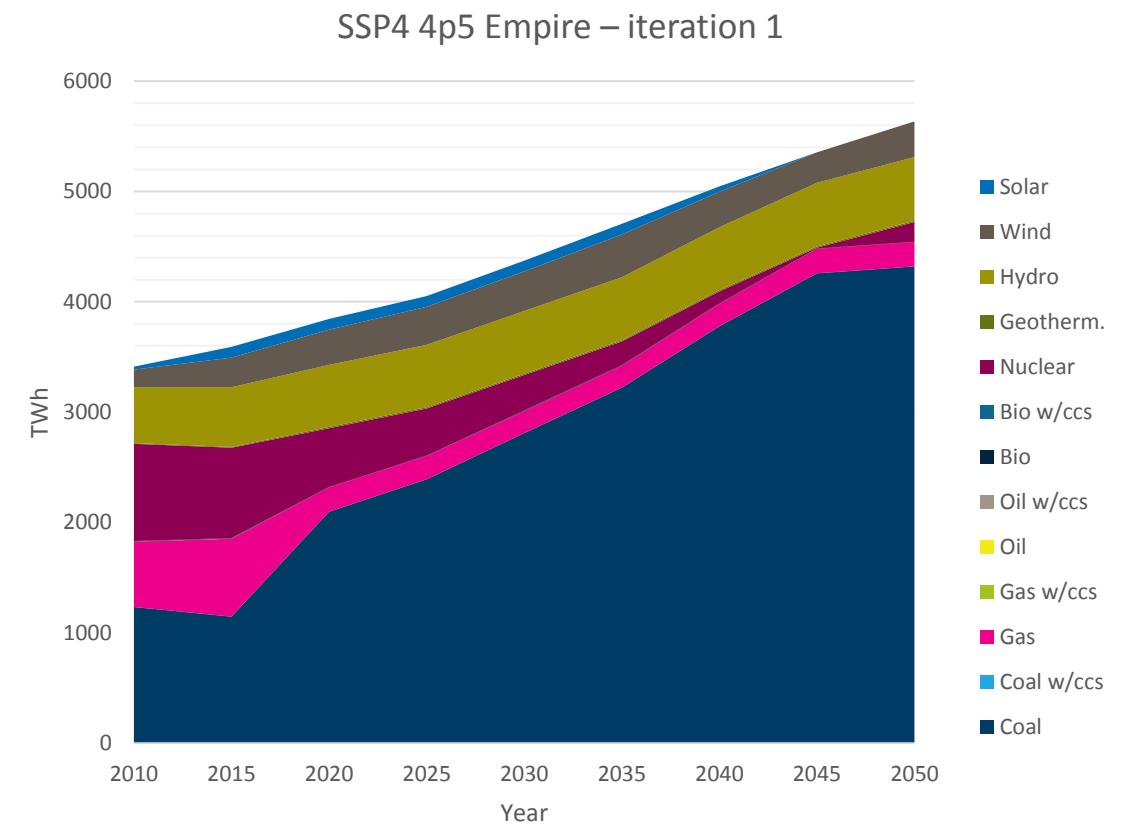
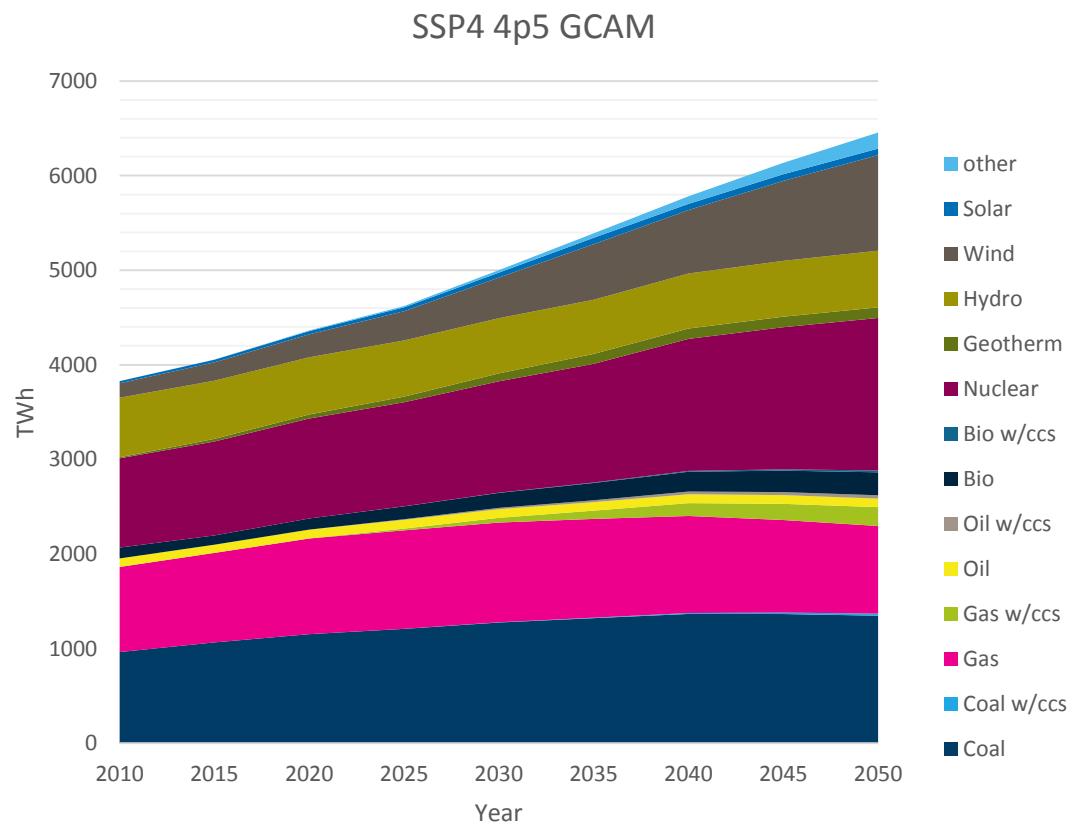
GCAM -> EMPIRE



Power generation mix

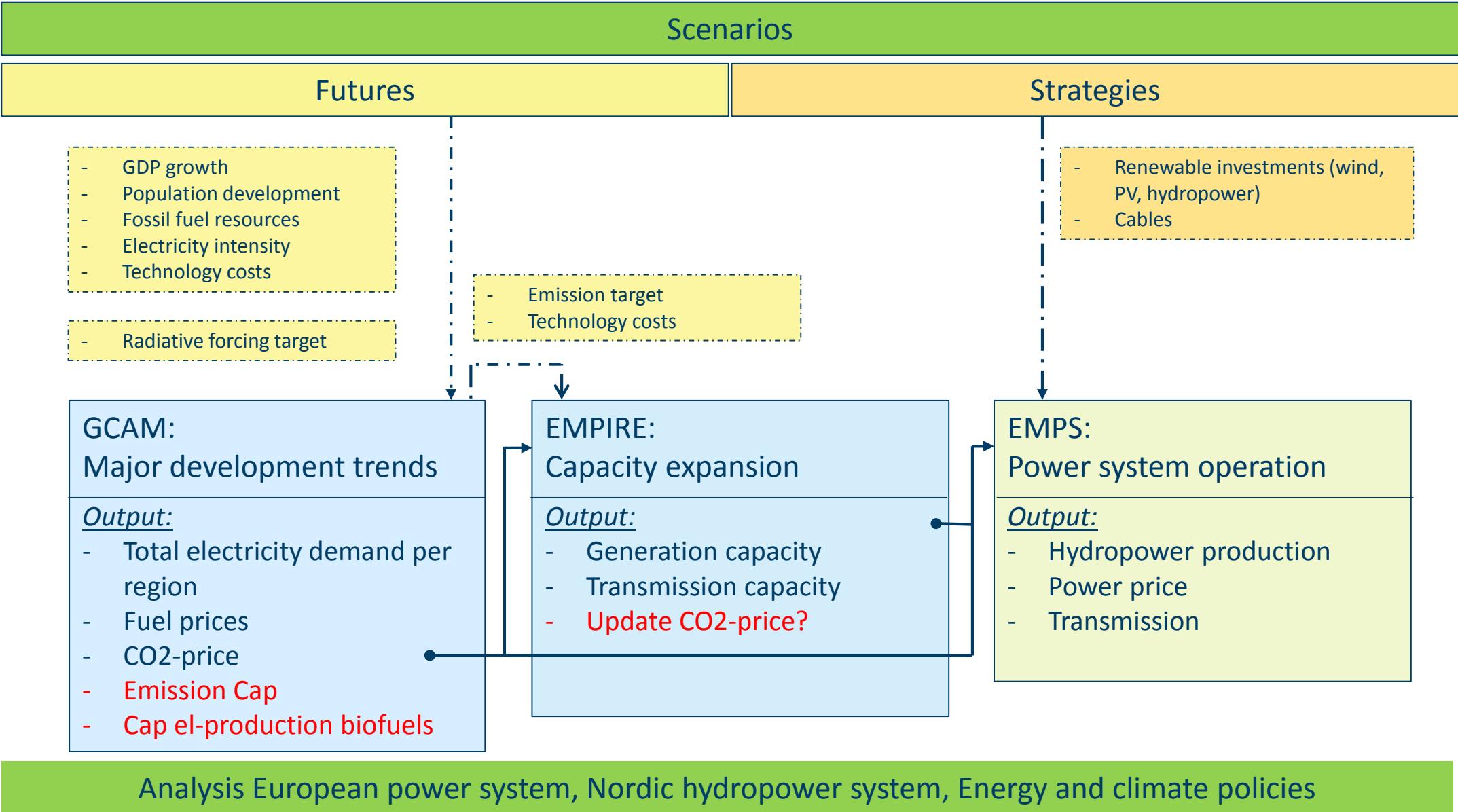


Power generation mix

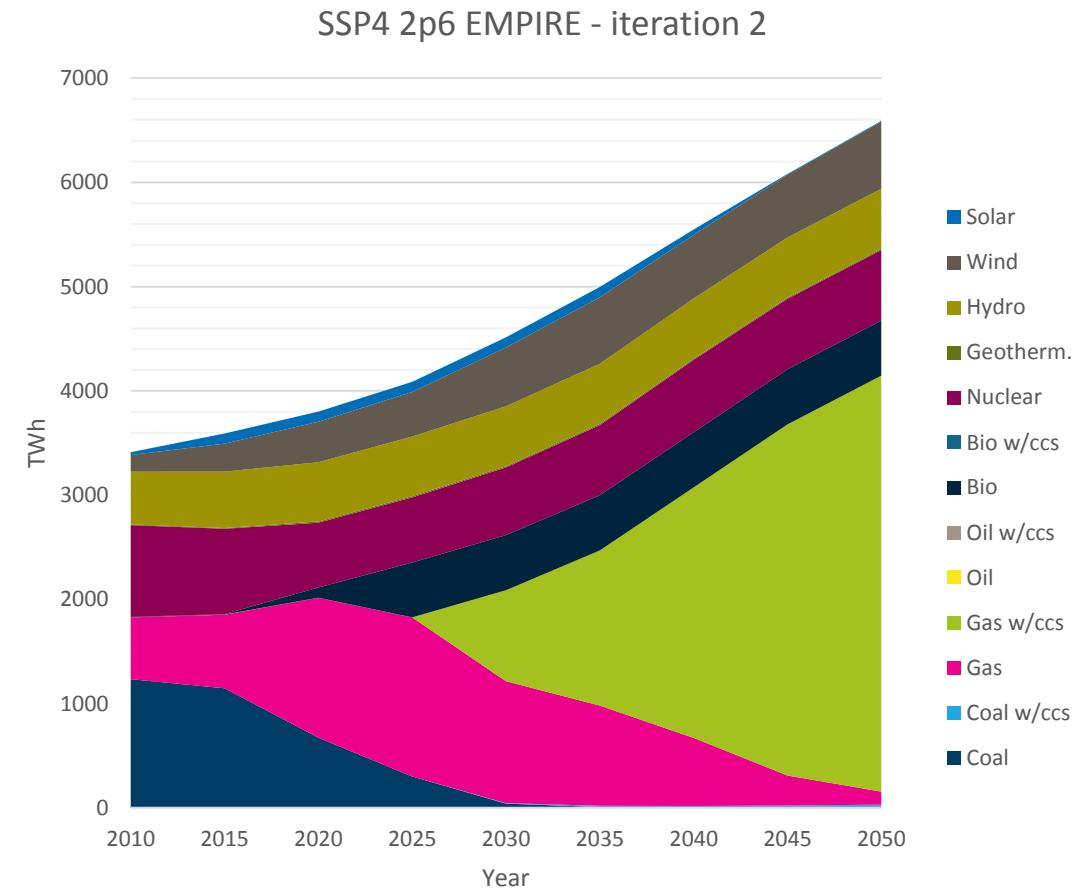
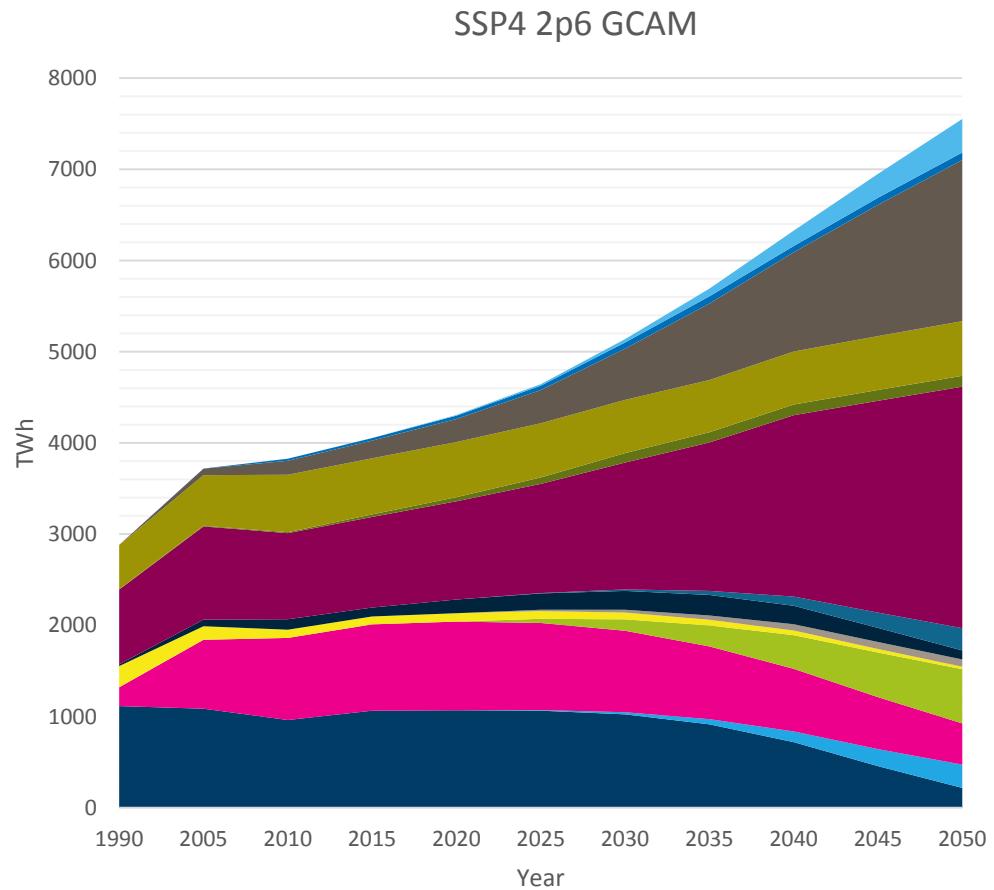


LINKING METHOD

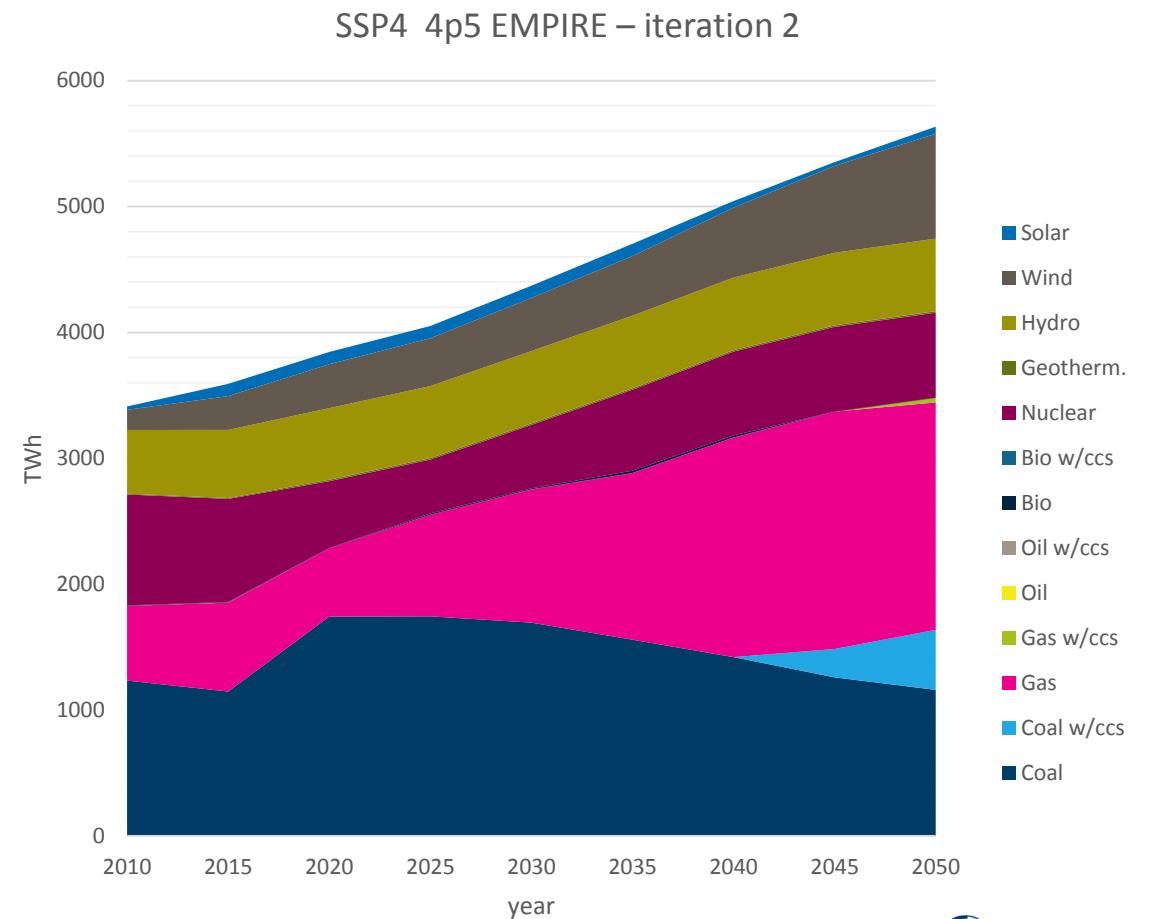
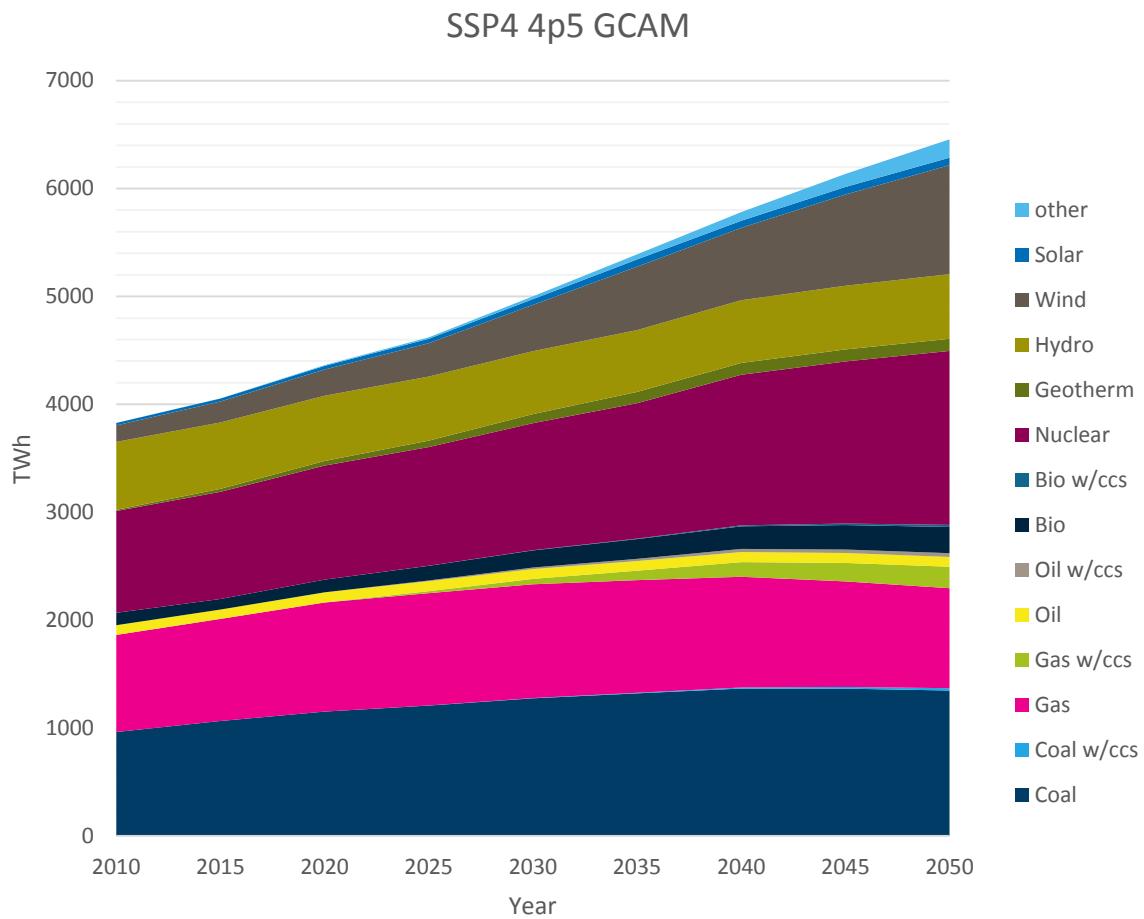
Iteration 2



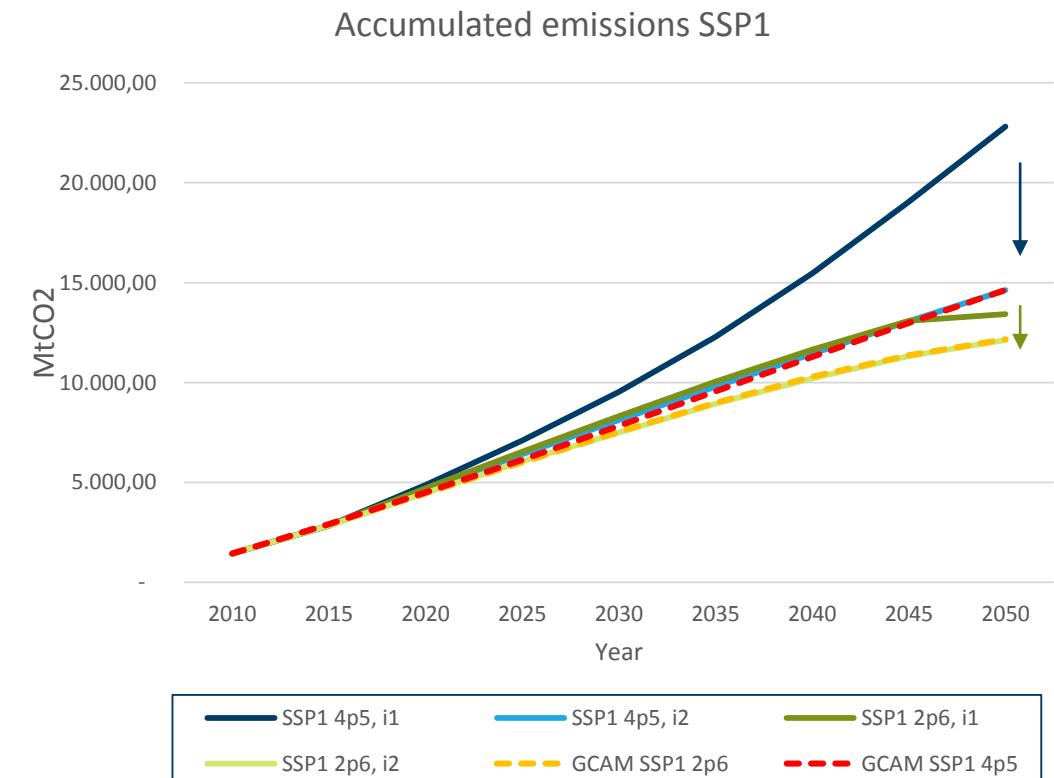
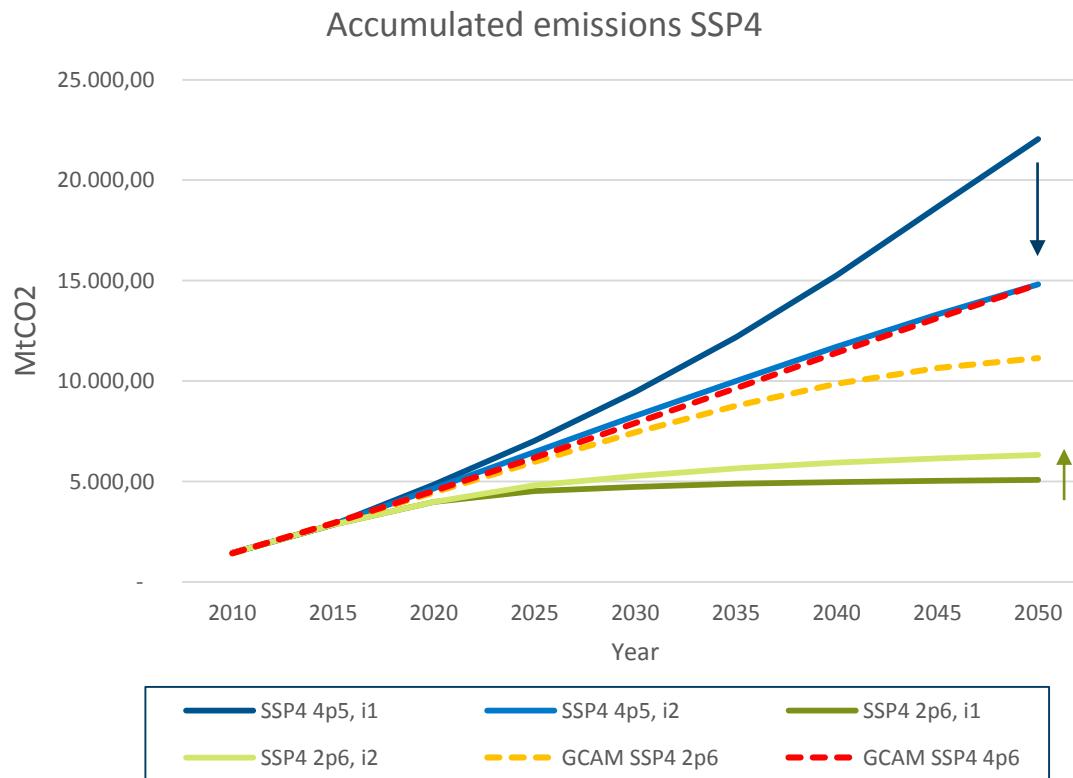
Power generation mix i2



Power generation mix i2

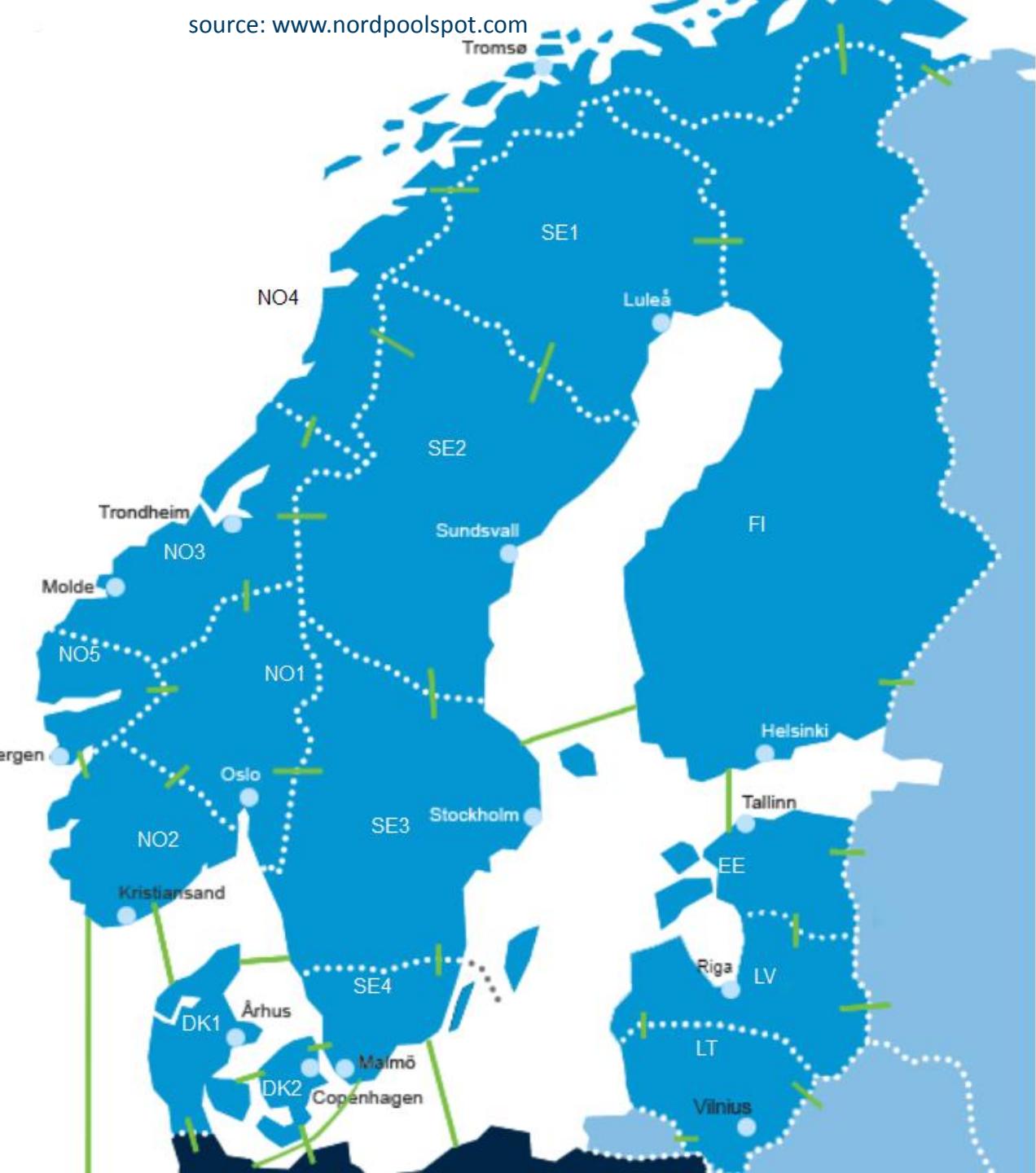


Accumulated CO₂ emissions



Further work

- Linking GCAM – EMPIRE
 - Technology costs GCAM, EMPIRE
 - Consider current capacity limits in EMPIRE
- Linking EMPIRE – EMPS
 - Nordic focus
- Qualitative analysis





Teknologi for et bedre samfunn

References

- [1] Jaehnert, S. 2016. CenSES energy scenarios. Design process and scenario description. [Report TR A7590](#), SINTEF Energy Research.
- [2] van Vuuren, D. P. and T.R. Carter. 2014. Climate and socio-economic scenarios for climate change research and assessment: reconciling the new with the old. *Climatic Change*, 122, 415-429.