

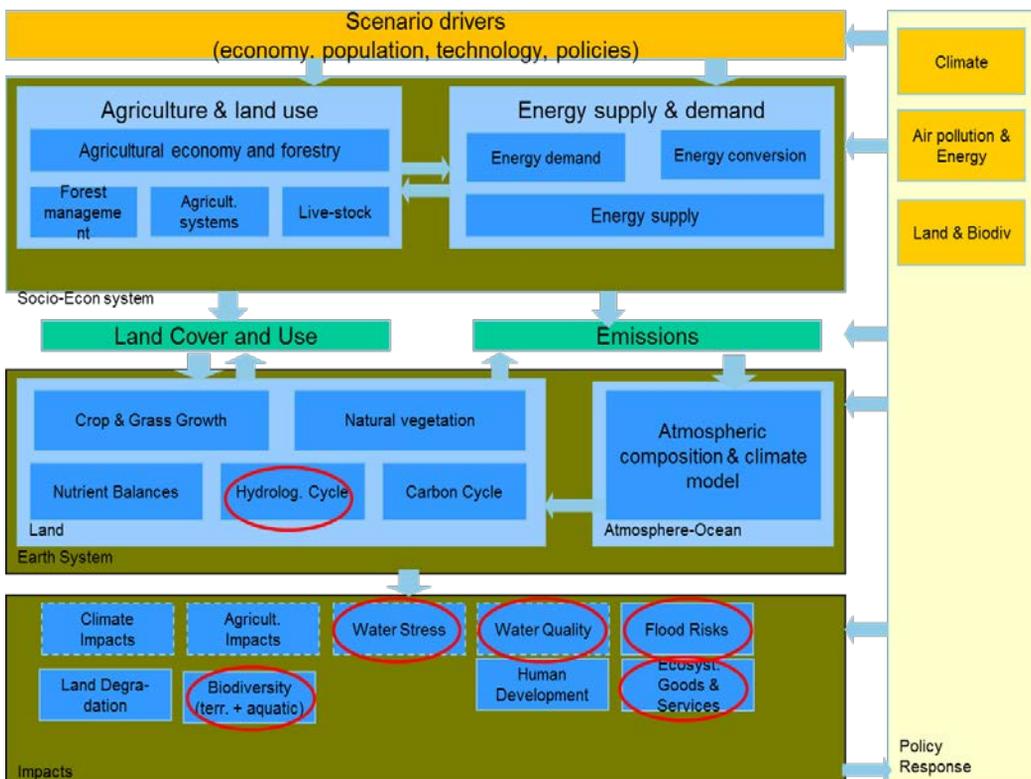


The model

IMAGE-GLOBIO

IMAGE (Integrated Model to Assess the Global Environment) is a comprehensive **integrated modelling framework of global environmental change**, suited to large-scale and long-term assessments of the interactions in the society-biosphere-climate system. Coupled to IMAGE, the GLOBIO (Global Biodiversity) model is used to assess the consequences of global environmental change on biodiversity (terrestrial and aquatic), and ecosystem services (GLOBIO-ES) .

A strength of the model is its integrated nature, securing globally balanced flows of material, a weakness is its technically complex model structure which hampers easy links with other thematic models.

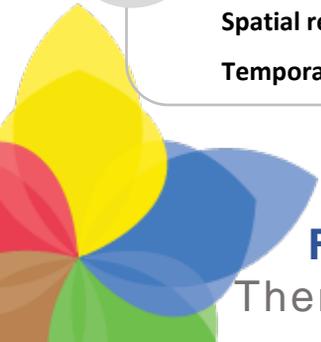


Spatial and temporal coverage

Spatial coverage: Global

Spatial resolution : 30 or 5 arcminutes grids

Temporal scale: Until 2100 in annual steps





Nexus coverage

In principle, **most of the nexus components are addressed**. A close link has been defined with the agro-economical model MAGNET and the energy demand model TIMER.

Some feedback between water and crop growth is incorporated via LPJmL. Other feedbacks and trade-offs will be dealt with via the water quality, biodiversity and ecosystem services modules.



Inputs

★ IMAGE: population, economic growth, dietary preferences, technological change (agriculture and energy system) and policy assumptions.

★ GLOBIO and GLOFRIS: P and N emissions, precipitation, evaporation, global mean temperature, land use and water maps, river dams (location, capacity).



Outputs

★ IMAGE: mean global temperature; GHG emissions; food production and allocation; land use (grid scale); carbon and water dynamics (grid scale).

★ GLOBIO and GLOFRIS: biodiversity intactness (MSA) per pixel, terrestrial and aquatic per water type; water discharge; total P and N; wetland area per pixel; water temperature; daily or monthly nutrient retention; C sequestration; flood risk per km².



Recent applications

The model is widely used for global environmental studies such as the Global Environmental Outlooks, Global Biodiversity Outlooks, OECD Environmental Outlooks, and in several other global and European projects.

★ PBL, 2014 (eds. M. Kok, R. Alkemade). How sectors can contribute to sustainable use and conservation of biodiversity. CBD Technical Series No. 79.

★ Stehfest, E., van Vuuren, D., Kram, T., Bouwman, L., Alkemade, R., Bakkenes, M., Biemans, H., Bouwman, A., den Elzen, M., Janse, J., Lucas, P., van Minnen, J., Muller, M., Prins, A., 2014. Integrated assessment of global environmental change with IMAGE 3.0. Model description and policy applications. PBL Netherlands Environmental Assessment Agency.



Further information

IMAGE website

User Support System for IMAGE

GLOBIO website

Get GLOBIO BETA version

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