



# KB1-1C-1 - Integrated toolbox for cross-sectoral forward looking assessments & scenario's

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## Background

The Netherlands has agreed to limit global warming to well below 2C in line Paris agreement. In, 2018 the Minister of Agriculture Schouten launched her vision document "Landbouw, natuur en voedsel, waardevol en verbonden" in which she expresses the ambition for a circular agriculture, which by 2030 will have closed nutrient cycles as much as possible, at local, national and international scale level.

There is a need for **integrated impact assessment** to assess the potential of circularity to close the gap for climate neutrality in 2050 (see Figure 1) considering a broad set of objectives and the possible costs as well as synergies and trade-offs.

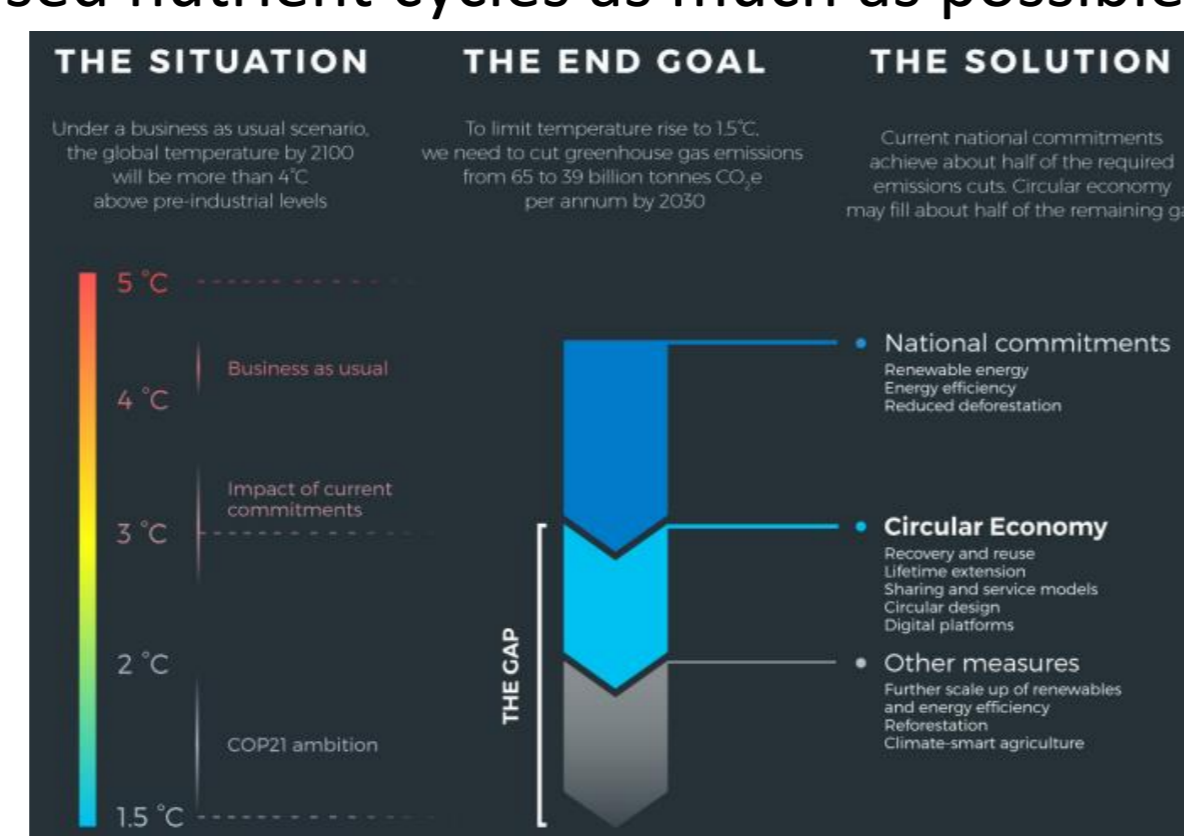


Fig 1: Circular economy strategies are estimated to reduce the emissions gap by half to meet the 1.5 target. (Source: Blok et. al, Circle Economy/Ecofys 2016)

## Project objectives

- Develop an Integrated Toolbox to assess the impact of actions directed at a circular and climate neutral economy on the sustainability of EU agriculture by 2050
- Provide a comprehensive assessment of the potential of a circular bioeconomy and cutting GHG emission and its costs in three case studies using the integrated toolbox.
- Develop a Science (model)-policy interface by means of a web-based interactive policy dashboard and stakeholder engagement.

## Results so far

- **Model integration & comparison** : a five steps methodology (See Figure 2) to co-create an integration framework for to the question in hand using causal loop & participatory techniques to identify the key strengthening or weakening relationships between the variables and mapping the models which are best suited to capture these variables and their relationships.

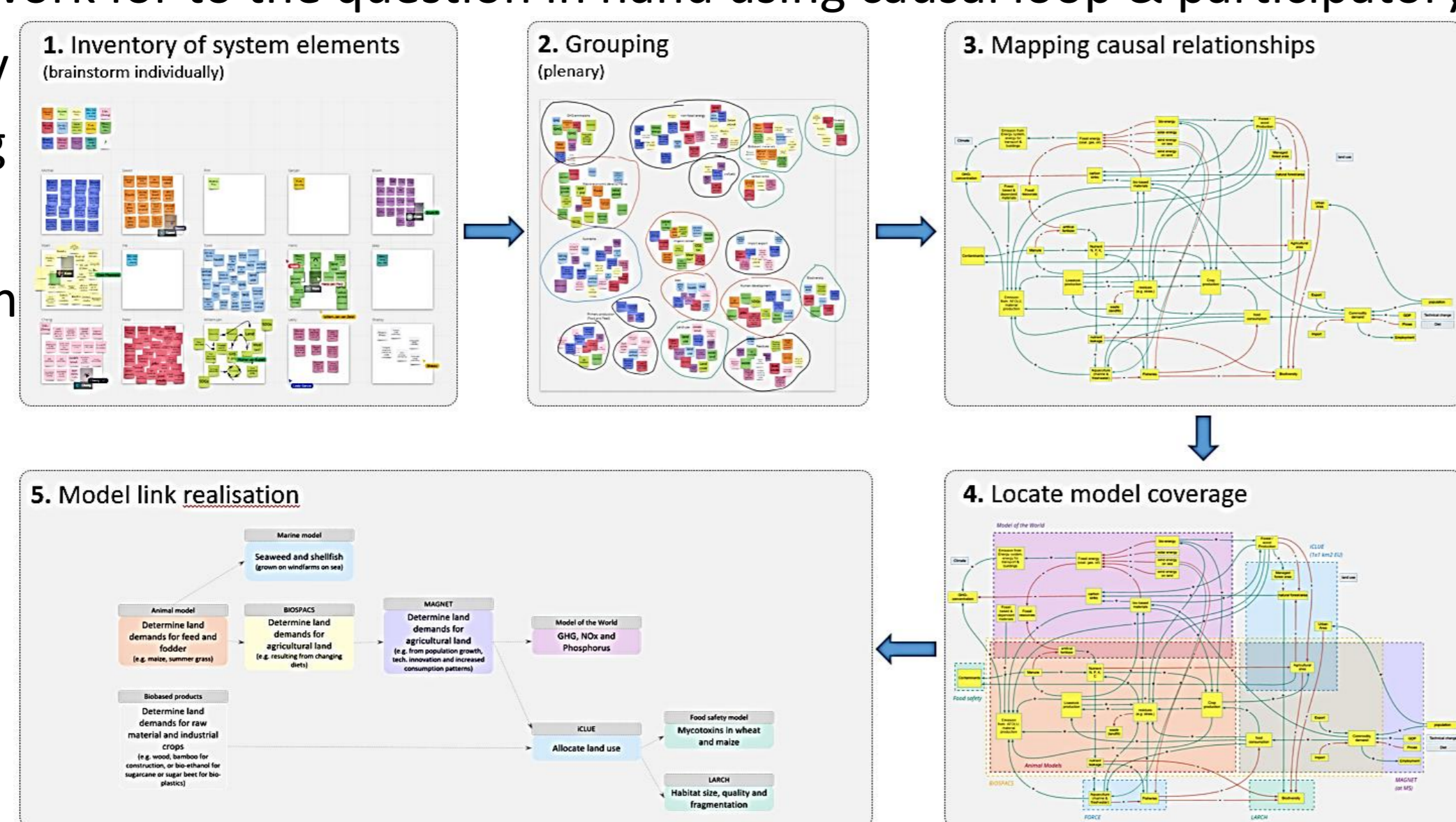


Fig2. Five steps integration approach based on causal loop and participatory techniques

- **Development of an Integrated Modelling Toolbox to assess the mitigation potential and costs of circular bioeconomy in agriculture (see Figure 3):**

- Individual model adjustments
- Harmonized baseline for the EU & MS's with projections to 2050
- Scenarios on circularity & diet
- Model integration and flows
- Developed five Key performance indicators (KPI's) for circular bioeconomy & measure them
- First version online dashboard (see Figure 5)

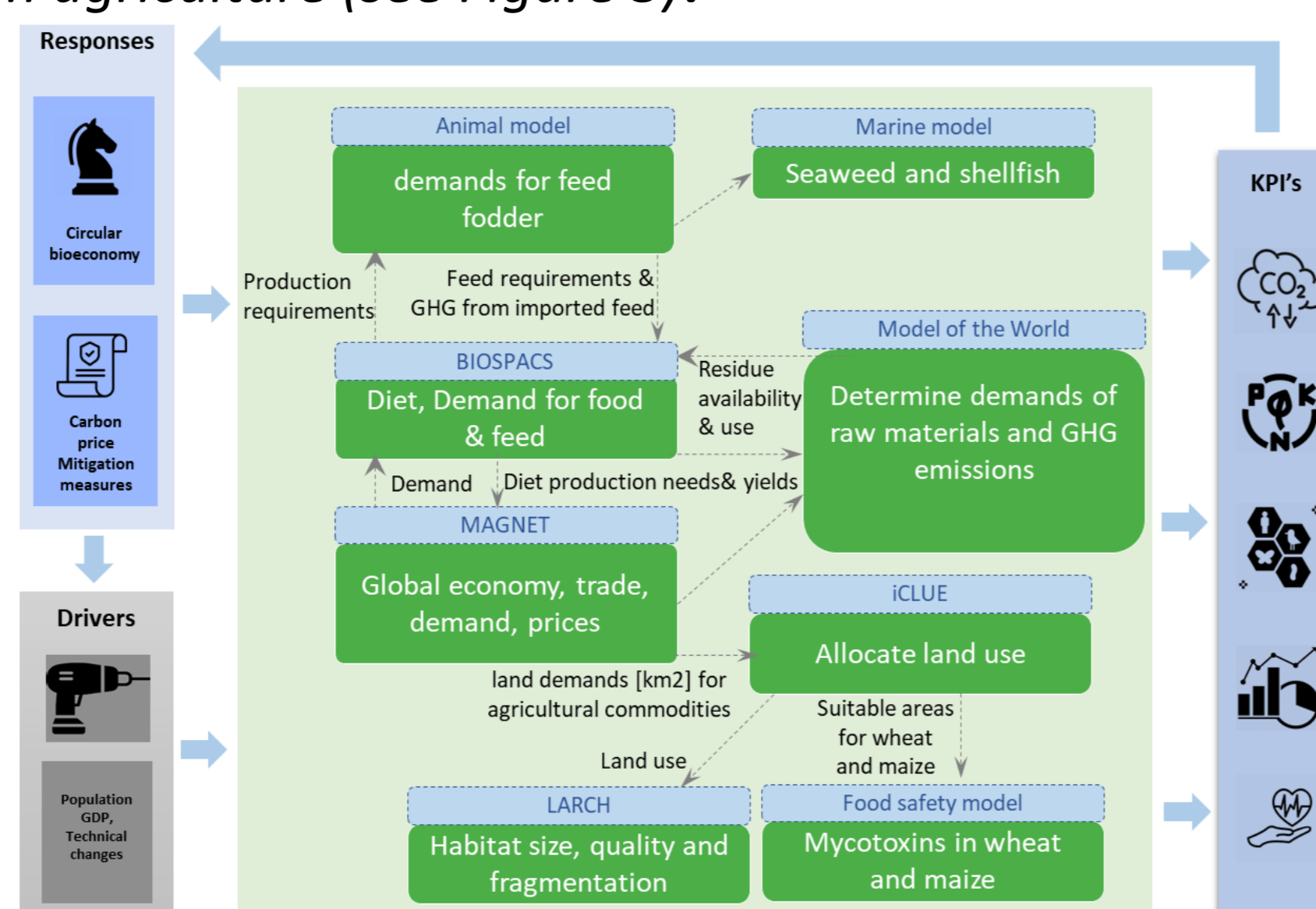


Fig 3. Integrated toolbox as a decision support system

- **Illustration of the use of the integrated toolbox via three case studies:**

- Biobased plastic: sustainable sourcing
- The impact of Circular bio-economy approaches in agriculture and food system
- Transition to climate neutral EU (2050)

## Expected impacts

- Boosting analytical and model integration capacity within WR in food and agriculture in both bio-physical and socio-economic domains for climate neutrality and circularity.
- Co-creation of a Science(model)-Policy interface with policy makers and other clients.

**Target groups:** Analyst supporting Dutch and EU policy-makers with quantified circular bioeconomy and climate scenarios, e.g. EU DGs and Dutch ministries to better assess the overall synergies and trade-offs

**Scale:** At the EU level, several DGs such as will benefit from the extended modelling capacity. At the national level, the authorities as well as modelers, and researchers within WR and outside.

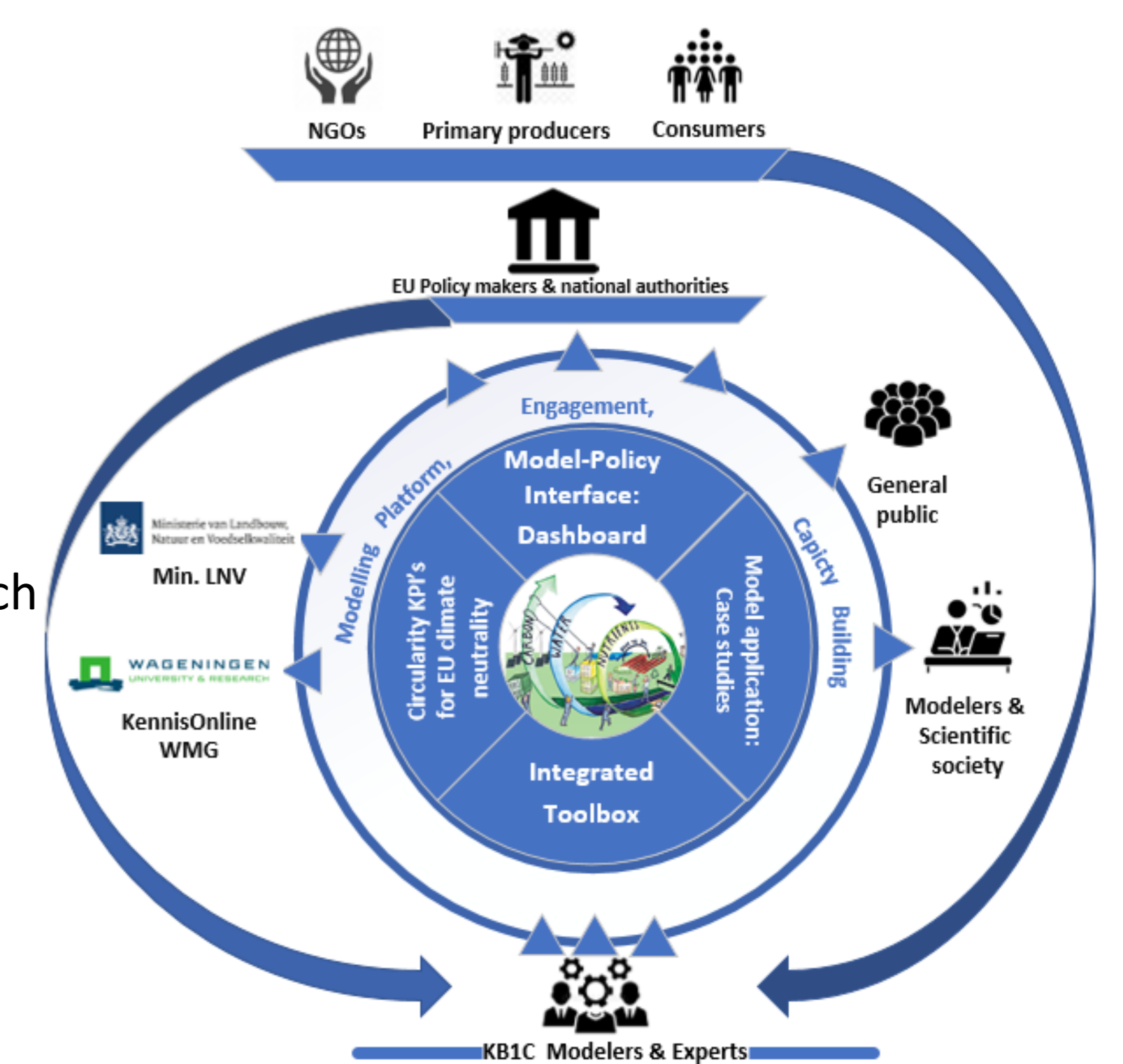


Fig 4. KB1C Impact loop & valorization

## Research and outreach plans remaining time

- Develop a governance structure for enduring use of the toolbox:
  - principles of open data
  - up to date ideas on integrated modelling practices in such a way that new models and researcher can join, replicate and add.
- Illustrate the use of integrated toolbox by a broad case on 'modelling the transition to a climate-neutral EU by 2050'.
- Launching the final version of web-based interactive policy dashboard. Figure 5 is a snapshot of the dashboard, presenting results on the 'Biobased Plastic case'.

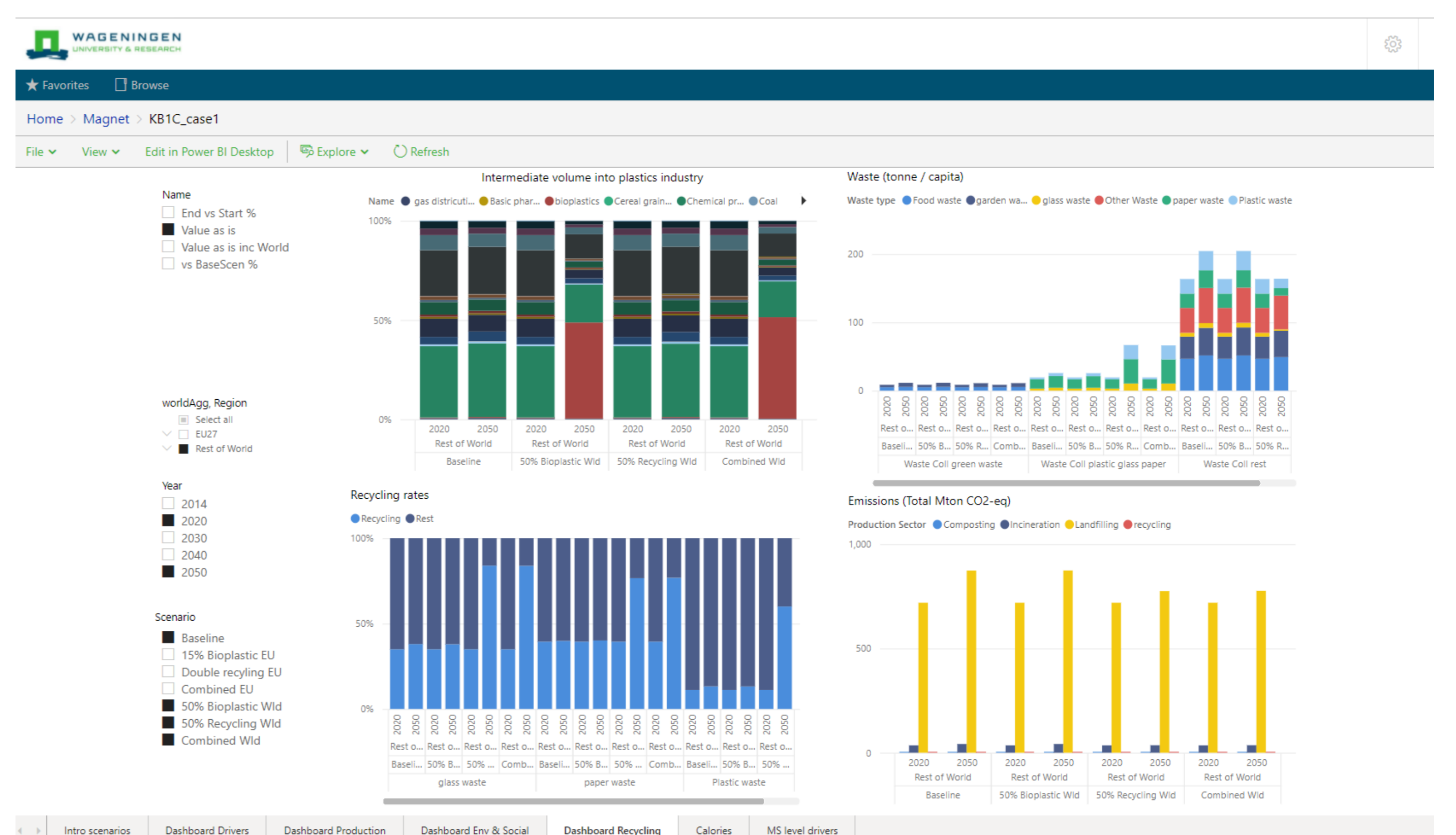


Fig 5. A snapshot of the 'Dashboard' showing the end-of-life and GHG emission impact of the EU plastic sector in a baseline and three scenarios for 2030: 1) Global increase of Biobased plastic input to all chemical sectors, 2) Recycling rate of plastic increase by 50%, 3) Combination of the two scenarios.

- Maximize the exploitation potential of the integrated toolbox, by mobilising the stakeholder community including EU and national policy-makers (e.g. MACSUR-Scipol, DG ENV and JRC) as well as researchers (e.g. Wageningen Modelling Group and other KB projects).