

What policies are necessary for achieving a resource efficient economy in Europe in 2050: Modelling results

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Background

The model and the scenarios

Background

- ▶ The GINFORS model
 - ⇒ GINFORS = global dynamic EE-MRIO
 - ⇒ Coverage and degree of detail of current version 3:
 - 38 countries + region „Rest of World“
 - 59 product groups, 35 industries, 27 energy carriers, 7 raw materials, 13 crop groups, 4 water abstraction sectors
 - National sector accounts with more than 100 posting items
 - ⇒ Theoretical foundation: Neo-Keynesian
 - ⇒ Empirical foundation:
 - WIOD as main database
 - Behavioural parameters derived by econometric analysis
- ▶ In POLFREE linked with LPJmL
 - ⇒ Global bio-physical model by PIK, that projects crop growth

Background

The Scenarios (up to 2050)

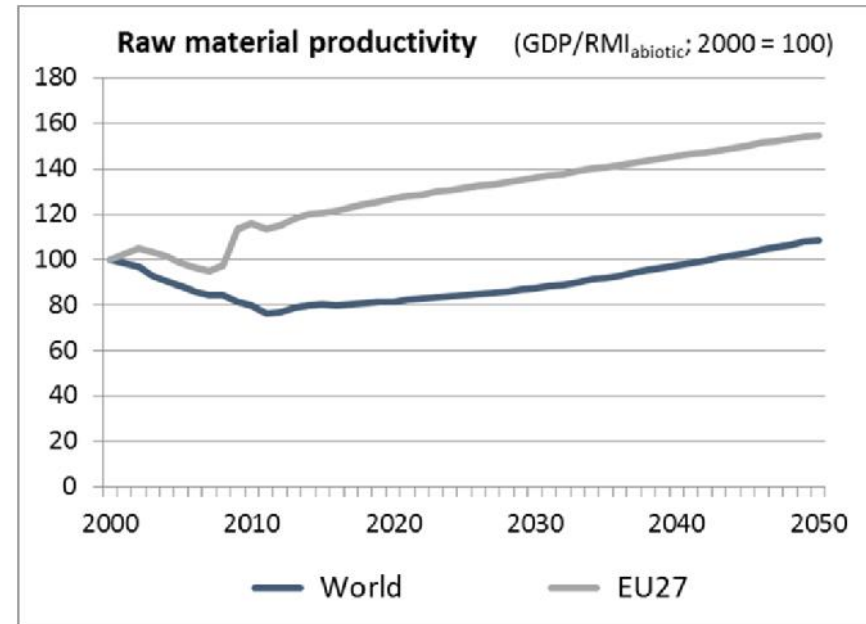
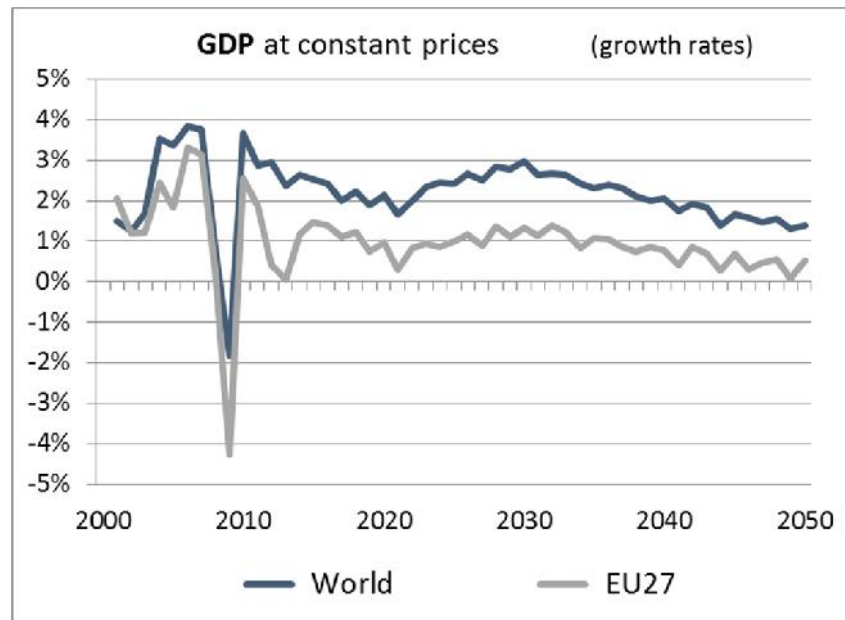
- ▶ A **Reference Scenario** that shows a plausible pathway, if technology and behaviour continues to change like in the past and (environmental) policy does not change.
- ▶ Three transition scenarios **Global Cooperation**, **EU Goes Ahead** and **Civil Society Leads** that ask for policy measures and behavioural changes that are needed for an simultaneous achievement of key environmental targets for the EU
 - ⇒ GHG emissions reduced by > 80% (compared to 1990)
 - ⇒ RMC per capita reduced to less than 5 tons
 - ⇒ Crop land footprint per capita reduced by > 30%
 - ⇒ Water exploitation indices below 20%

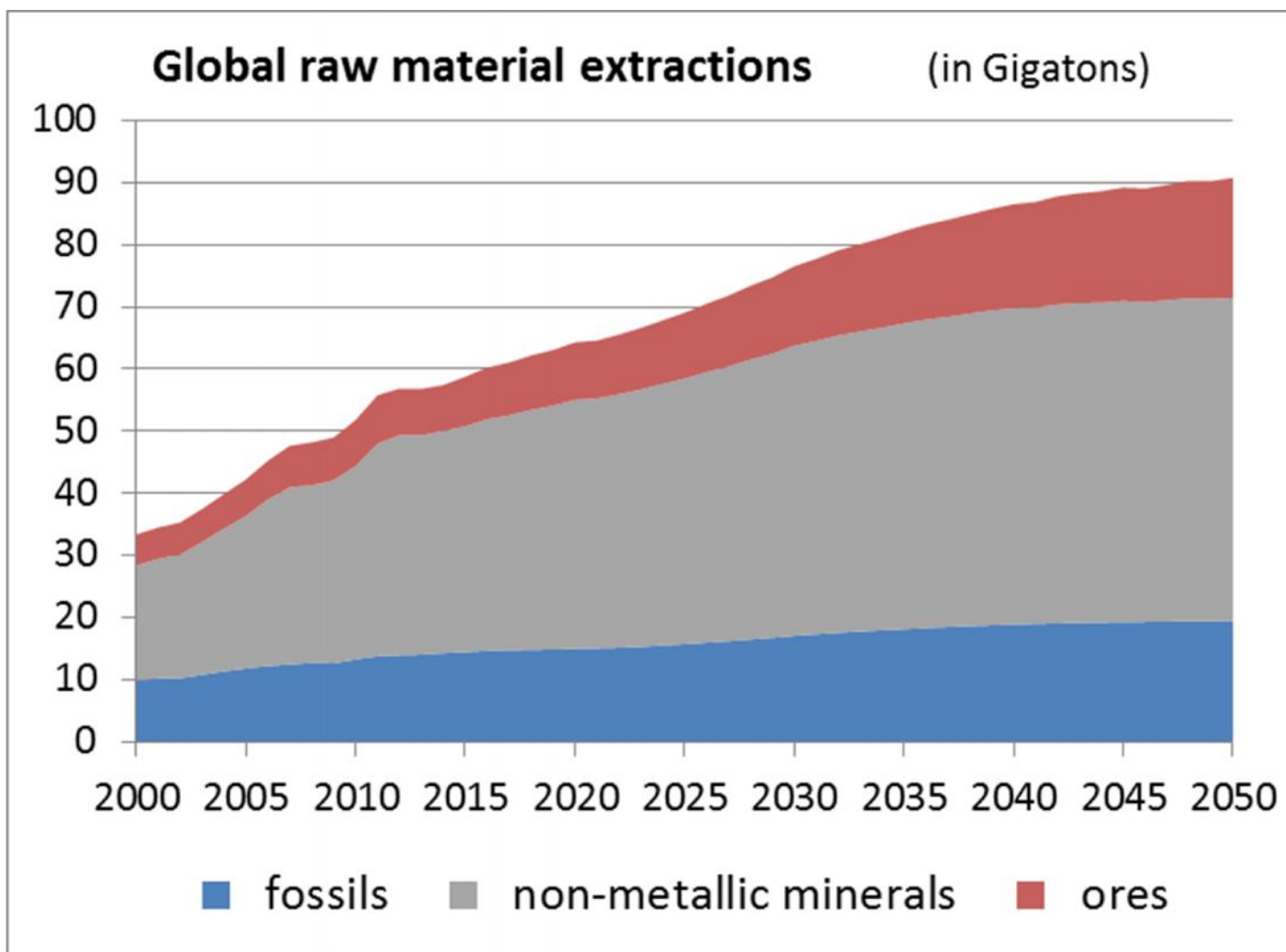
Key findings

The development up to 2050 in the Reference scenario

Key findings

Reference Scenario



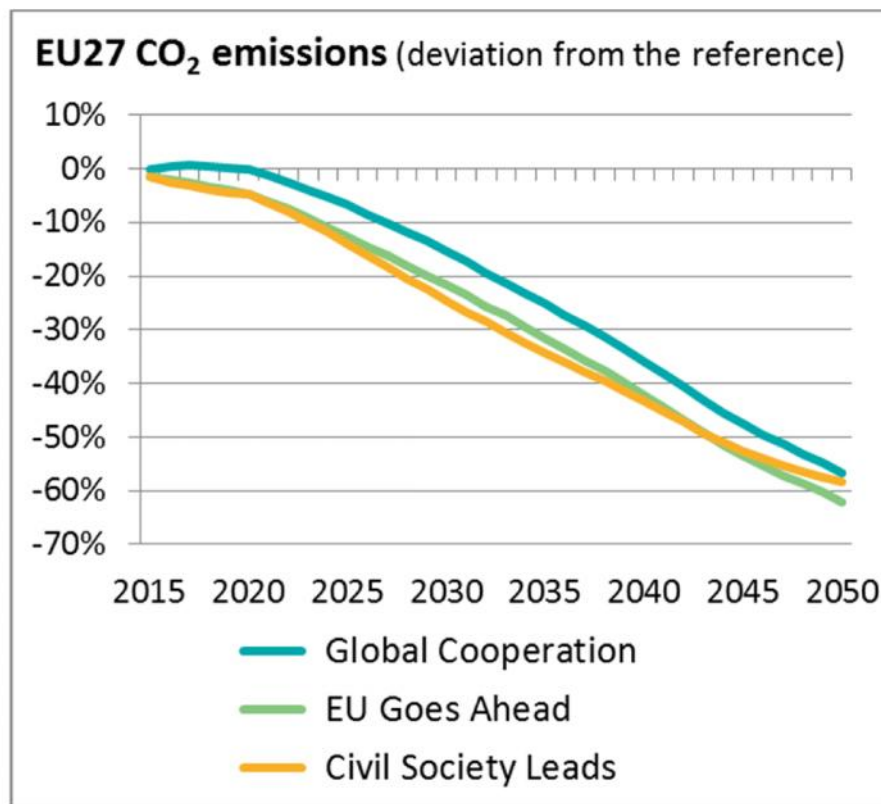
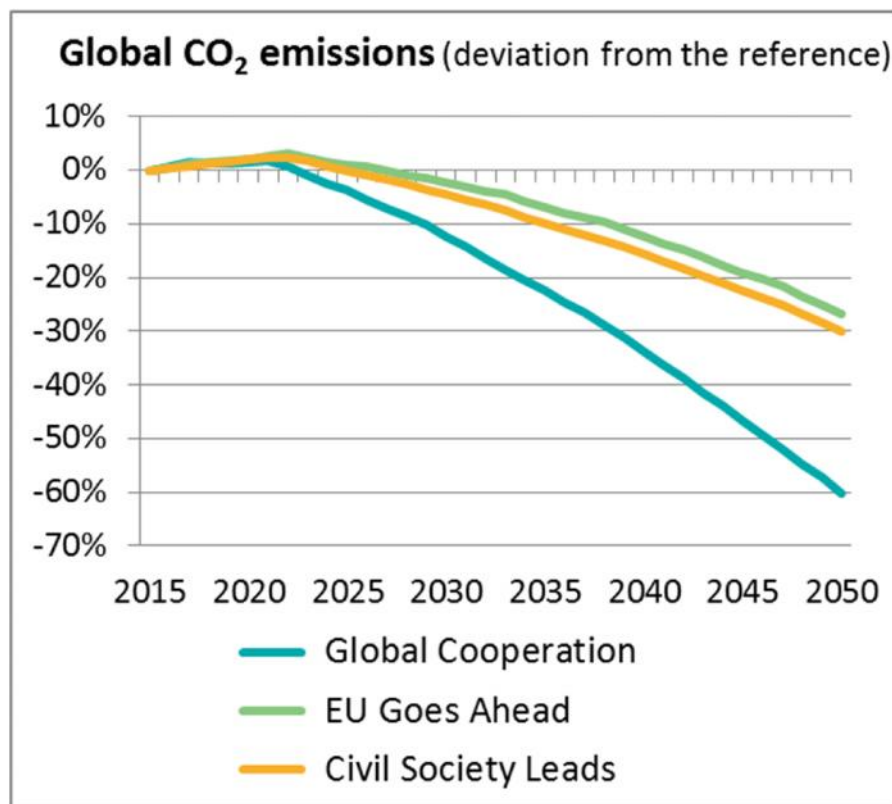


- ▶ What else?
 - ⇒ Global CO₂-emissions climb up to 45 Gigatons, which means that the world is on a RCP6.0 pathway
 - ⇒ Global agricultural land increases by more than 3.9 mio. km² (nearly halve the size of Brazil) within the next 35 years
 - Ongoing deforestation and biodiversity losses
 - ⇒ Further increase of global water abstraction (+5%)
 - Ongoing/increasing pressure on freshwater resources
 - ⇒ Global crop demand for food, feed and processing purposes increases faster than crop production
 - Accelerating crop prices with negative impacts on poverty and famine abolishment
 - ⇒ and from a EU27 perspective: despite demographic change ongoing unemployment problems

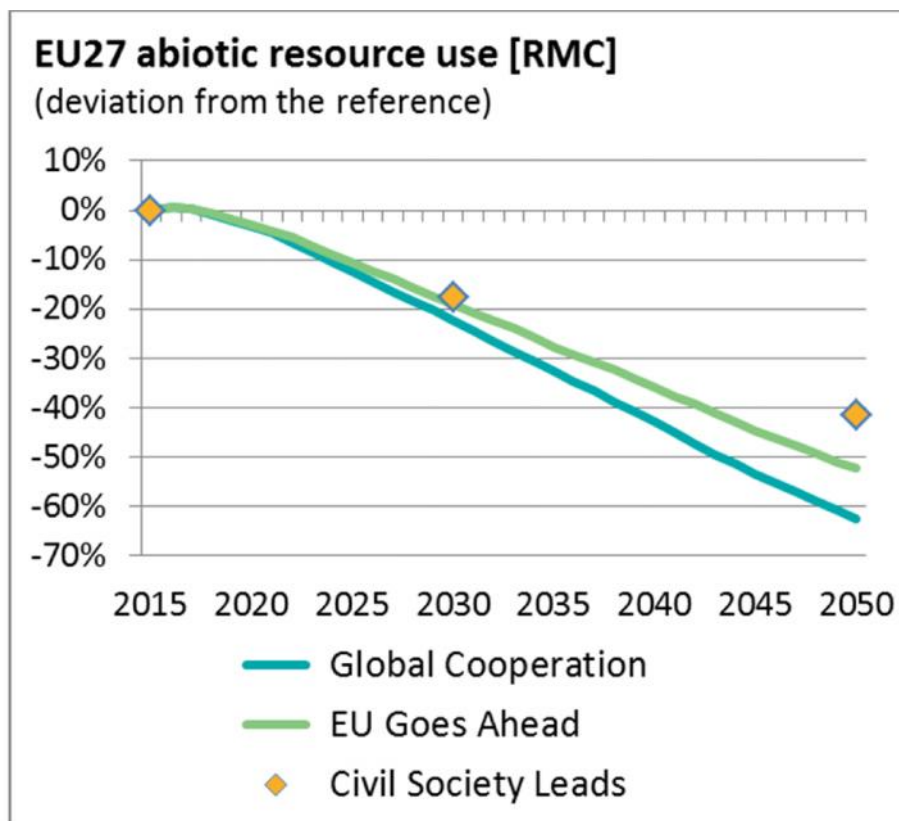
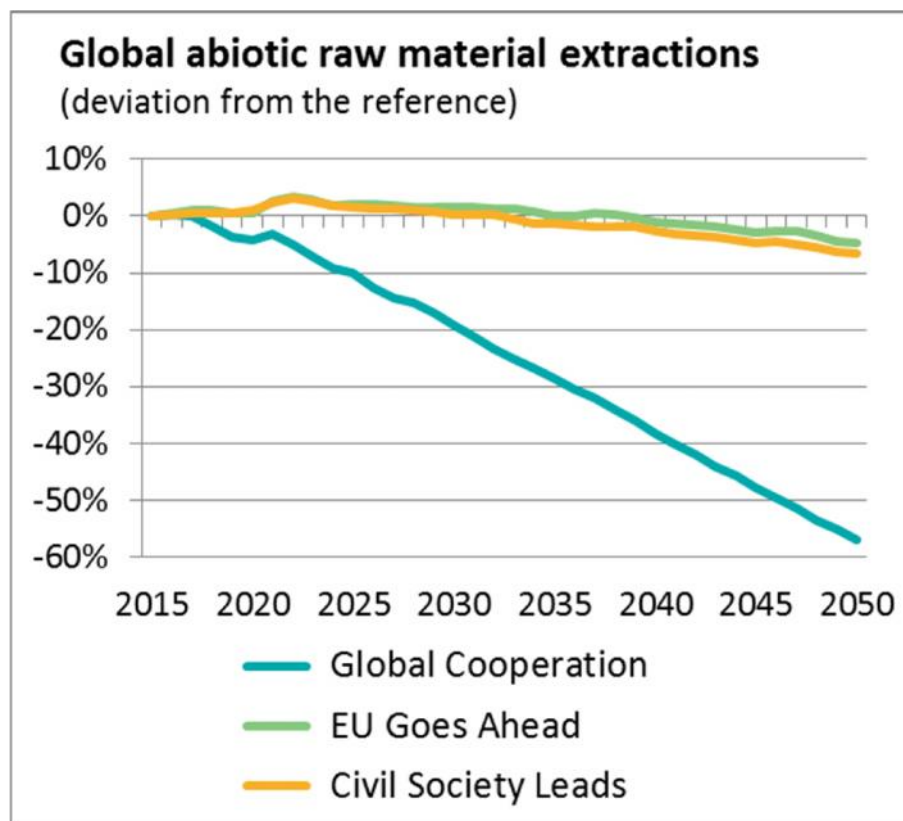
Key findings

The policy impacts in the transition scenarios

► Carbon



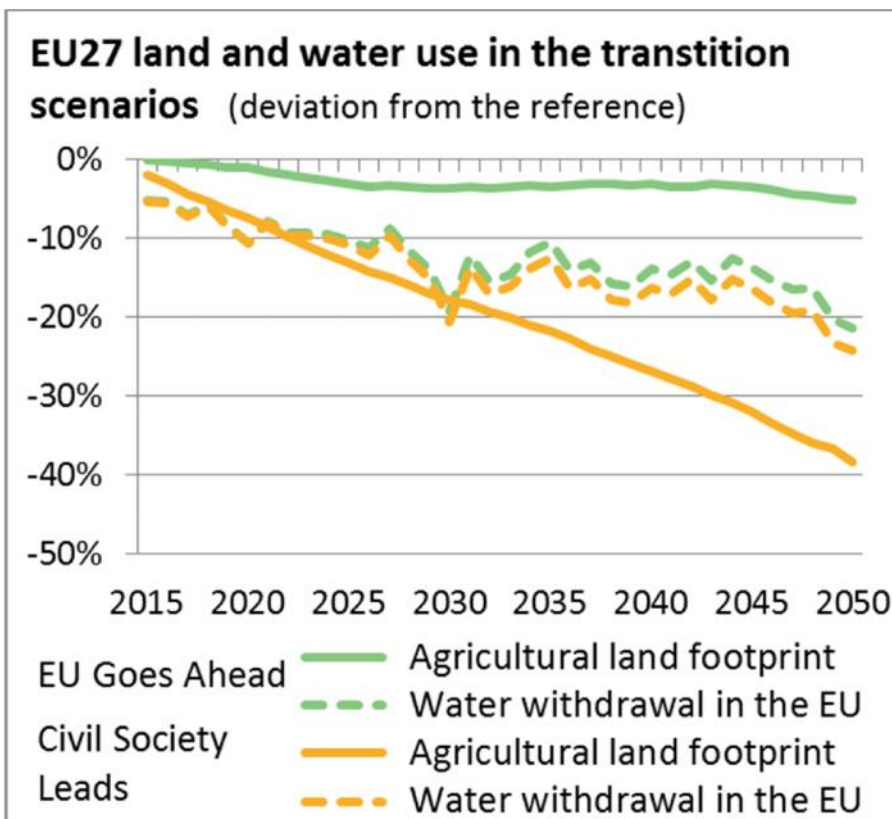
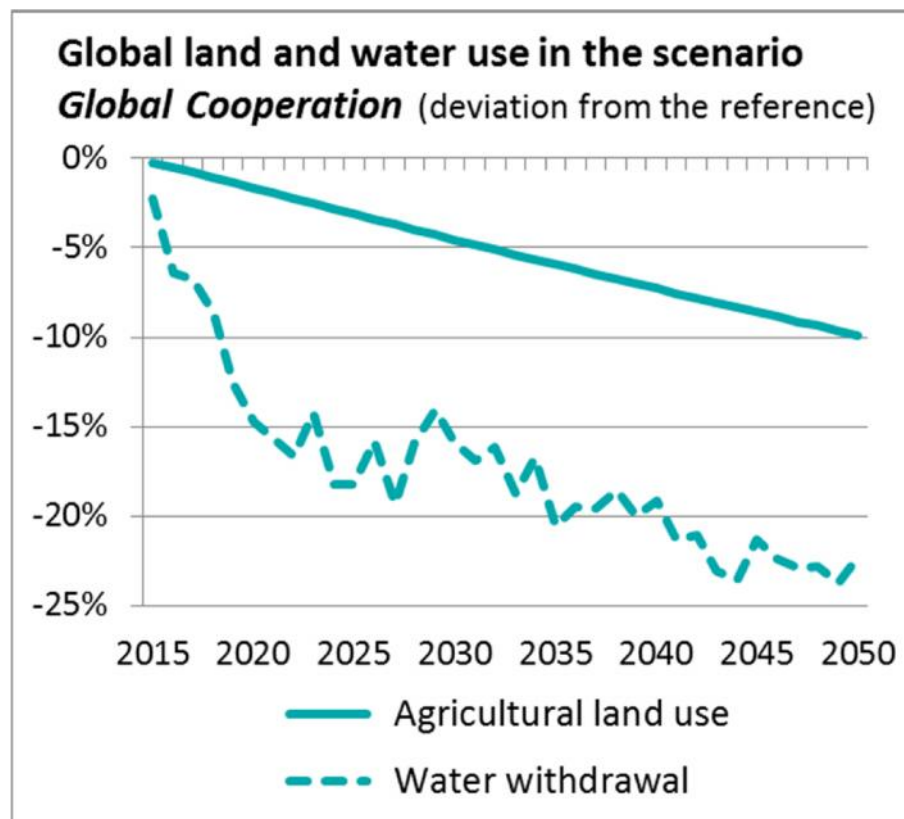
► Abiotic raw materials



Key findings

Policy impacts in the transition scenarios

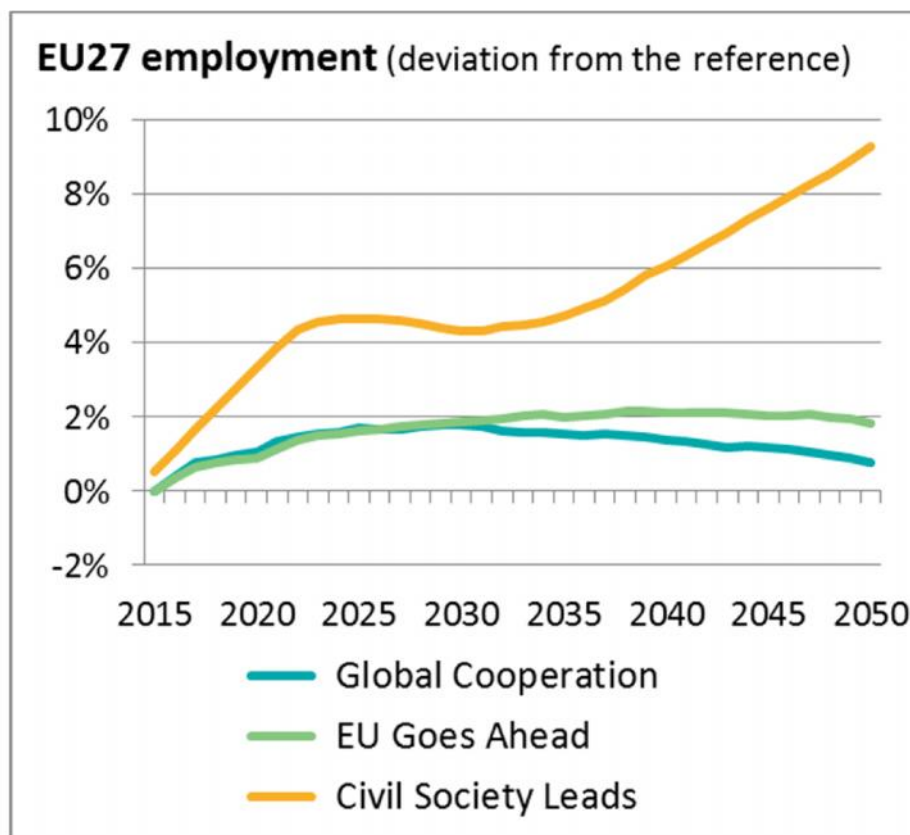
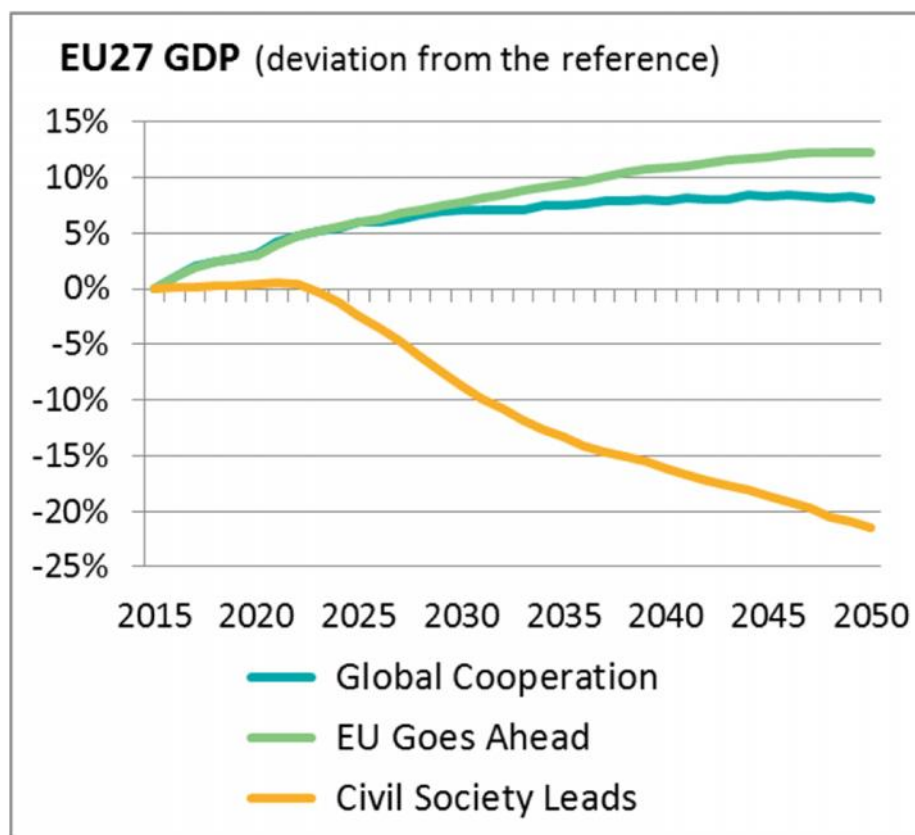
► Land & Water



Key findings

Policy impacts in the transition scenarios

► Impact on jobs and growth in the EU



- ▶ Achievement of environmental targets is possible,
- ▶ but only with a clear and comprehensive policy intervention that targets at resource efficiency advances in industry as well as at resource use reductions by citizens
- ▶ Modelling of policy measures and behavioural changes in POLFREE based on elaborated research by WI
 - ⇒ In each of the three transition scenarios a set of 20 to 30 single policy measures / behavioural changes is considered

- What policies are necessary for achieving a resource efficient economy in Europe in 2050?

1. Set the prices right

- Examples: ETR / ETS; fade out of EHS

2. Regulation

- Examples: Binding targets for e.g. Renewables, Recycling; Land and Water

3. Information and incentives

- Examples: Public innovation fund; food waste; insulation

4. Behavioural changes of consumers / citizens

Thank you for your attention

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Detailed results will shortly be available at:
www.polfree.eu