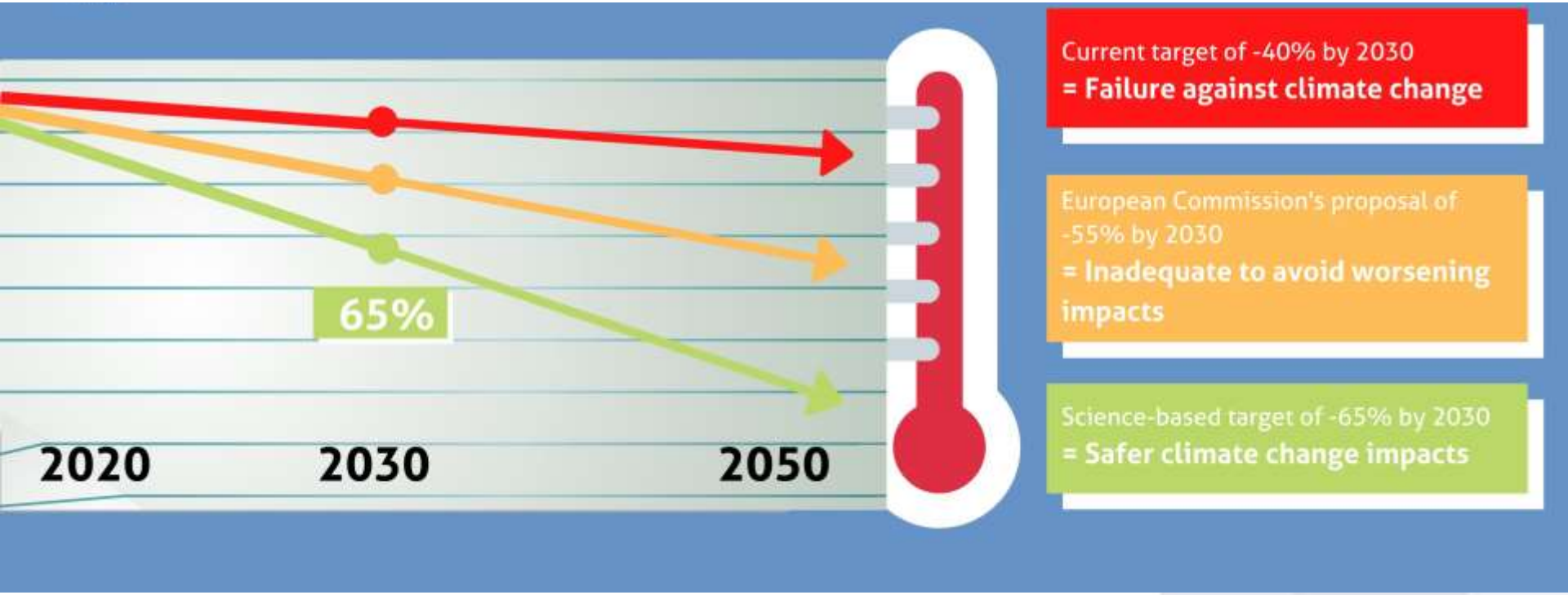
EU climate ambition increase: implications, costs and benefits

Workshop ”Making Climate Action Happen“

Jörg Mühlenhoff, 4 December 2020

Only a 65% target is Paris compatible



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Costs of dangerous climate change

- Expected welfare losses of up to 1% of GDP by mid-century
- Expected welfare losses between 1-2% of GDP by mid-century
- Expected welfare losses of more than 2% of GDP by mid-century

HIGHER climate ambition leads to LOWER costs of climate change impacts

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Building our Paris Agreement compatible scenario

Paris Agreement Compatible Scenarios for Energy Infrastructure

- Collective research process of >150 members & experts
- Starting point: IPCC 1.5°C = -65% 2030 & net-zero 2040
- Scrutinise existing studies and models, opt for mature solutions



CAN Europe/EEB: Paris Agreement Compatible (PAC) energy scenario
https://www.pac-scenarios.eu/scenario-development.html

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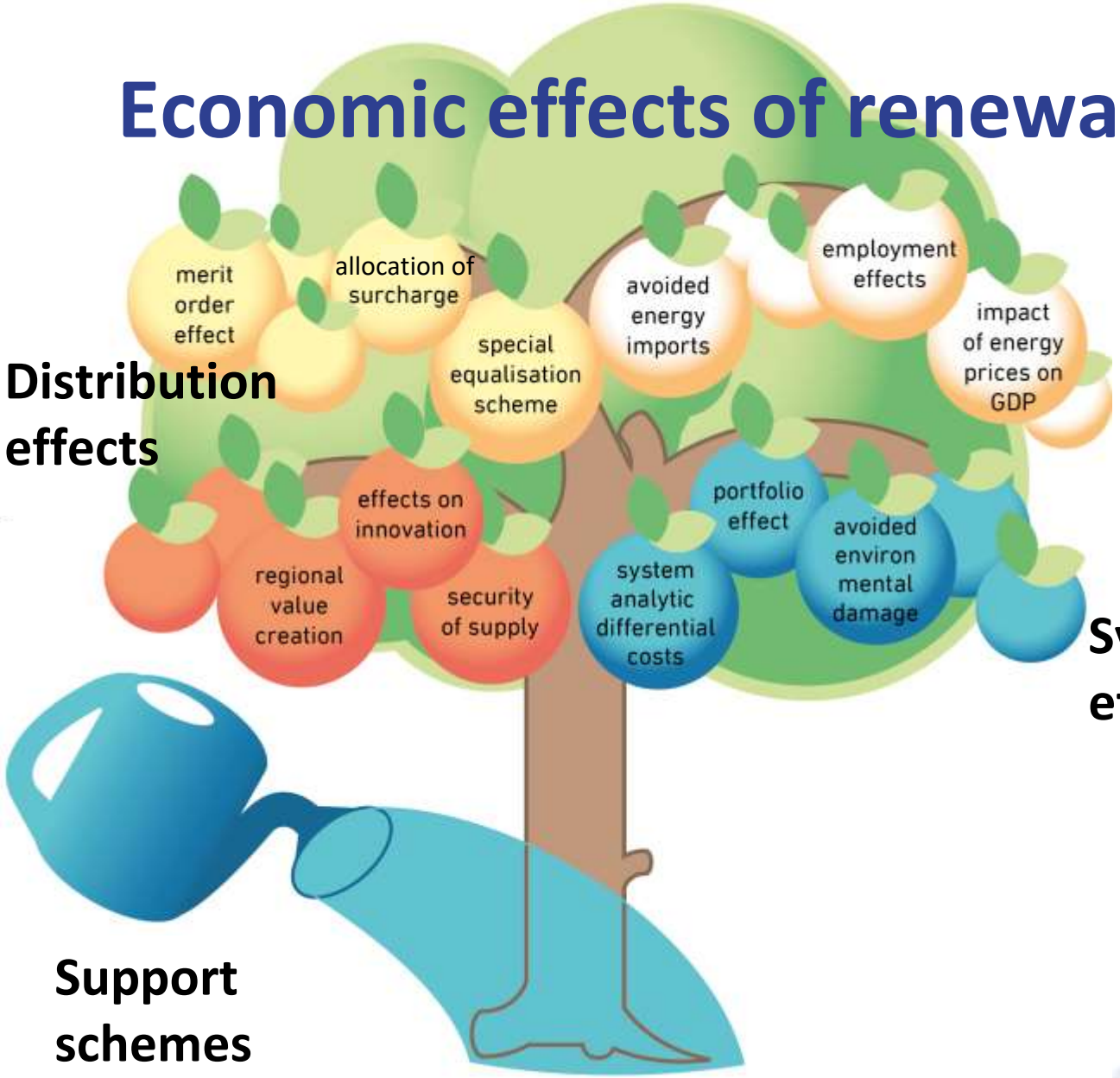
Economic effects of renewables



Distribution effects

Macro-economic effects

System effects

Support schemes

Illustration: AEE

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Avoided energy imports

- 65% emission cuts by 2030
  save ca. €280 bn costs
  of EU energy imports per year
- Net-zero emissions by 2040
  save ca. €1,426 bn costs
  of EU energy imports per year

German Institute for Economic Research & Technical University of Berlin, June 2020
https://www.diw.de/documents/publikationen/73/diw_01.c.791736.de/diwkompakt_2020-153.pdf

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Avoided environmental damage

- Net-zero emissions by 2040
  save ca. €10,000 bn costs
  of environmental and climate damage
  between 2015 and 2050
  (assuming external costs of
  €180 per tonne of CO_2)

German Institute for Economic Research & Technical University of Berlin, June 2020
https://www.diw.de/documents/publikationen/73/diw_01.c.791736.de/diwkompakt_2020-153.pdf

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Avoided health damage and costs


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- 55% emission cuts by 2030 reduce two thirds of air pollutants and save €246 bn of health costs
- 55% emission cuts by 2030 prevent the premature death of 120,000 Europeans (compared to ca. 600,000 premature deaths in 2016)

European Commission 2030 Climate Target Plan Impact Assessment, September 2020
https://www.solarpowereurope.org/100-renewable-europe/

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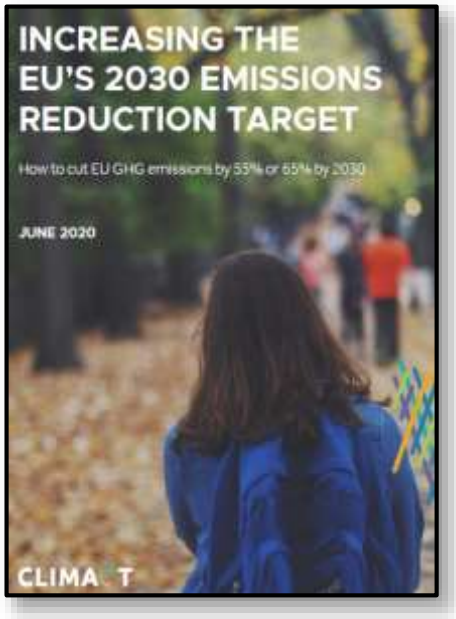
System analytic differential costs



- 65% emission cuts by 2030 reduces total system costs from €1,726 bn in 2016 to €1,577 bn in 2030
- Decrease of total system costs is up to 24% bigger than in the case of reaching only 55% emission cuts by 2030

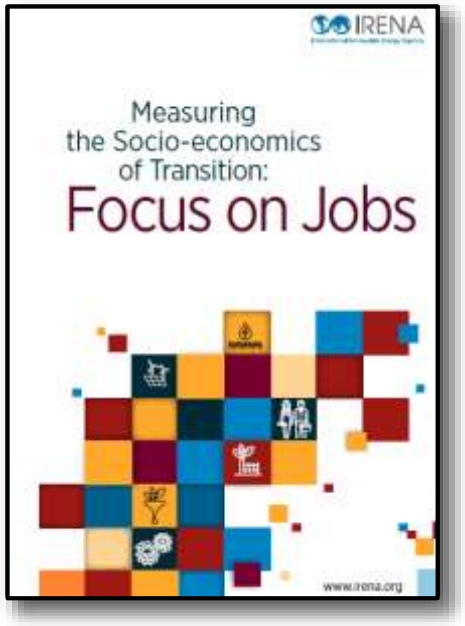
Climact, June 2020
https://climact.com/wp-content/uploads/2020/06/Climact_Target_Emissions_report_FINAL.pdf

Effects on innovation and energy markets

- 63% emission cuts by 2030 and
  100% renewable energy supply by 2040
  reduce the levelised cost of electricity from
  €71/MWh in 2020
  to €68/MWh in 2030
  and €39/MWh in 2050
- Cumulative investment of €8,300 bn by 2050

LUT University, May 2020
https://www.solarpowereurope.org/100-renewable-europe/

Employment effects



- Current policies will at least double EU jobs in renewables from 1.5 million FTE in 2019 to 2.7 million FTE in 2050
- Related infrastructure and energy efficiency in addition employ ca. 3 million FTE in 2050

IRENA, February 2020
https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Feb/IRENA_Transition_jobs_2020.pdf

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Employment effects and GDP impact

- 55% emission cuts by 2030 and net-zero emissions by 2050 reduce total energy system operating expenditures by €260 bn per year (>1.5% of the current EU GDP)
- Net job gains of 2.2 million FTE by 2030 and 4.9 million FTE by 2050

McKinsey, December 2020
https://www.mckinsey.com/business-functions/sustainability/our-insights/how-the-european-union-could-achieve-net-zero-emissions-at-net-zero-cost

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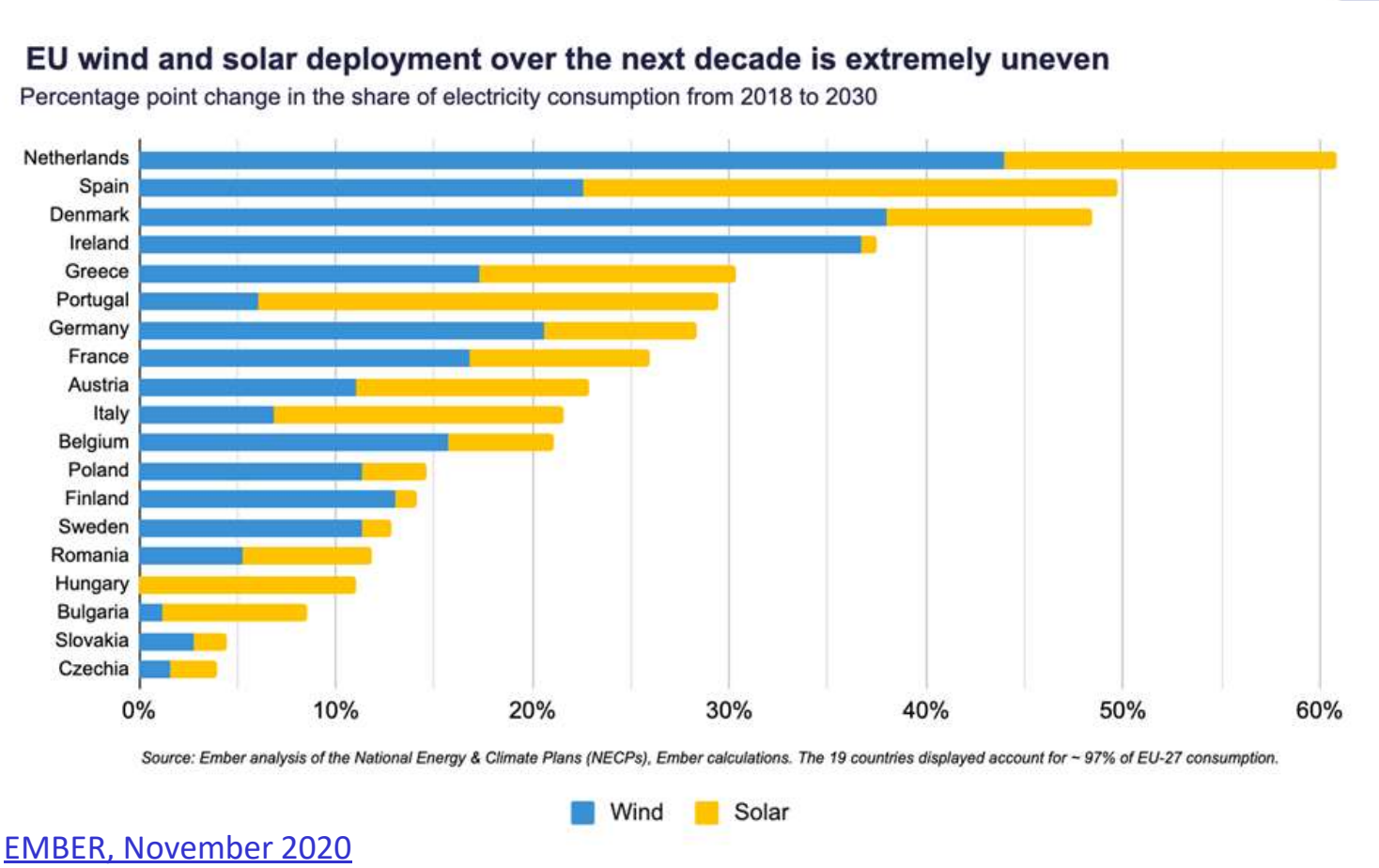
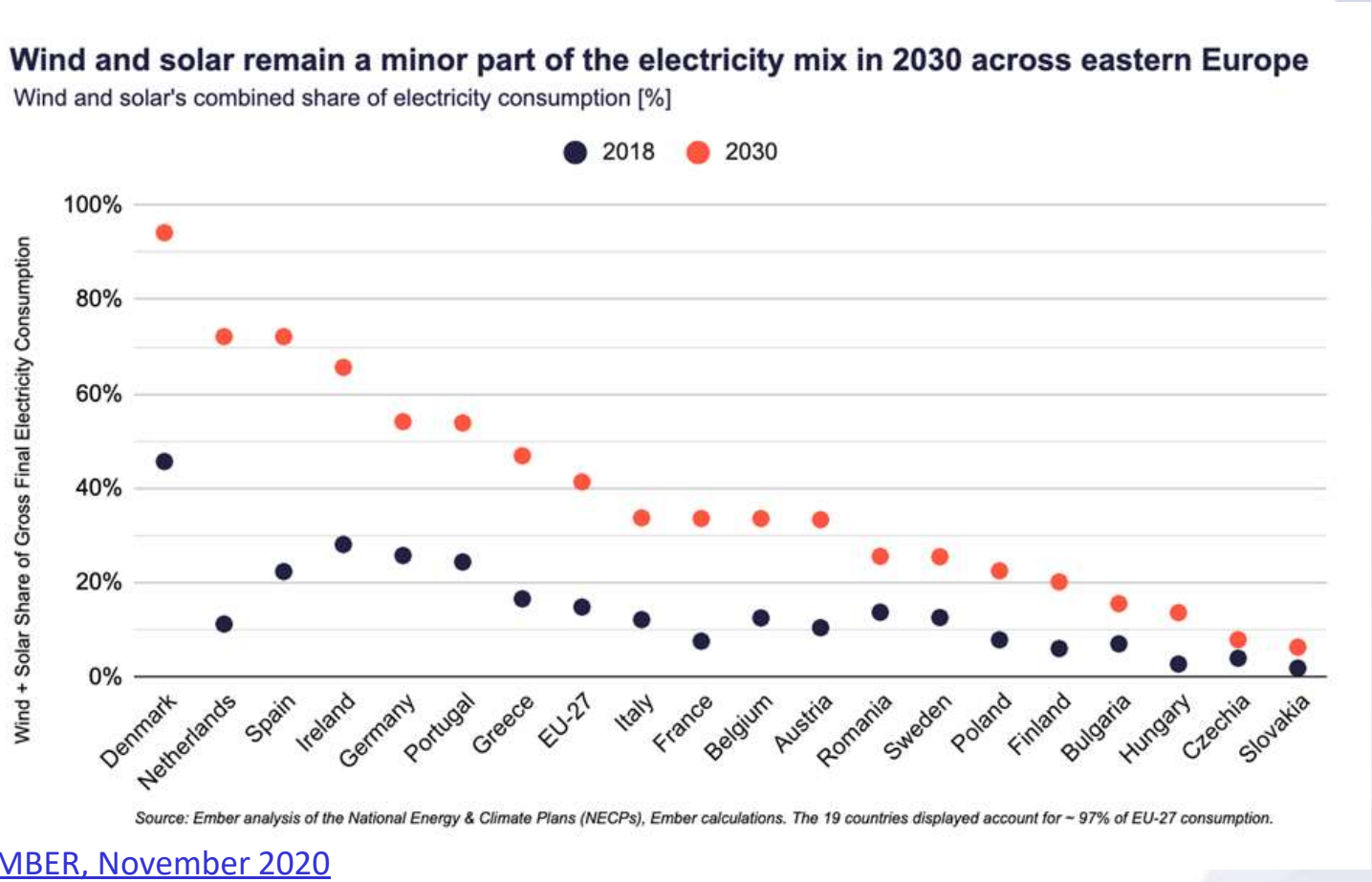
Will CEE countries benefit?



EMBER, November 2020
https://ember-climate.org/project/necp7/

Will CEE countries benefit?



EMBER, November 2020
https://ember-climate.org/project/necp7/

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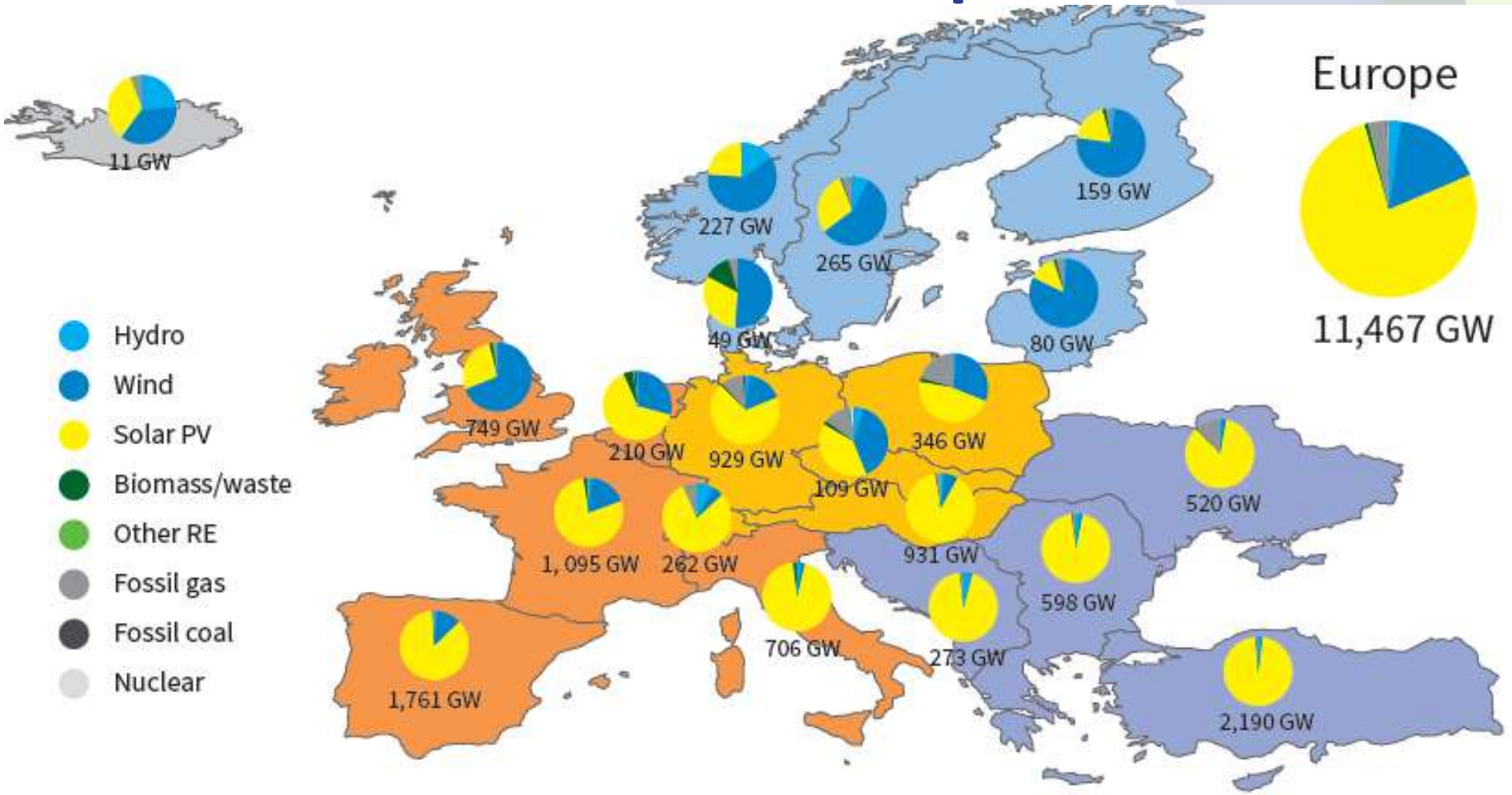
CEE countries can catch up



LUT University, May 2020
https://www.solarpowereurope.org/100-renewable-europe/

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Energy transition can offset job losses in CEE coal regions

- 32% renewables share by 2030
  leads to ca. 700,000 FTE jobs in wind power
  260,000 FTE jobs in solar PV
- Poland: ca. 15,000 new FTE jobs in wind,
  10,000 in solar, 50,000 in bioenergy
  Czechia, Slovakia, Romania: slightly lower

European Commission Joint Research Centre, February 2020
https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/clean-energy-technologies-coal-regions

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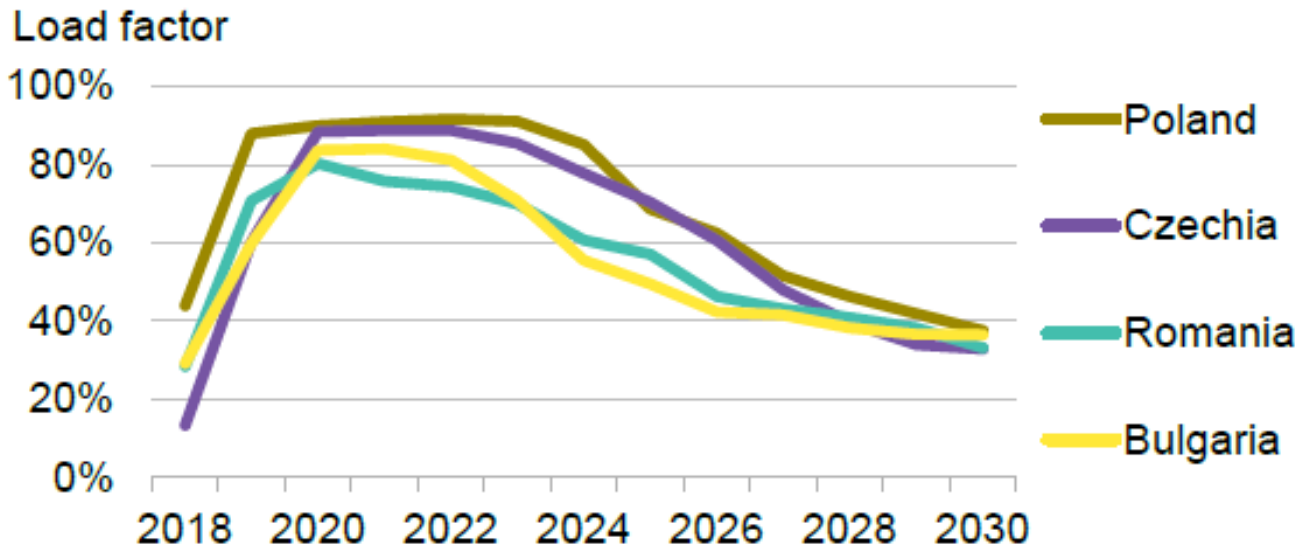
Fossil gas increases costs and emissions, also in CEE countries

Utilisation rate of combined cycle gas turbines (CCGT) in case of 55% emission reductions



Bloomberg NEF: New climate goals accelerate Eastern European decarbonisation, November 2020
https://about.bnef.com/blog/new-report-reveals-economic-path-to-a-rapid-coal-phase-out-in-europe/

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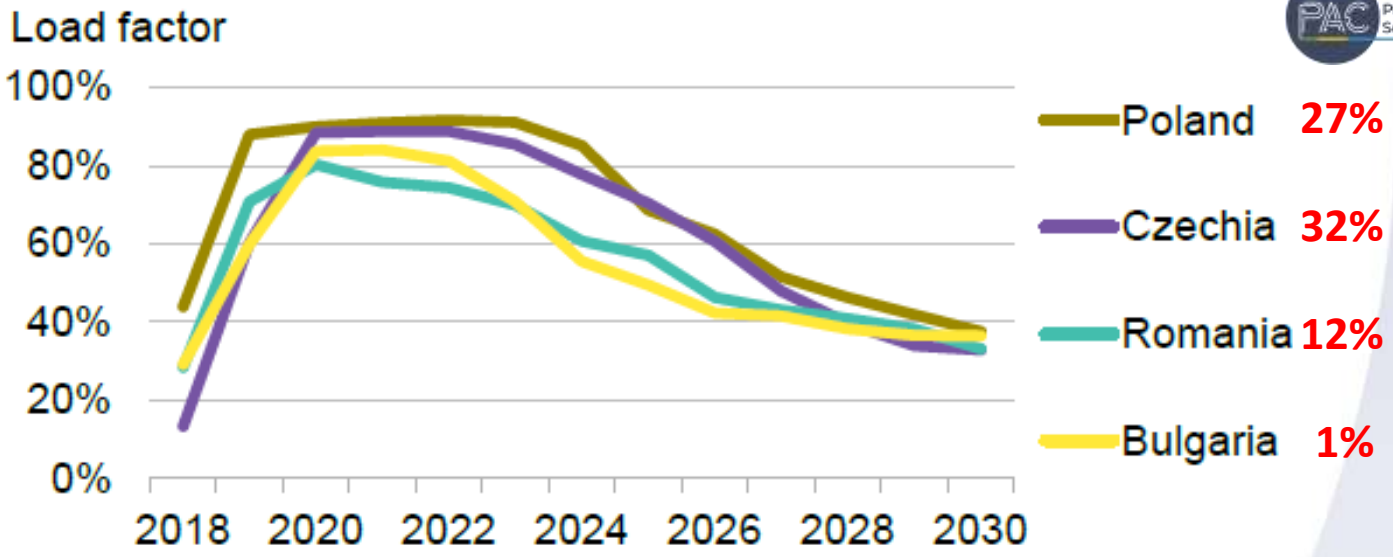

Paris Agreement Compatible Scenarios for Energy Infrastructure

[Bloomberg NEF: New climate goals accelerate Eastern European decarbonisation, November 2020](https://about.bnef.com/blog/new-report-reveals-economic-path-to-a-rapid-coal-phase-out-in-europe/)
https://about.bnef.com/blog/new-report-reveals-economic-path-to-a-rapid-coal-phase-out-in-europe/

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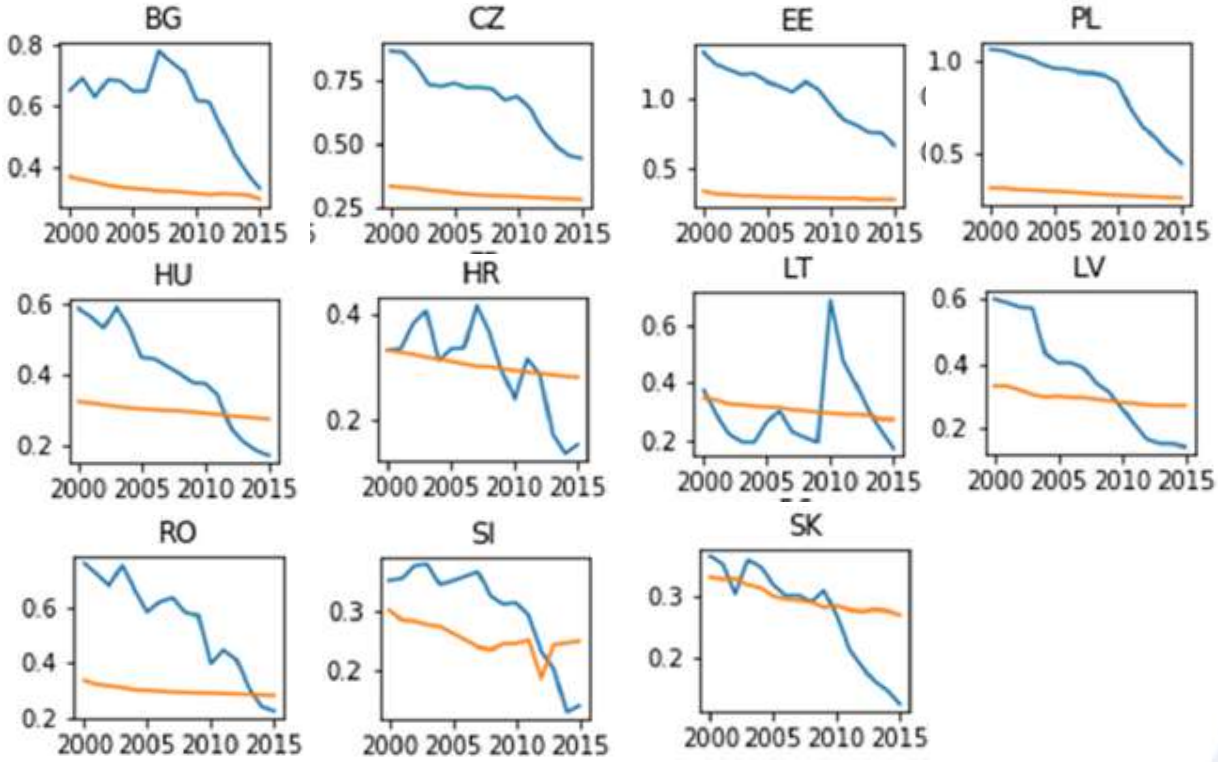
Fossil gas increases costs and emissions, also in CEE countries

CO_2 emission per MWh of heat from heat pumps
CO_2 emission per MWh of heat from fossil gas boilers



European Commission Joint Research Centre, November 2020
https://www.sciencedirect.com/science/article/pii/S0301421520306406

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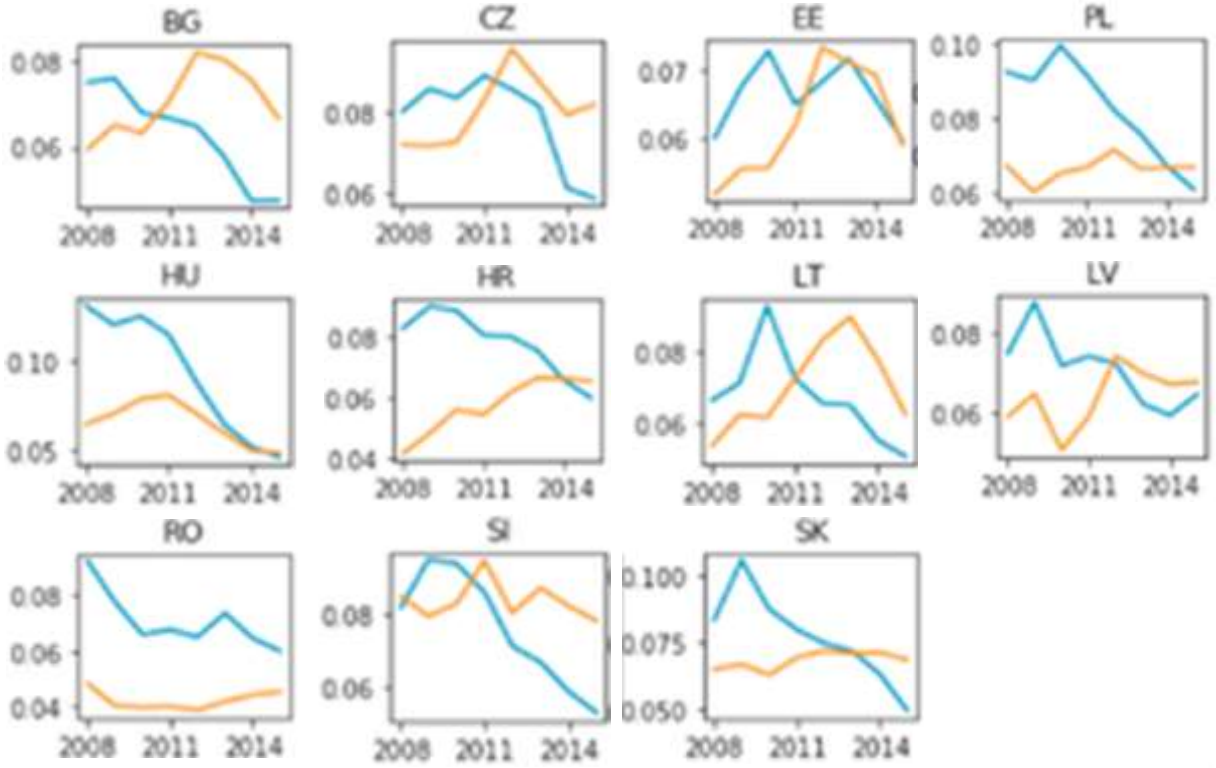
Fossil gas increases costs and emissions, also in CEE countries

end-consumer cost per kWh of heat from heat pumps
end-consumer cost per kWh of heat from fossil gas boilers



European Commission Joint Research Centre, November 2020
https://www.sciencedirect.com/science/article/pii/S0301421520306406

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Thank you!

joerg@caneurope.org

https://www.pac-scenarios.eu/scenario-development.html

Illustration: AEE

We are not the first or only ones showing 65% by 2030 pays off

http://www.caneurope.org/docman/climate-energy-targets/3645-can-europe-65percent-is-feasible-sep20/file

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Impact of energy prices on GDP


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- 52.8% to 55.5% emission cuts by 2030 increase the EU GDP by 0.5% or reduce it by 0.4%, depending on global policies and carbon pricing

European Commission 2030 Climate Target Plan Impact Assessment, September 2020
https://www.solarpowereurope.org/100-renewable-europe/

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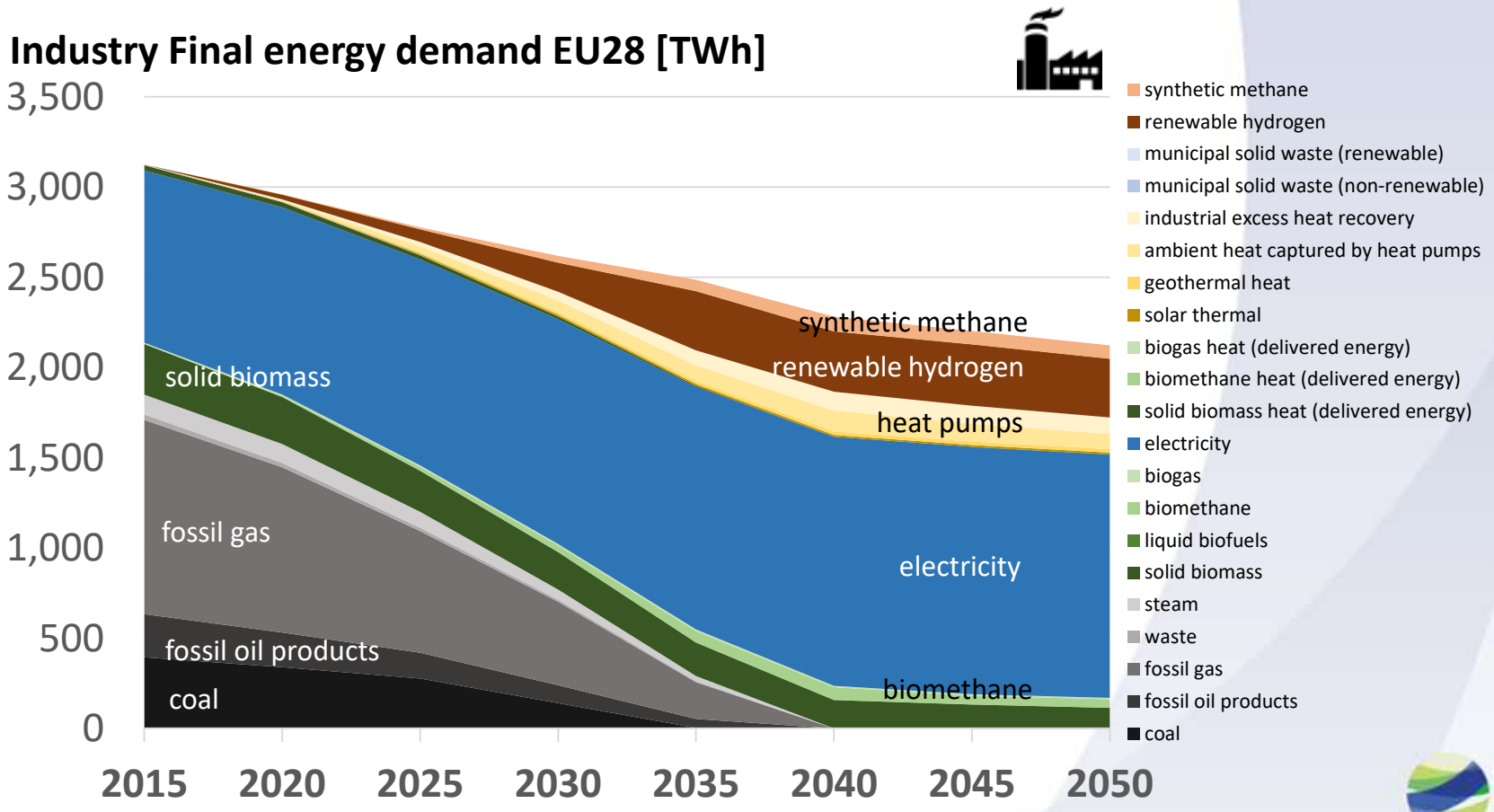
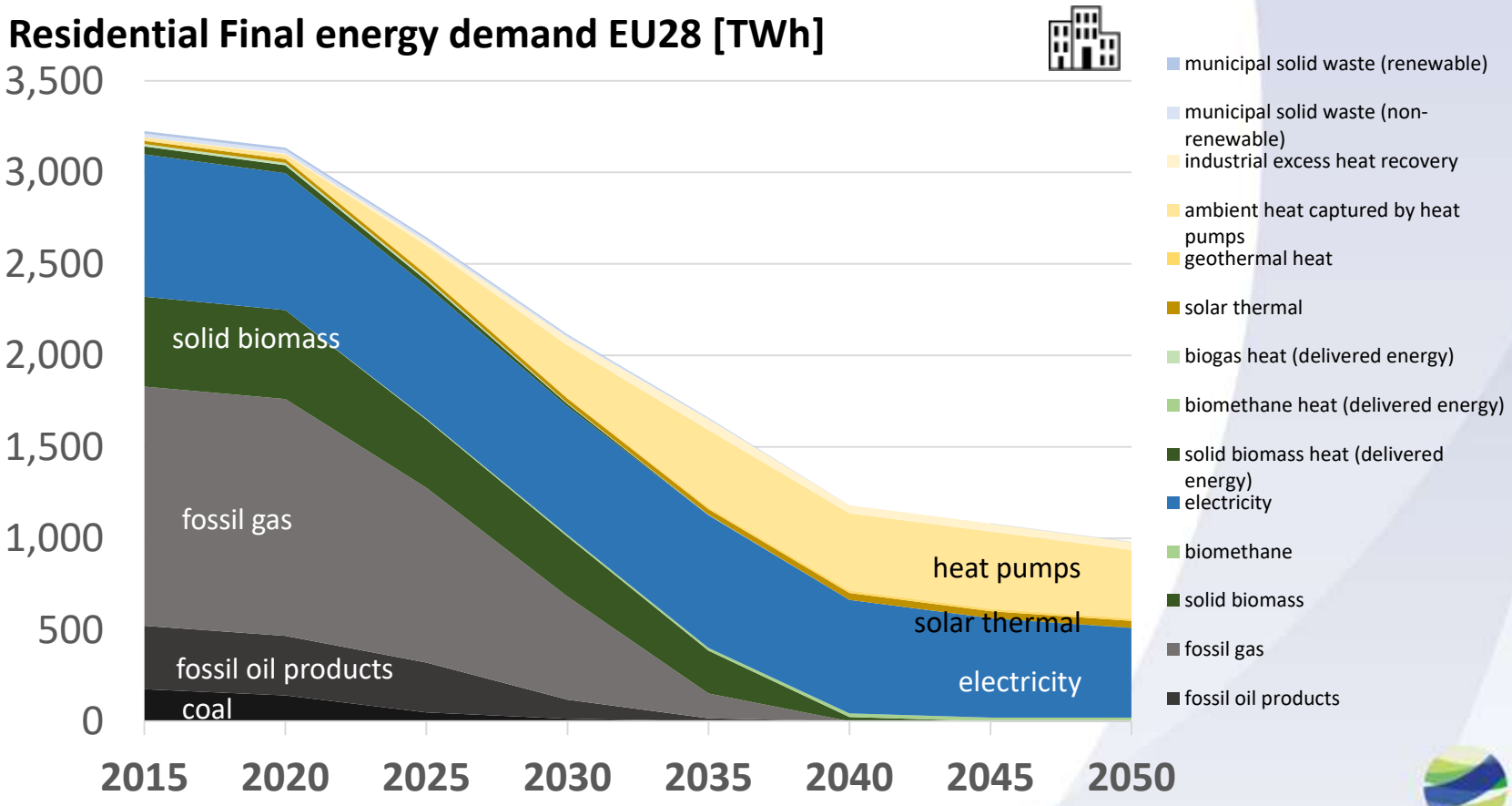
Industry: Circular economy



Buildings: Deep renovation wave



Transport: Electrify where possible