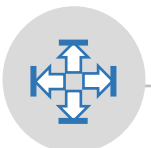
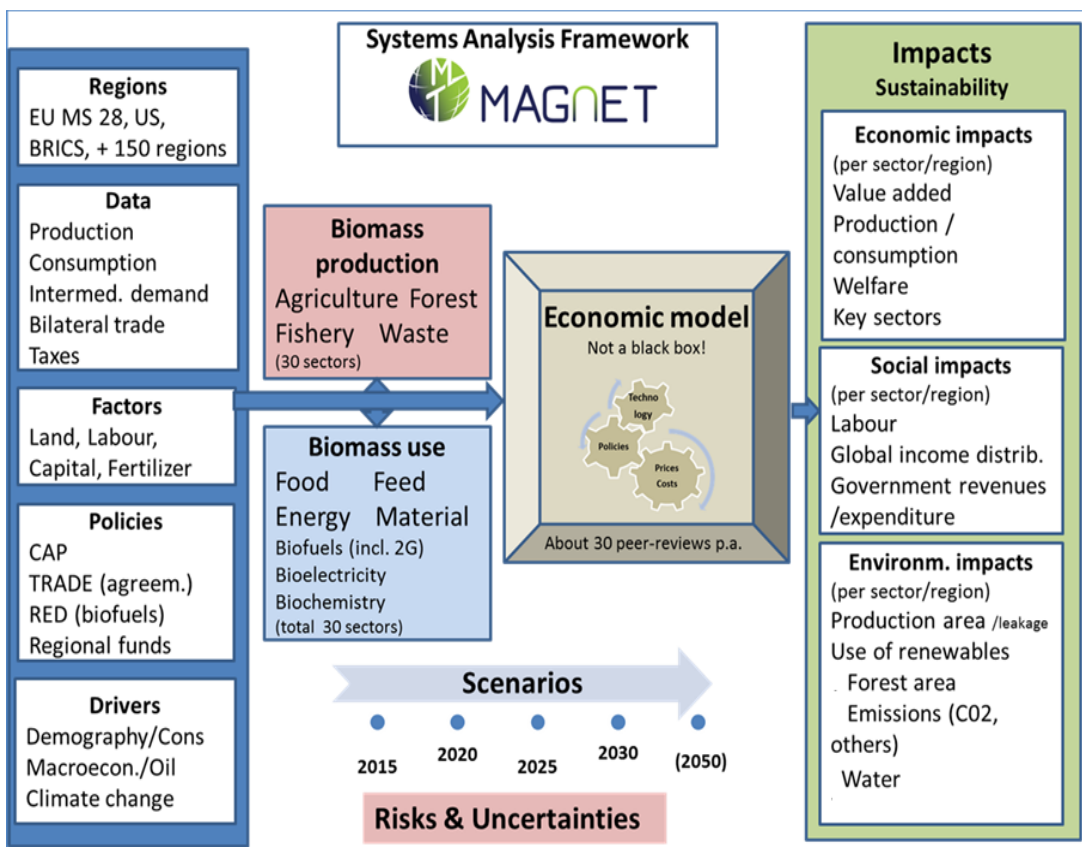




## The model



MAGNET (Modular Agricultural GeNeral Equilibrium Tool) is a general computable equilibrium model, with an additional focus on agriculture, designed for **economic impact assessment**. MAGNET builds on the global general equilibrium Global Trade Analysis Project (GTAP) model. MAGNET is a tool for analysis of trade, agricultural, climate and bioenergy policies.



## Spatial and temporal coverage

**Spatial coverage:** Global

**Spatial resolution:** National

**Temporal scale:** Until 2050 in flexible time steps (2100 is possible)





## Nexus coverage

**Food-energy links:** quantitative analysis in the area of agricultural policies, international trade policies and bio-economy policies (including bioelectricity, 2nd generation biofuels and biochemical policies). Next to various agricultural sectors, two additional biomass producing sectors are added, namely a residue producing sector and an energy crop sector.

**Food-water links:** In 2017 virtual water flows will be integrated within the magnet model (including biophysical water flows).



## Inputs

- ★ GDP and population developments
- ★ Policy changes
- ★ Changes in productivity of land, labour and capital as well as efficiency changes in the economic sectors themselves (in percent change).
- ★ Changes in patterns of consumption preferences such as a shift to a more meat based diet for example.



## Outputs

- ★ GDP, value added, employment, trade balances, self-sufficiency rates
- ★ Changes in prices and quantities of units produced and consumed
- ★ Changes in CO2 emissions and the market price for emission permits
- ★ New land brought into production
- ★ Energy produced and consumed from various fossil fuel and clean energy sources.



## Recent applications

MAGNET is used to study the macro-economic contributions of the emerging bioeconomy as well as the impact of agricultural, trade, bioeconomy and climate policies on various dimensions of food security.

★ Koopman, J.F.L., Kuik, O.J., Tol, R.S.J. and R. Brouwer (2015). The potential of water markets to allocate water between industry, agriculture and public water utilities as an adaptation mechanism to climate change. *Mitigation and adaptation strategies for global change*. DOI: 10.1007/s11027-015-9662-z.

★ Smeets E., Vinyes C., Tabeau A., Van Meijl H., Corjan B. and Prins A.G. (2014) Evaluating the macroeconomic impacts of bio-based applications in the EU. Luxembourg: Publications Office of the European Union. <http://dx.doi.org/10.2791/10930>.



## Further information

MAGNET website  
Documentation  
Software

**Contact:**

Hans Van Meijl  
[Hans.vanmeijl@wur.nl](mailto:Hans.vanmeijl@wur.nl)

Jason Levin-Koopman  
[jason.levin-koopman@wur.nl](mailto:jason.levin-koopman@wur.nl)



sim4nexus@wur.nl.

 @SIM4NEXUS

[www.sim4nexus.eu](http://www.sim4nexus.eu)