

Climate Policy and Green Transition – a CGE Analysis of the Finnish 2035 Carbon Neutrality Target

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TERVEYDEN JA HYVINVOINNIN LAITOS

Modelling Green Transition

Supply side: potential output is driven by technological change, investment and population/labour supply growth

- Productivity growth differentials between industries change industry structure – the share of industry is falling
- Productivity growth starting to affect service sectors
- But new technologies help to revive energy-intensive industries in the WAM scenario (metals, forest industries)

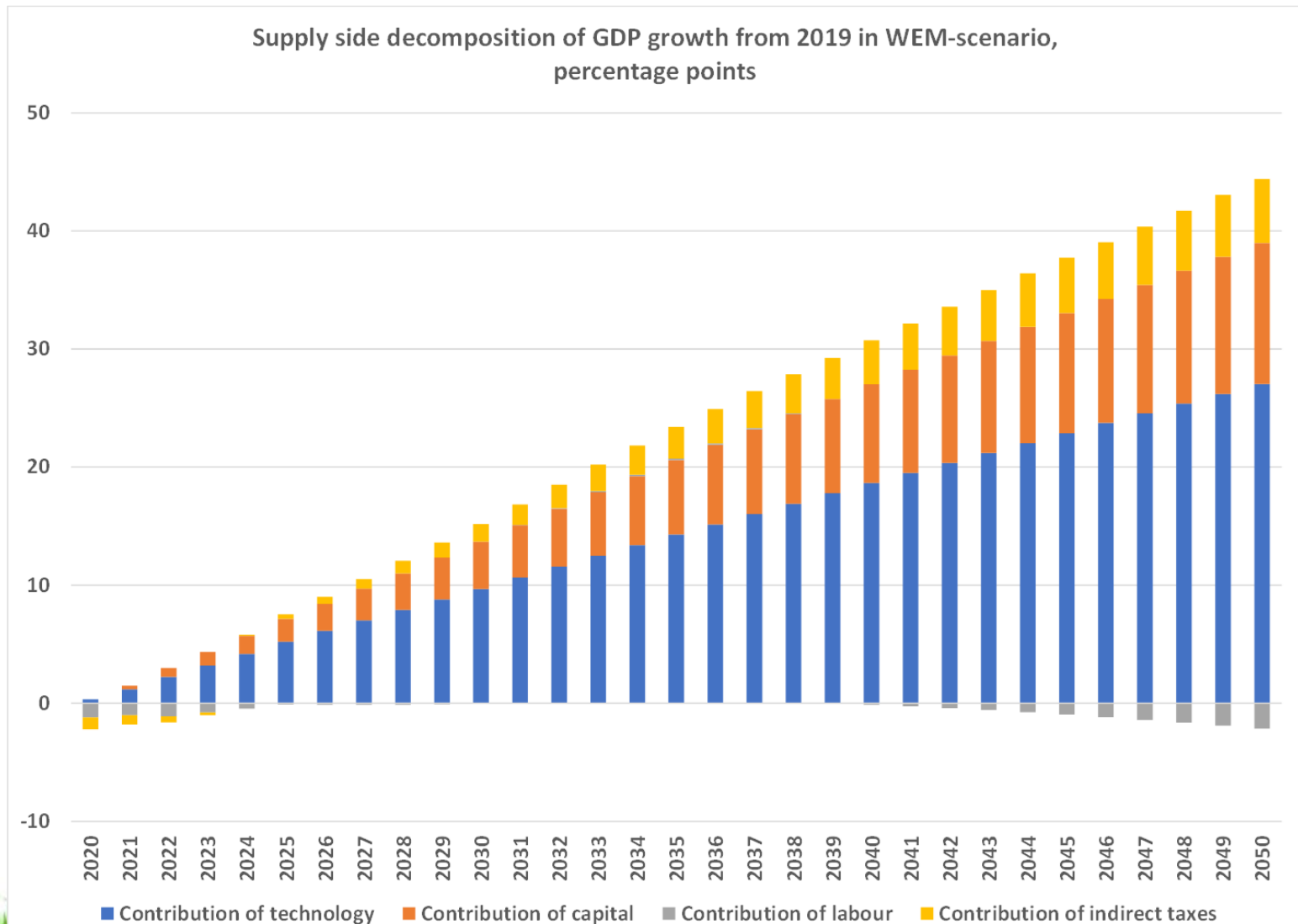
Demand side: productivity differentials affect relative prices and change demand structure

- The demand share of services is growing
- But new transition favours construction, energy-intensive industries (huge investment in energy, industry and transport)

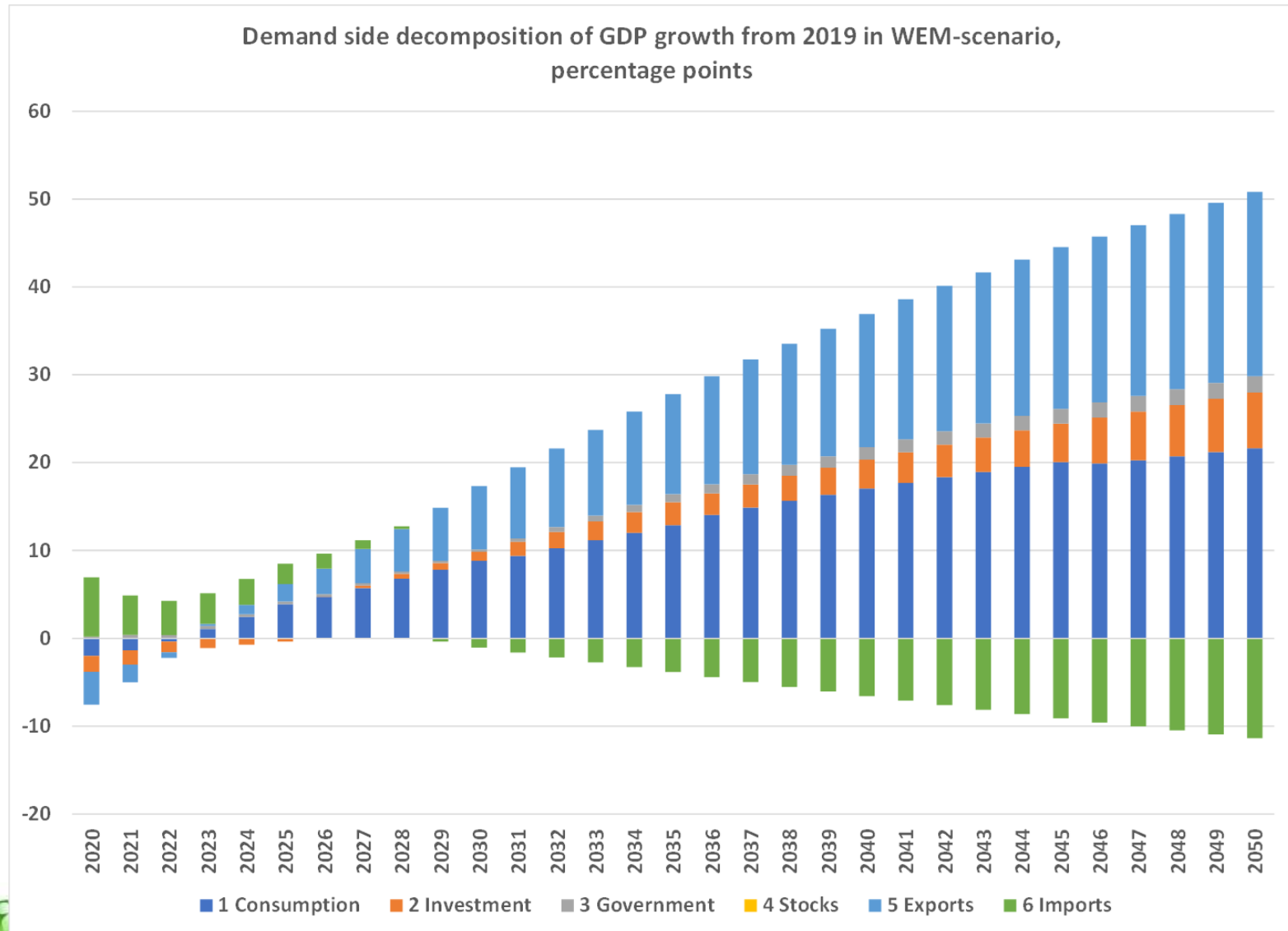
How will the Green Transition appear?

- FINAGE: dynamic CGE based on Monash/VU-model

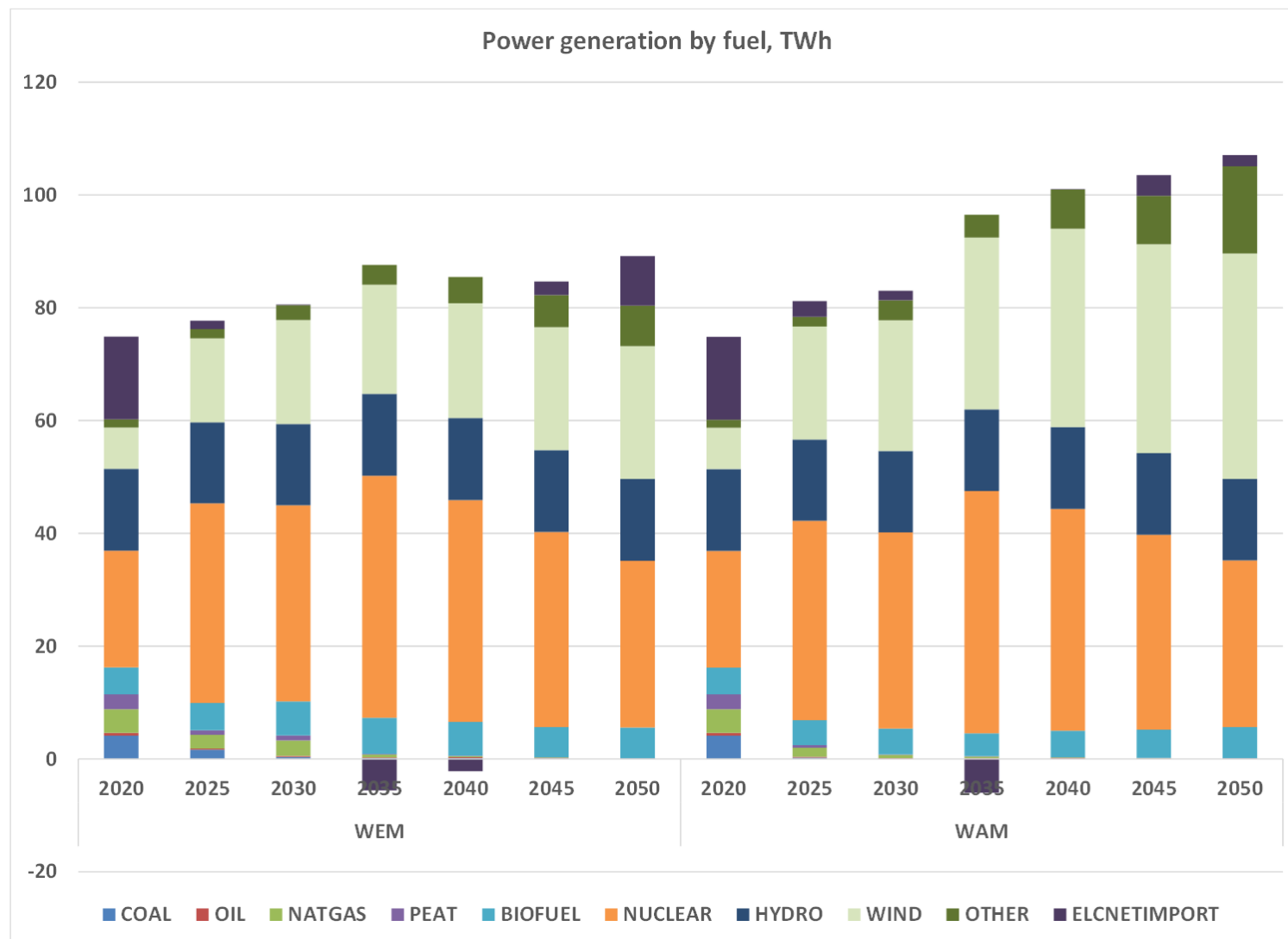
The WEM-scenario – revival of productivity growth after COVID



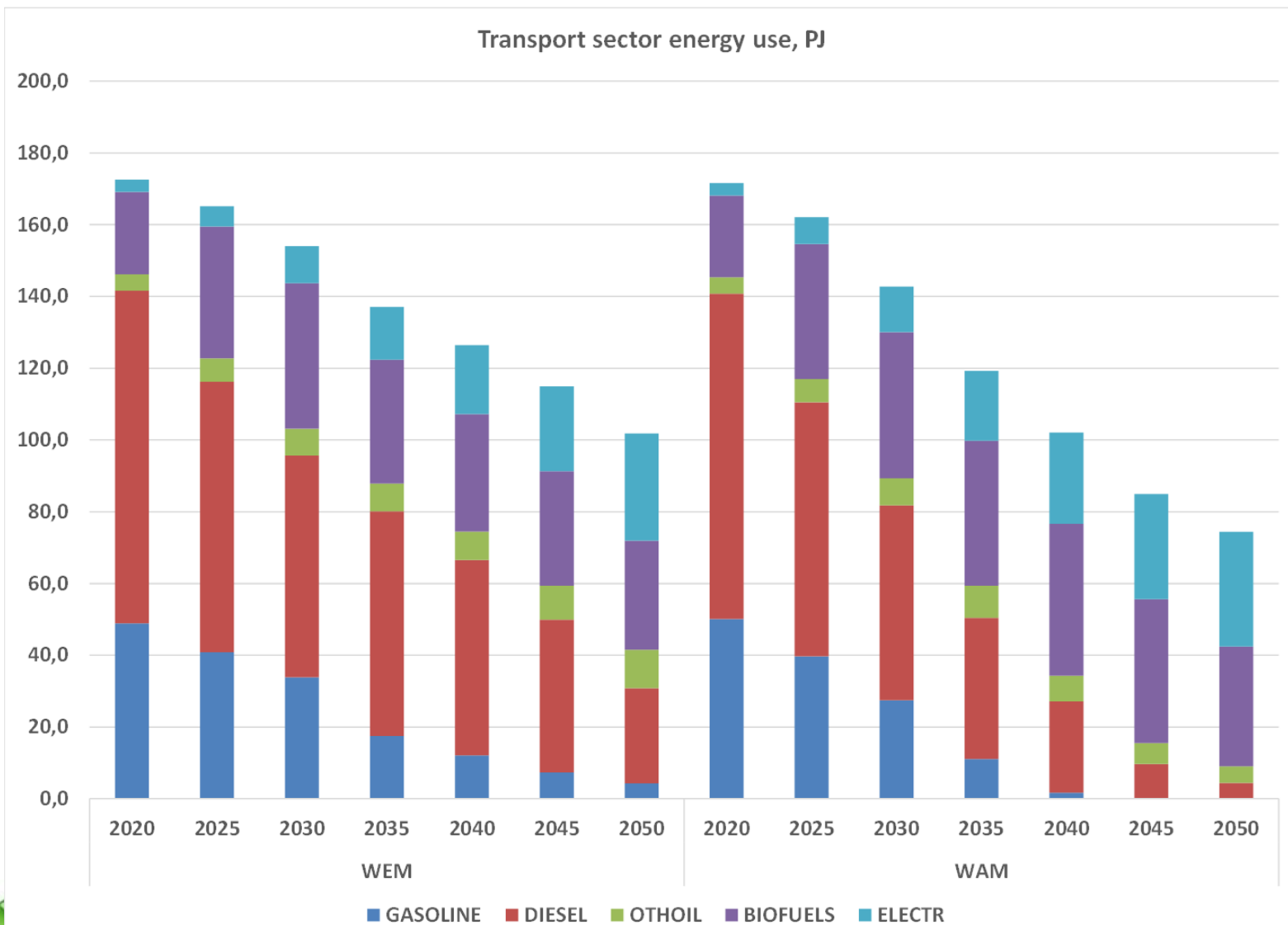
The WEM-scenario – export-driven growth after COVID



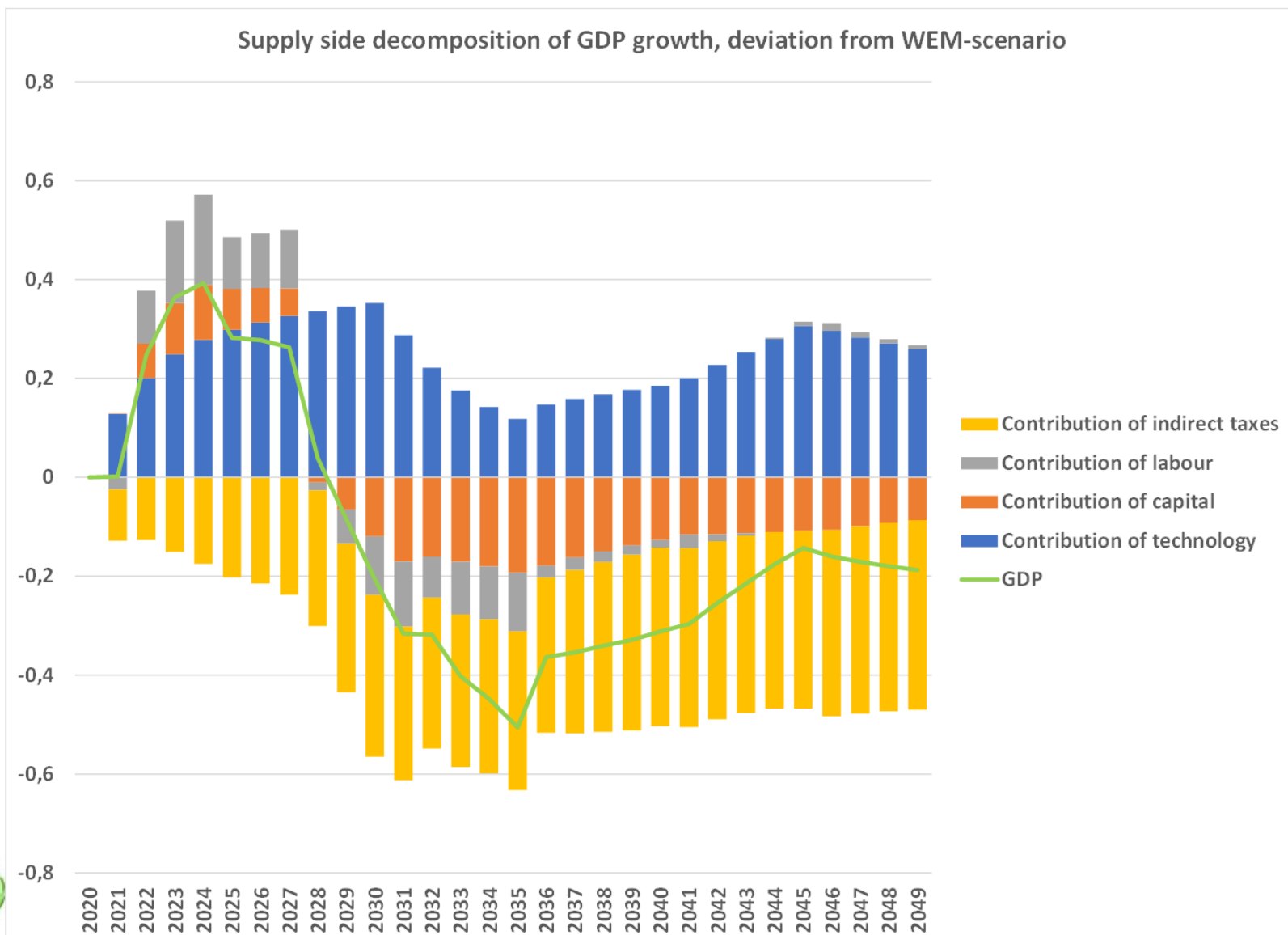
WAM: Green Transition in Power Generation



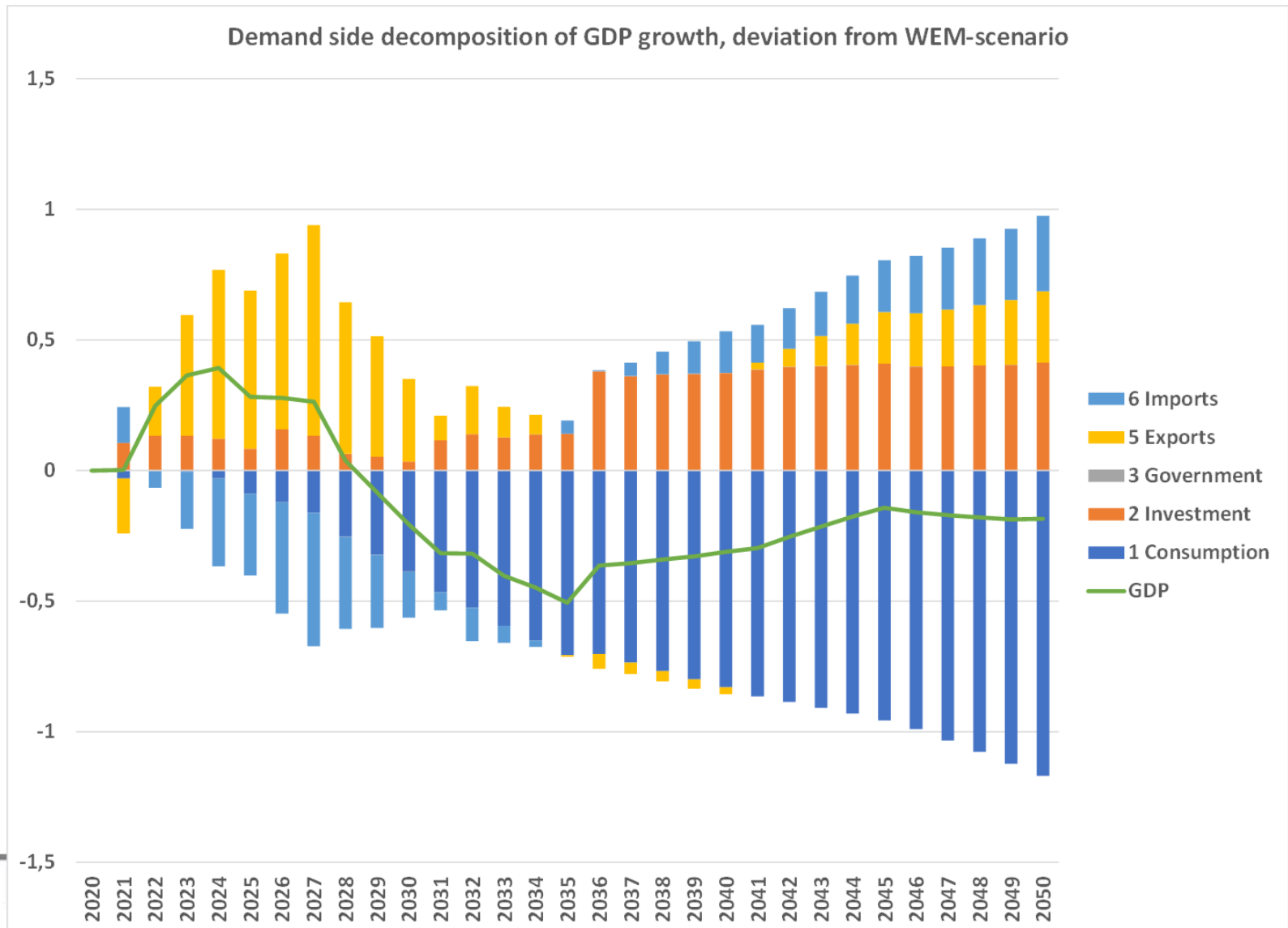
WAM: Green Transition in Transport Sector



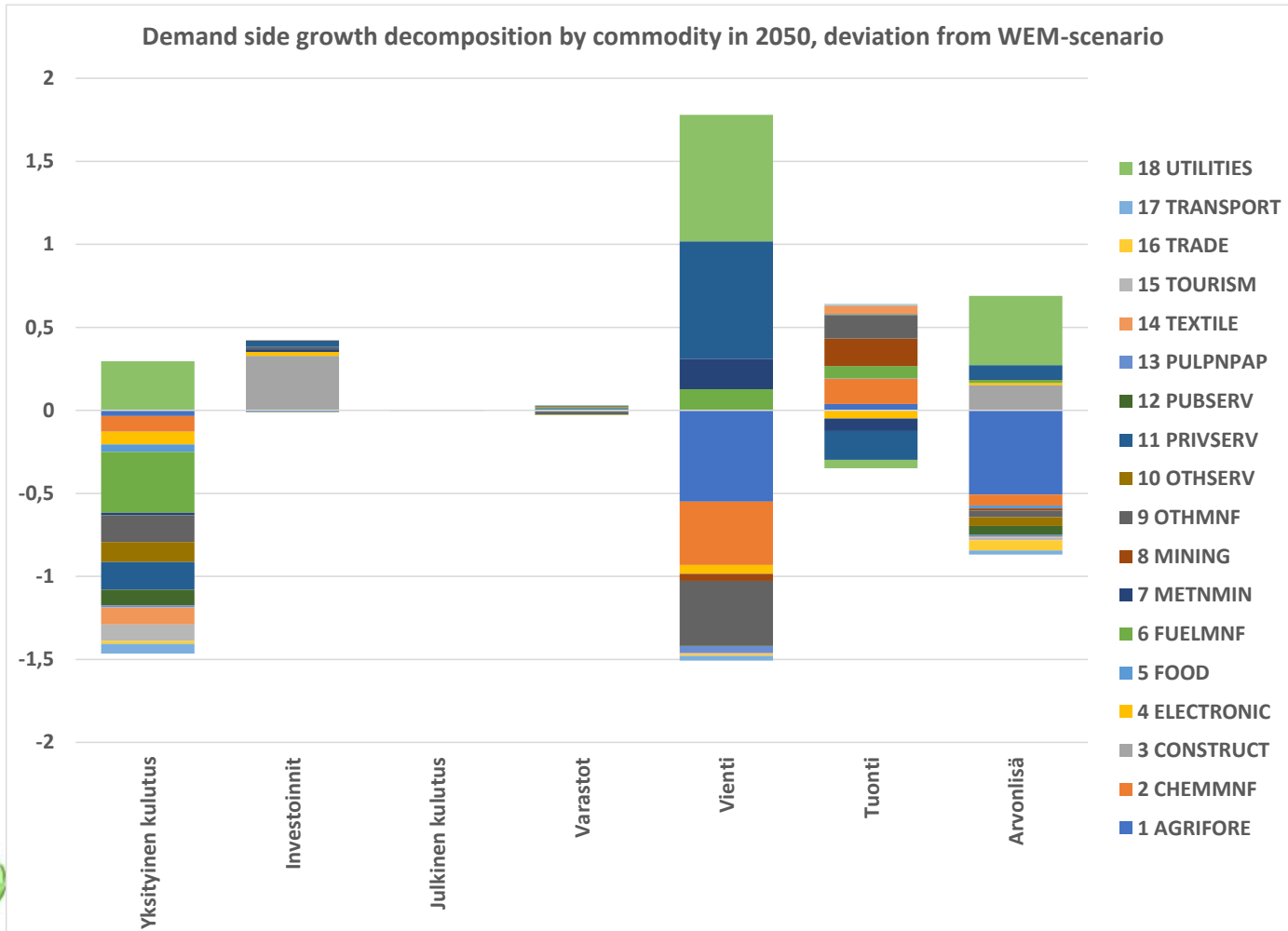
WAM: GreenTransition via Productivity Growth - with loss of indirect tax revenue



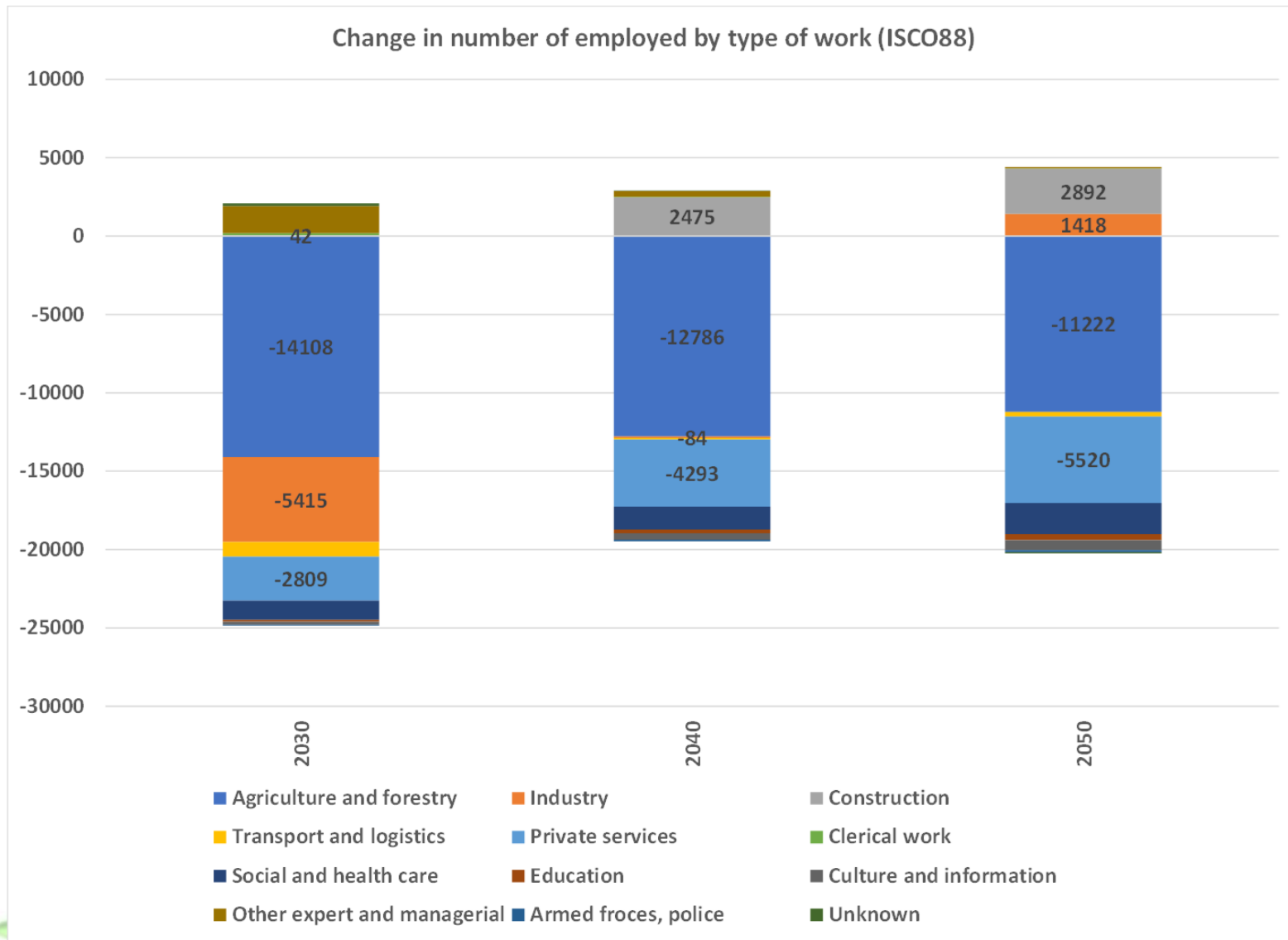
WAM: GreenTransition with some welfare cost as investment replaces consumption



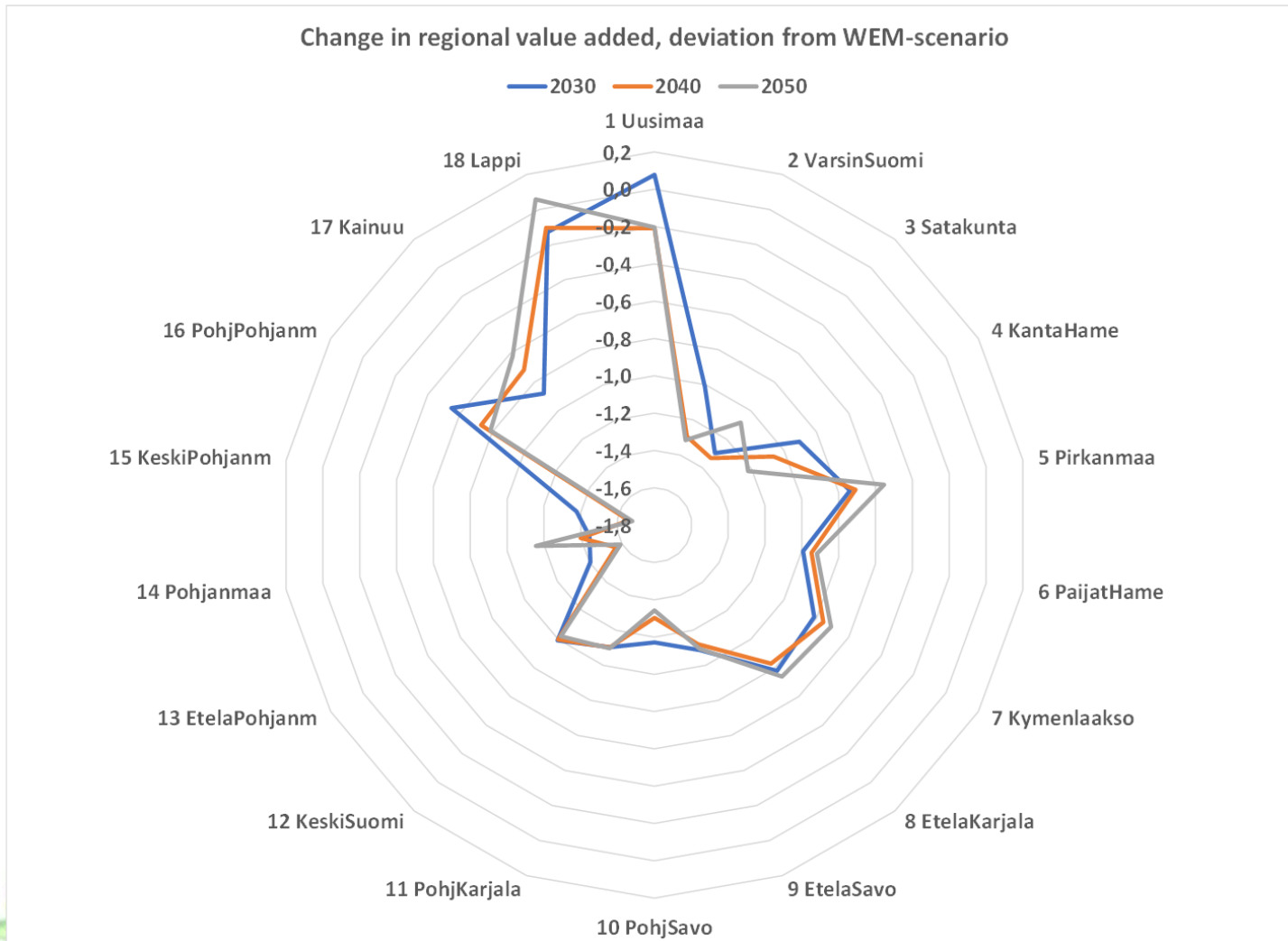
WAM: Green transition favours energy, services, some export industries, and construction, and increases self-sufficiency in many industries



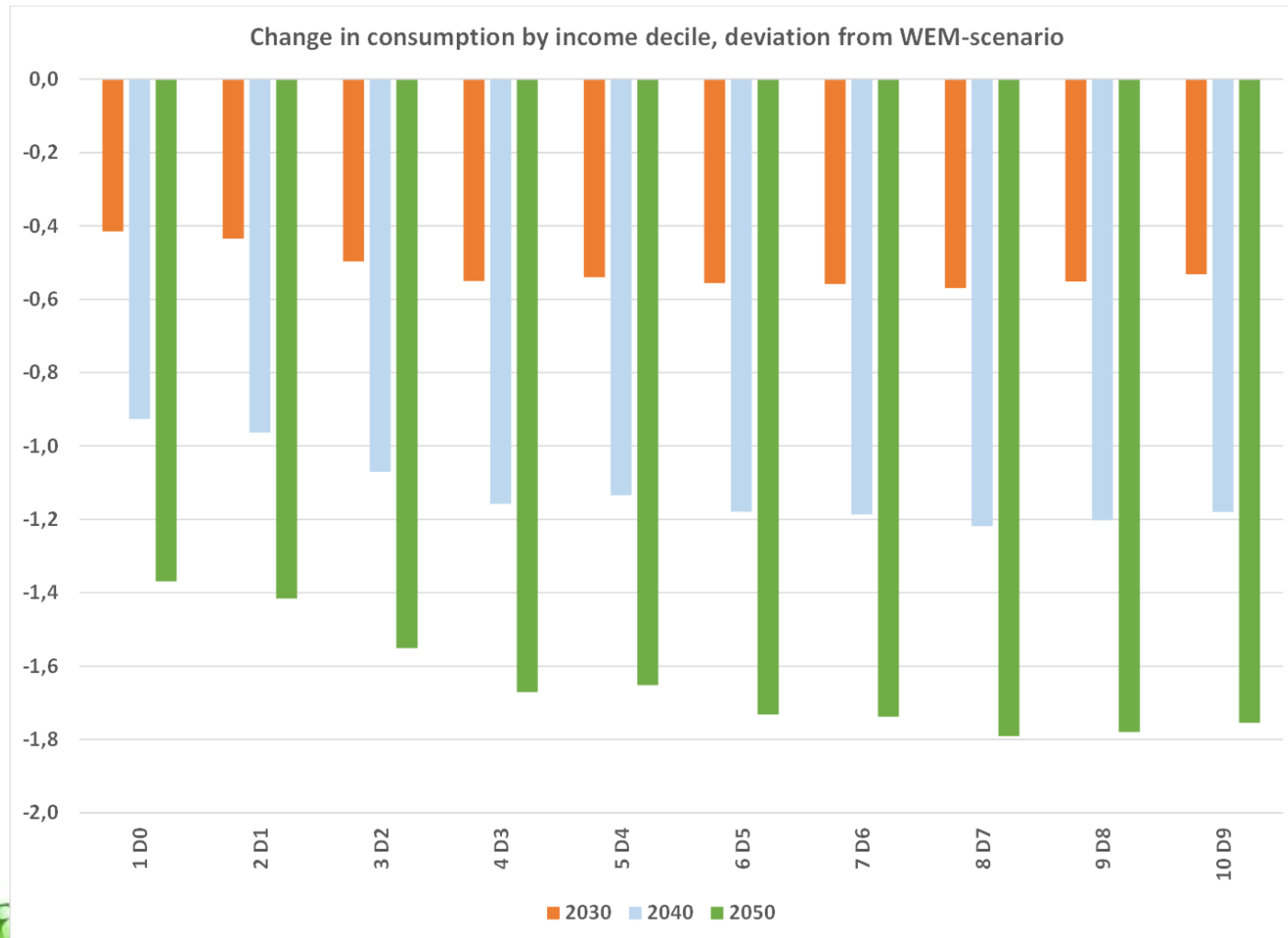
WAM: Employment may fall in some sectors – unless these sectors also reform



WAM: Regional effects concentrate in regions where services and key industries' value added share lower than in population centers



WAM: Welfare effects largest for high-income households – which also have largest carbon-footprints



GreenTransition and Climate Policies

Transition requires successful investments in new technologies

- Key technologies are viable in principle (in the Finnish case, especially hydrogen replacing coal in steel production; new processes in forest industries; wind, solar in energy production; EVs in transport sector)
- New technologies enable some of the energy-intensive sectors to thrive fossil-free, replacing imports
- Investments induce a boom in construction for a long time, "replacing" domestic consumption (especially of services), but exports of energy and services benefit
- Welfare costs are not nil, but they are small in the longer run, and they also "justly" distributed