International Institute for Applied Systems Analysis
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science for global insight

Draft results: Modelling Carbon Neutrality - BMU

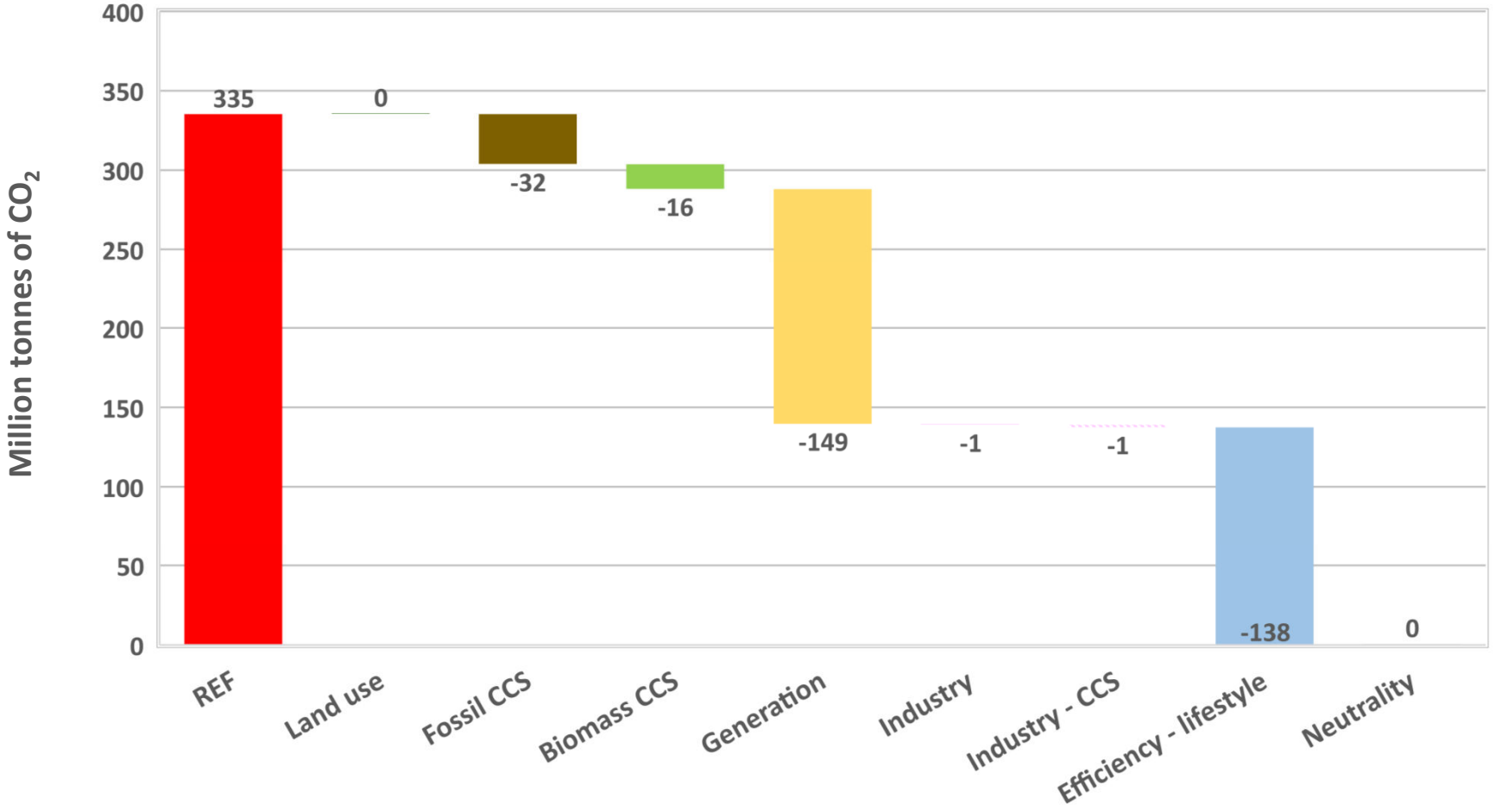
02 June 2021

Modeling Results: BMU

The path to carbon neutrality

ENERGY

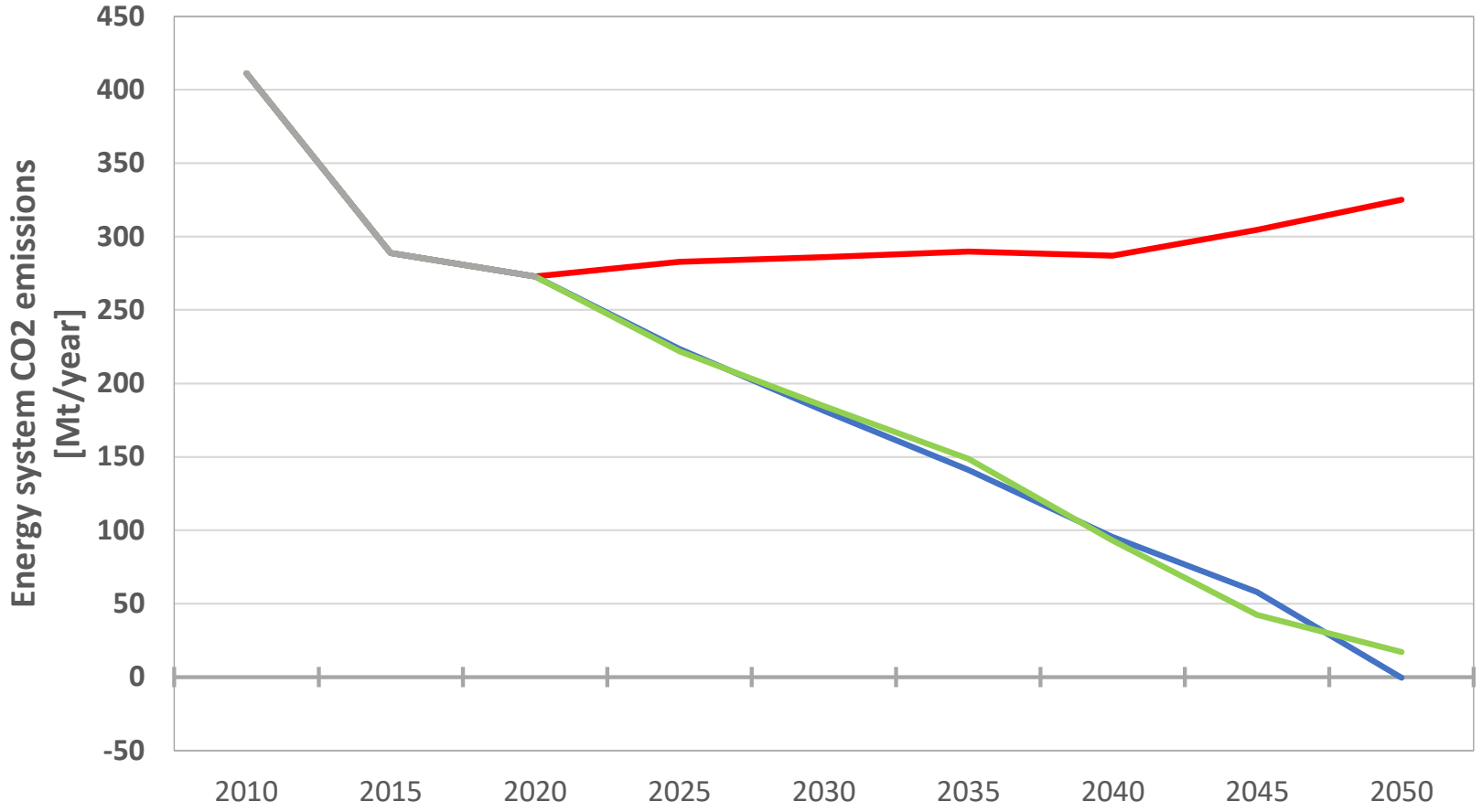
Cumulative mitigation steps from REF to CN (as seen by an observer in 2050)



Modeling Results: BMU

Carbon emissions

ENERGY

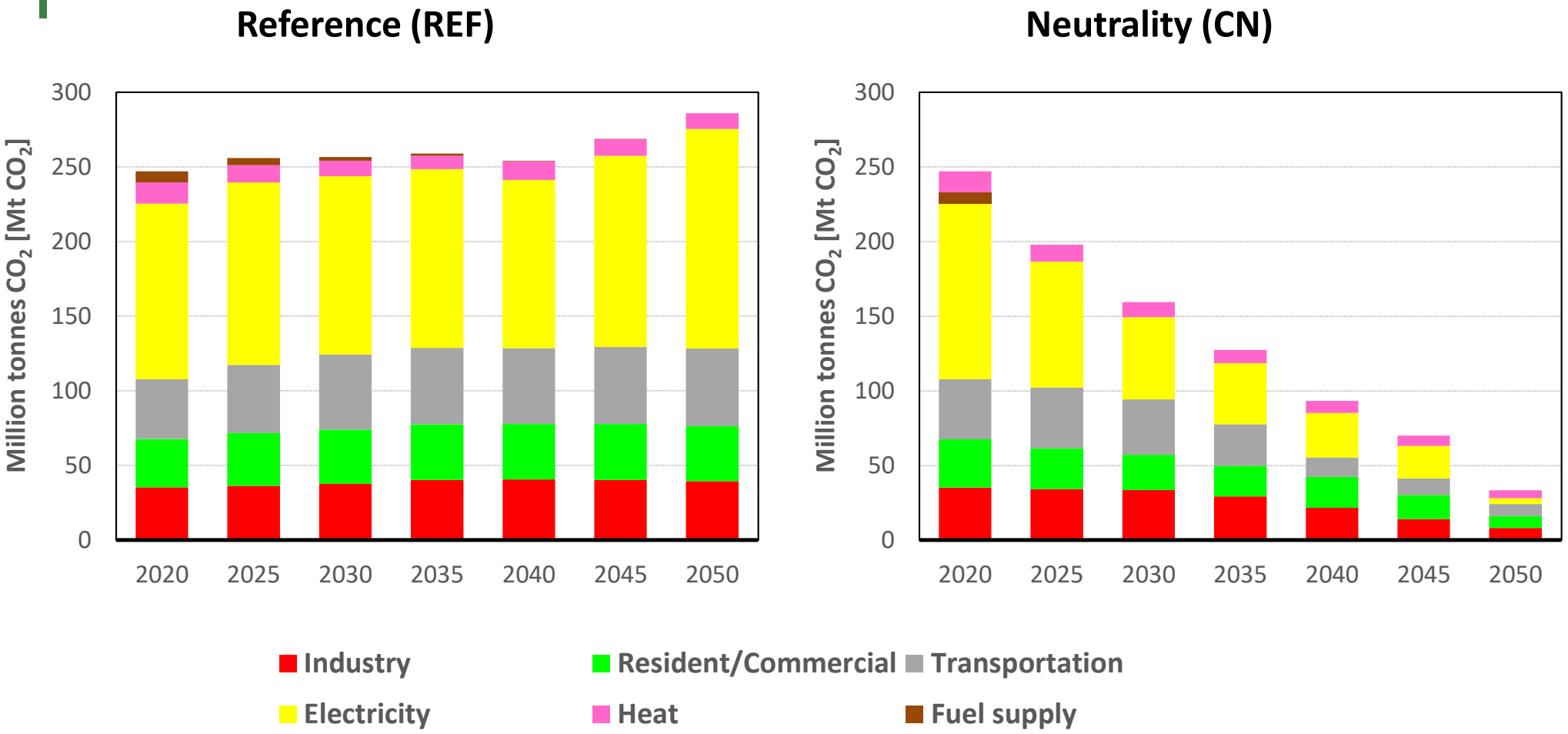


Modeling Results: BMU

Sector emissions

ENERGY

Carbon emissions by sector

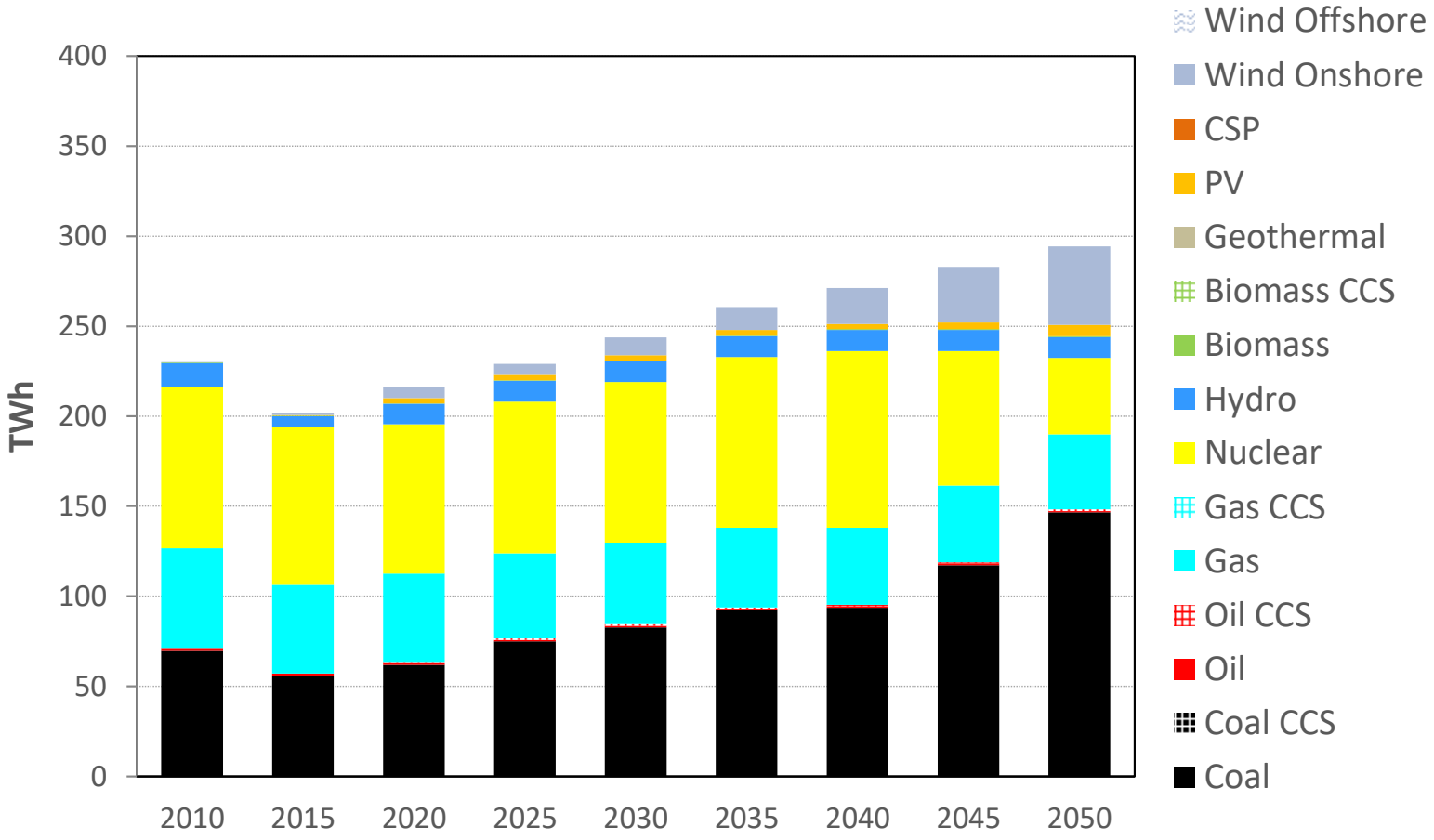


Modeling Results: BMU

Electricity generation

ENERGY

Electricity generation by technology - BMU Neutrality Scenario

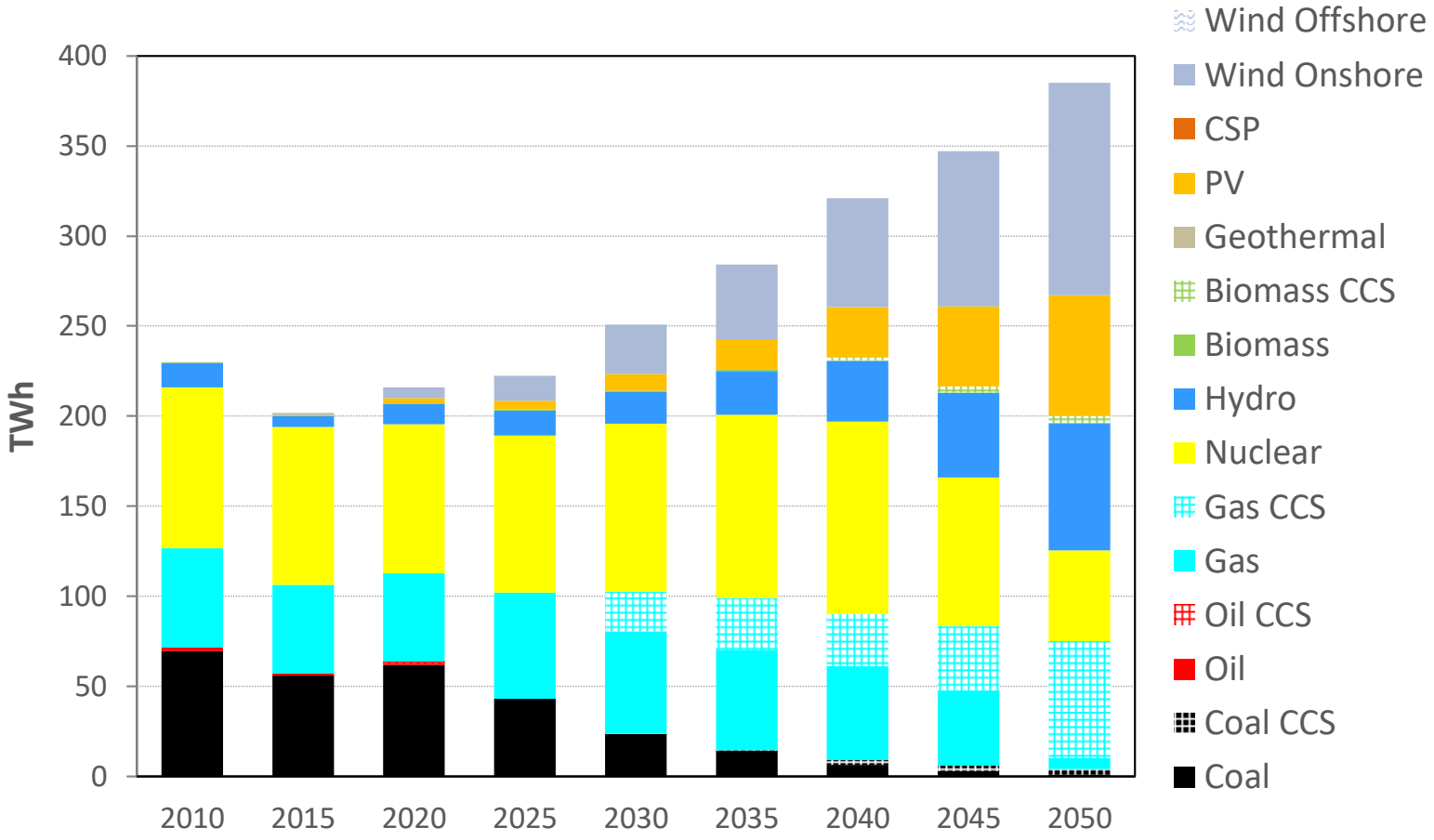


Modeling Results: BMU

Electricity generation

ENERGY

Electricity generation by technology - BMU
REF Scenario

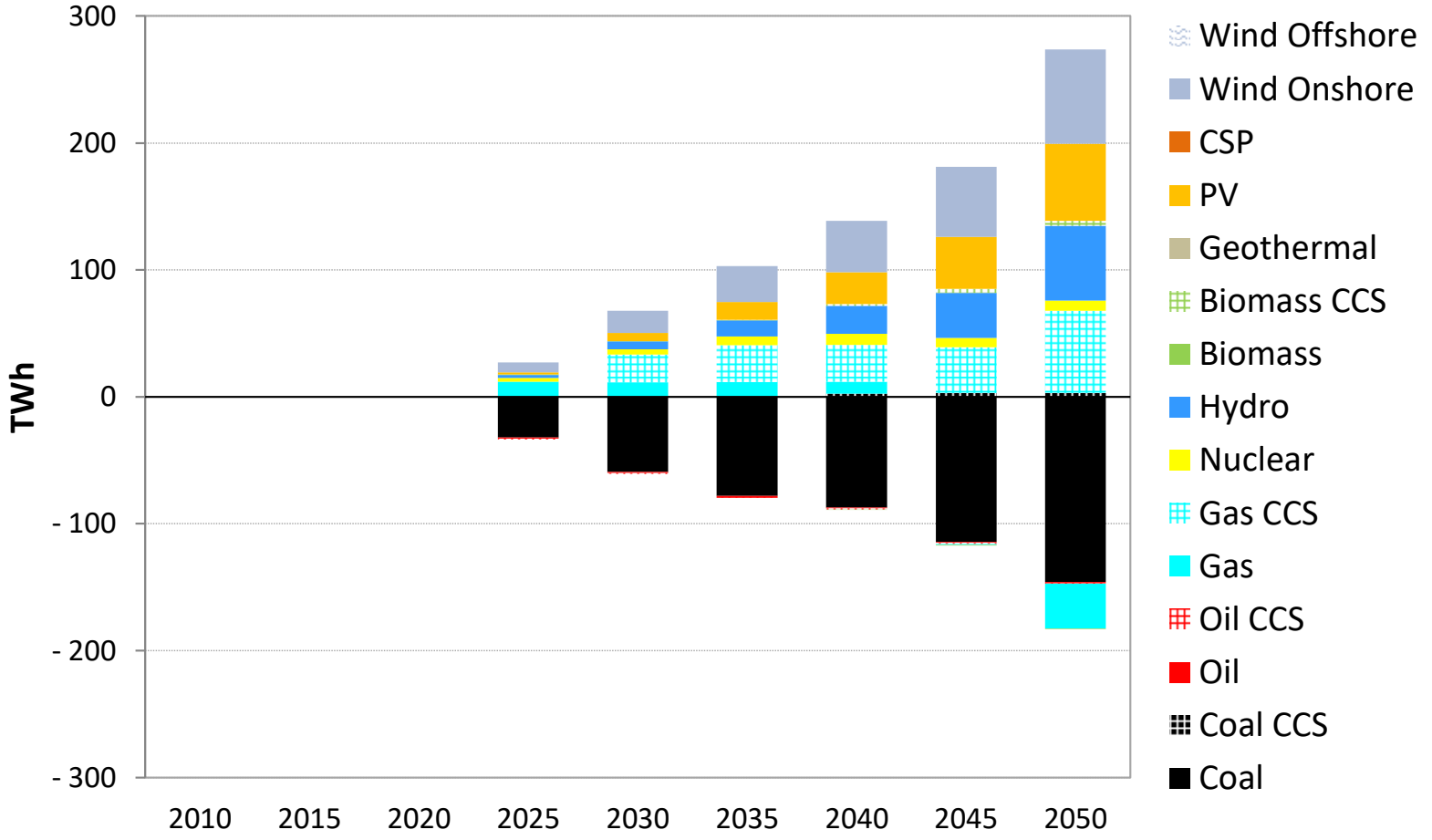


Modeling Results: BMU

Electricity generation

ENERGY

Electricity generation by technology - BMU
CN-UNECE versus REF Scenario



Modeling Results: BMU

The path to carbon neutrality

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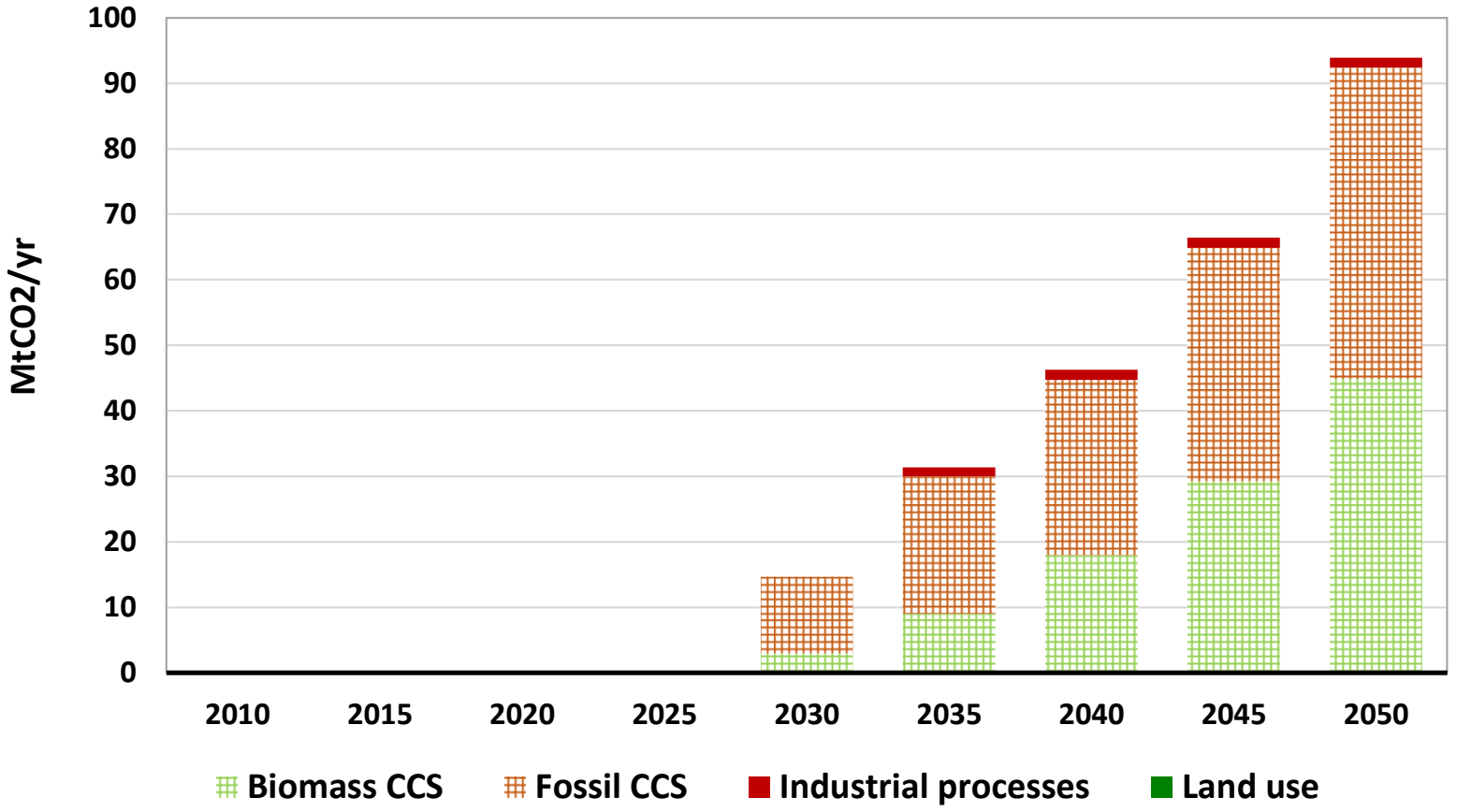
Carbon capture, utilization and storage (sequestration)

A mixed set of measures



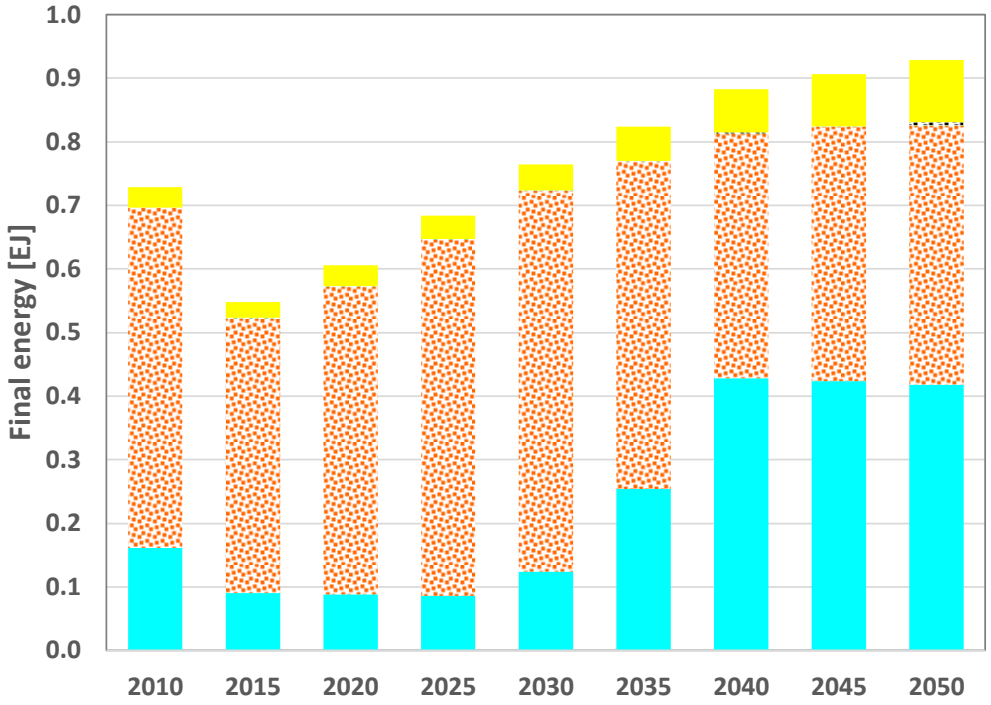
Modeling Results: BMU

Final Energy Mix

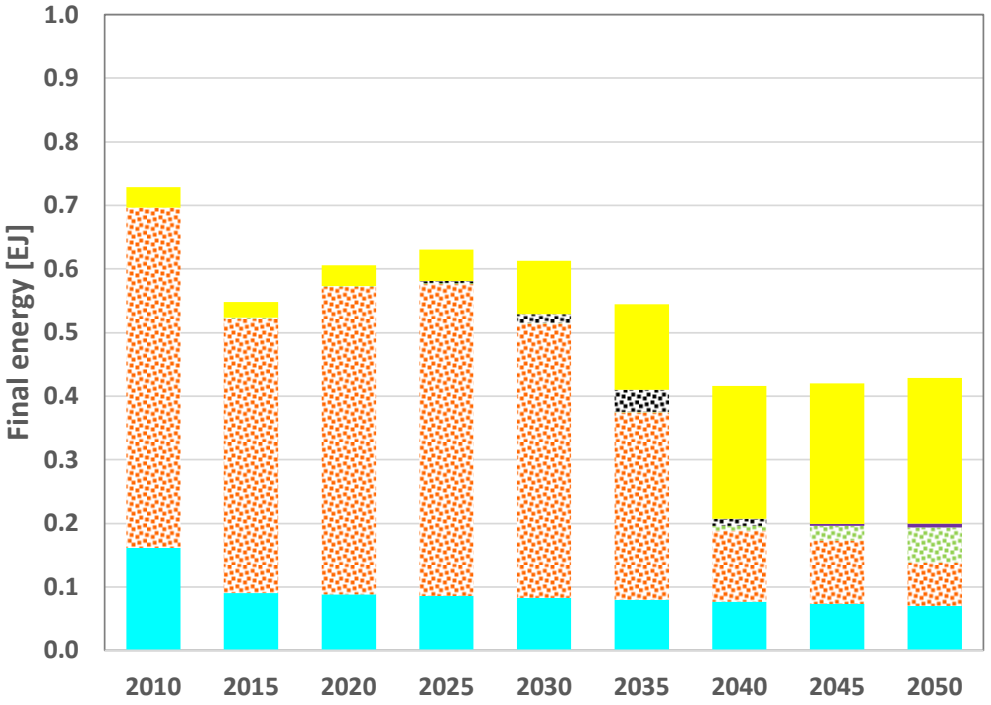
ENERGY

Final energy mix - Transportation

Reference (REF)



Neutrality (CN)



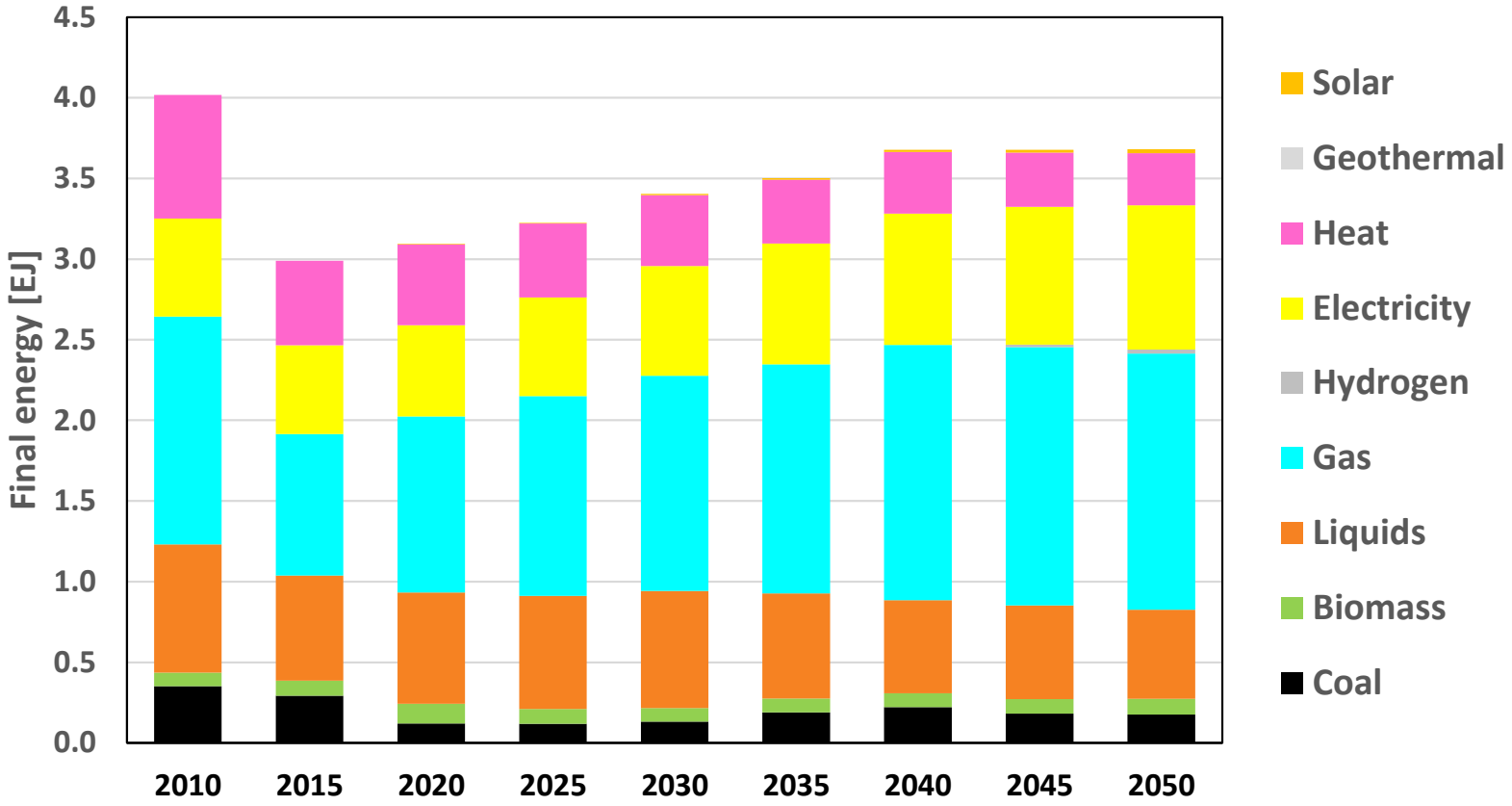
Oil-liquids Bio-liquids Coal-liquids Gas-liquids Gas Hydrogen Elec Other

Modeling Results: BMU

Final Energy Mix

ENERGY

Final energy mix - BMU
REF Scenario

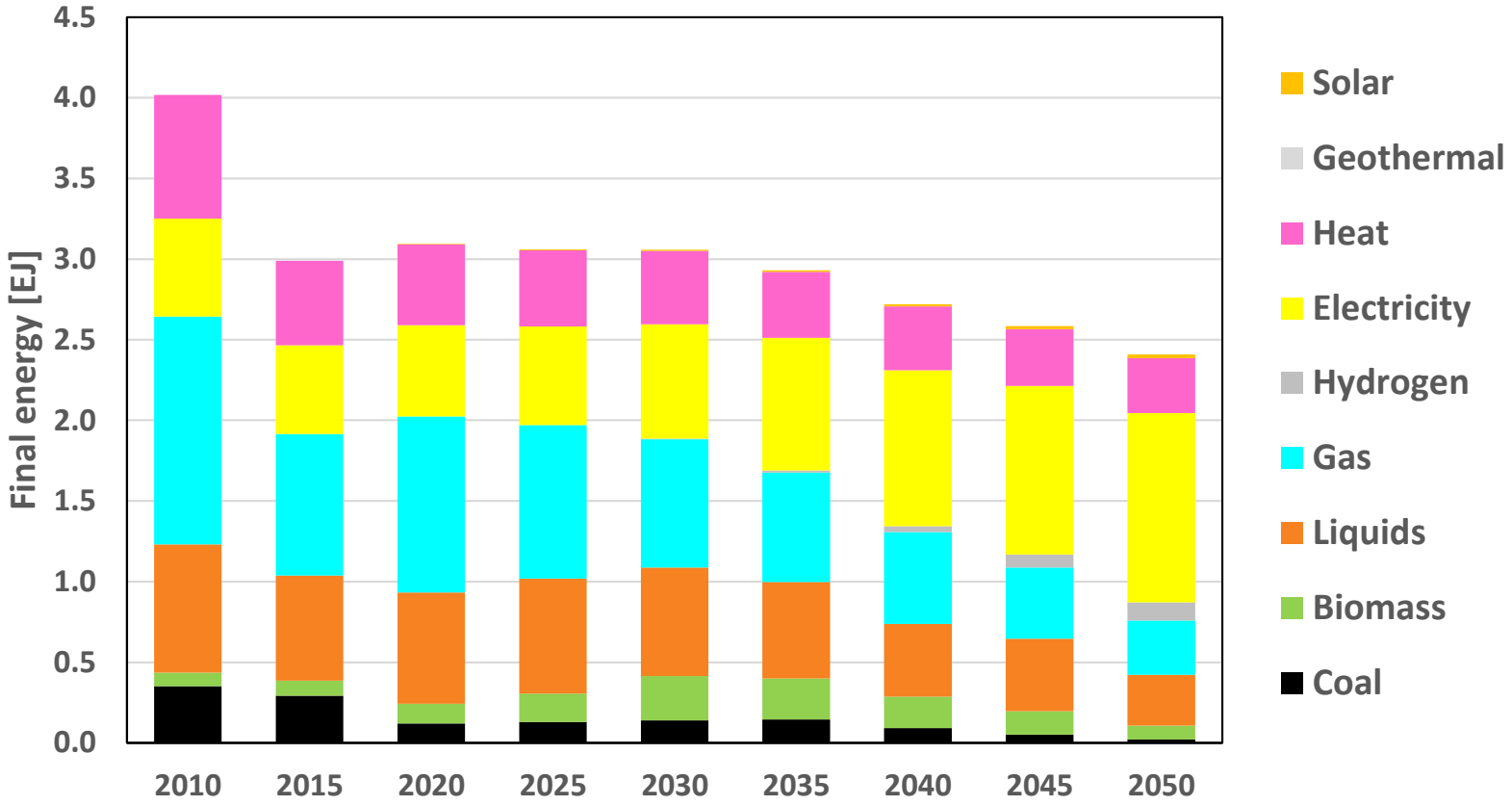


Modeling Results: BMU

Final Energy Mix

ENERGY

Final energy mix - BMU
CN-UNECE Scenario

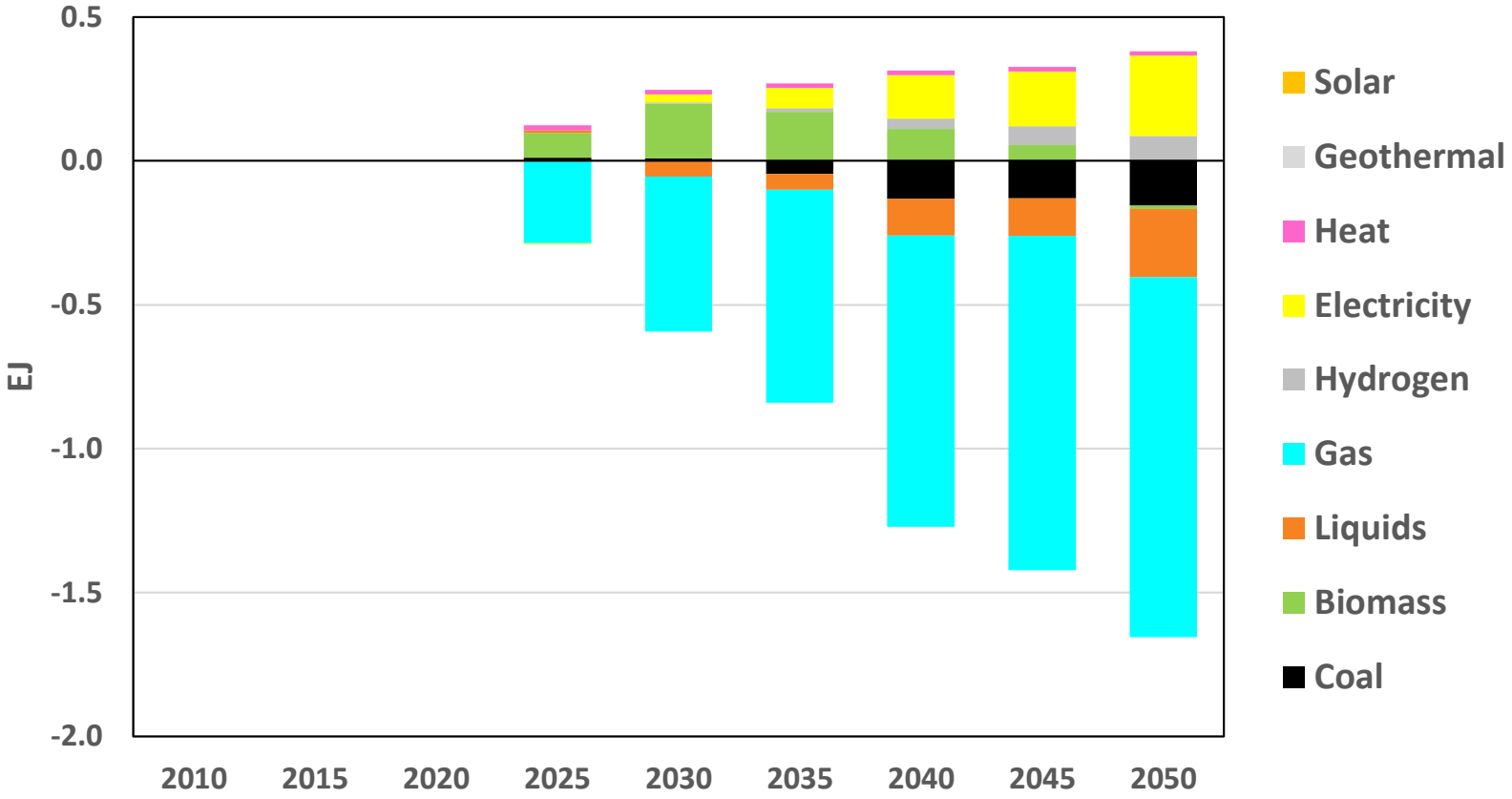


Modeling Results: BMU

Final Energy Mix

ENERGY

Final energy mix - BMU
CN-UNECE versus REF Scenario

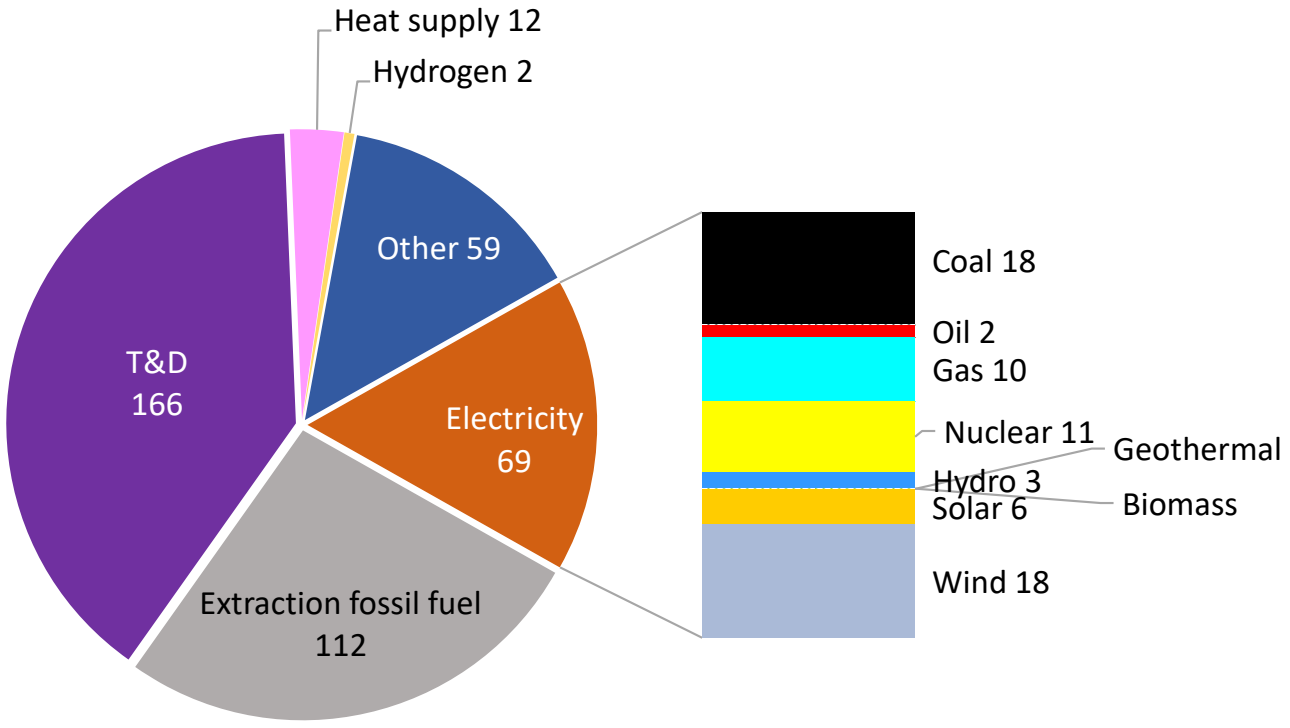


Modeling Results: BMU

Investment needs

ENERGY

Cumulative investments 2020-2050: *419.4 billion US$$_{2020}$*
Reference (REF)

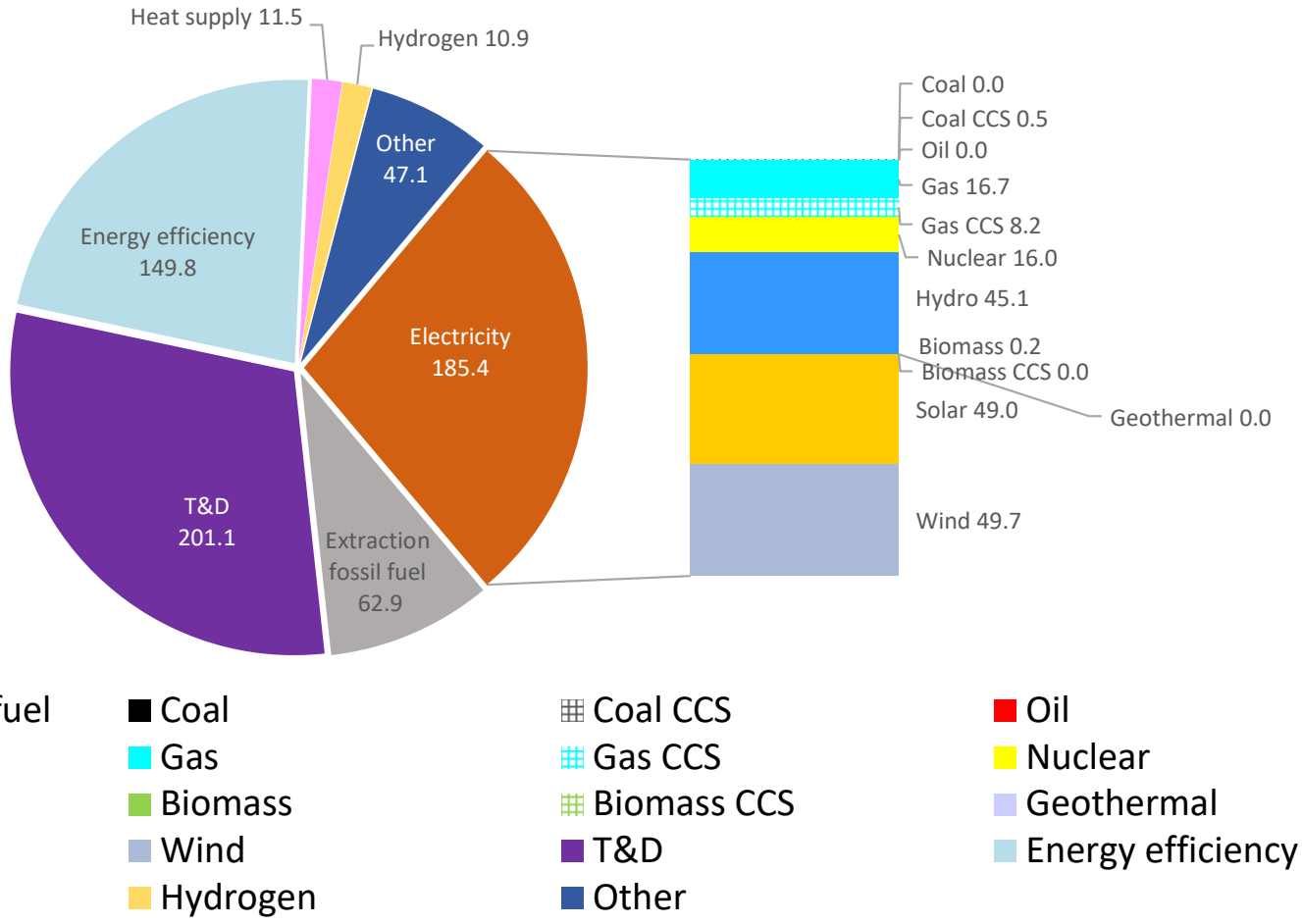


Modeling Results: BMU

Investment needs

ENERGY

Cumulative investments 2020-2050: *668.9 billion US$$_{2020}$*
Neutrality (CN)

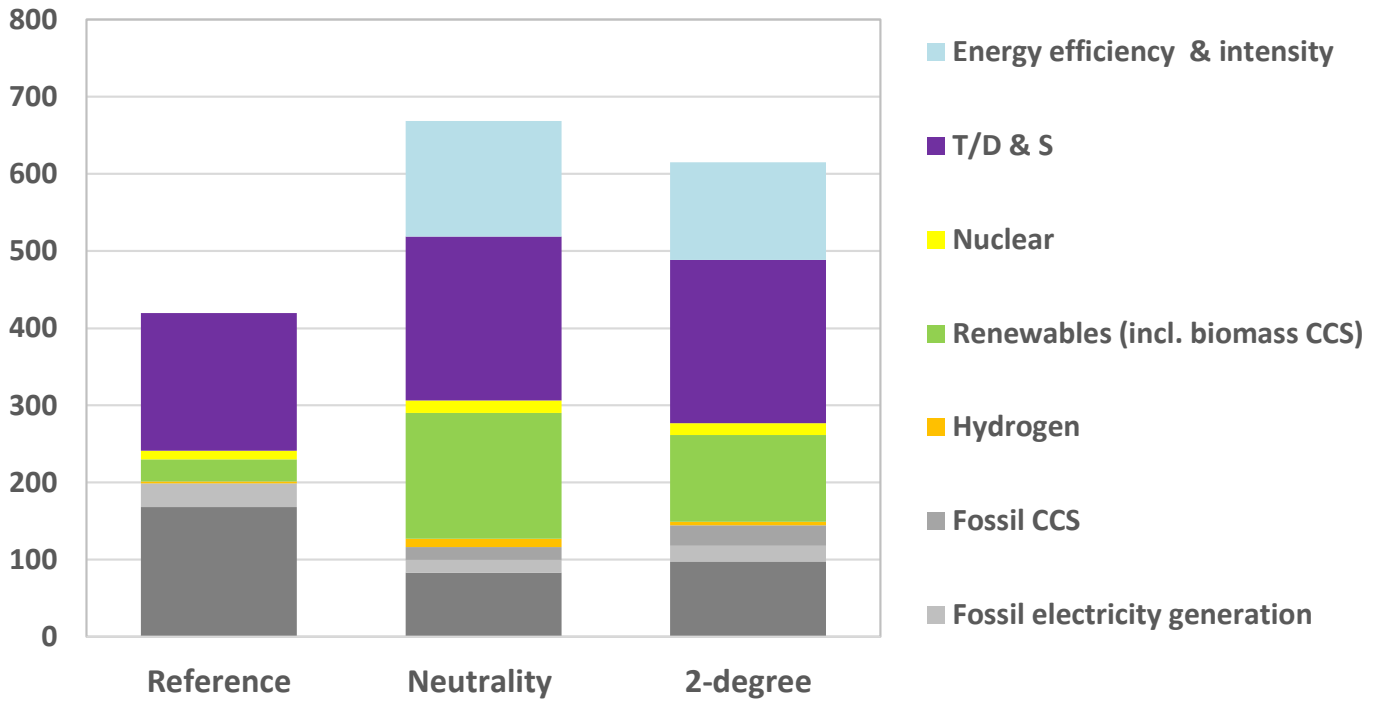


Modeling Results: BMU

Investment needs

ENERGY

Cumulative investment requirements
REF, CN and 2-degree



- T/D & S: transmission, distribution and storage of electricity and district heat
- CCS: carbon capture and storage
- BAT: Best available technology

Modeling Results: BMU

Impact of different futures

ENERGY

Indicators across scenarios (averages between 2020 and 2050)