

## BIOPHYSICAL AND SOCIO-ECONOMIC MODELLING DATA

In the NEXOGENESIS project, the team aims at providing a portfolio of consolidated future biophysical and socio-economic data trends for each case study. These data take into account the climatic, hydrological, environmental and socio-economic aspects to support the development of conceptual mapping, casual loop diagram, System Dynamic Models, NEXUS Policy Assessment Tool, for each case study in the NEXOGENESIS project. Climatic, environmental, and socio-economic conditions are expressed in quantitative terms for each case study, in line with a combination of selected IPCC future scenarios up 2070 in terms of: Representative Concentration Pathways (RCPs), defining specific radiative forcing as function of Greenhouse Gasses concentrations and Shared socio-economic pathways (SSP), a collection of pathways describe alternative socio-economic future development.

### Climate and biophysical projections and trends

In NEXOGENESIS, trends are driven from a common base of state-of-the-art climate projections (CMIP6), to ensure data coherence that facilitate comparison of outcomes across Case Studies and replicability of methods outside Case studies. Projections and trends about Climate, Agriculture, Water, Ecosystems / Biomes and Biodiversity are gathered from the following sources:

- **Inter-Sectoral Impact Model Intercomparison Project (ISIMIP):** gives a consistent and harmonized framework for cross-sectoral, cross-scale modelling of the impacts of climate change across different sectors (water, fisheries, forests, biomes, agriculture, agro-economics, terrestrial biodiversity, coastal systems, health and lakes) and relevant WEFE NEXUS variables, following standard protocols and common underlying climate forcing/scenarios.
- **Simulation of Evapotranspiration of Applied Water – GIS (SIMETAW-GIS):** provides estimates about atmosphere-soil-water-crop interactions at different temporal and spatial scales to simulate crop water requirements, growing season, yield losses due to water stress, for a wide range of crops (e.g., vegetables, cereals, legumes, orchards, etc).
- **BioScen1.5-MEM-GAM and Global Biodiversity (GLOBIO) model for policy support:** to provide information about biodiversity and terrestrial vertebrate richness (amphibians, birds, mammals) in terms of Mean Species Abundance (MSA) as a function of different stressors.

### Socio-economic models

As a source for the socio-economic models, the NEXOGENESIS team uses the following sources:

- **GTAP Global Social Accounting Matrix:** shows the circulation of income and market transactions among agents of an economic system and provides consistent representation of the world economy for a pre-determined reference year.
- **SSP scenarios in terms of projected GDP and various demographic characteristics provided by IIASA:** are scenarios of projected socio-economic global changes up to 2100.
- **NUTS2 Sub-National Economic Data provided by EUROSTAT:** allows to get a finer geographical detail at regional level.

To learn more about the biophysical and socio-economic modelling data used in the project, read our corresponding deliverable: [here](#).

More about the project on our website: <https://nexogenesis.eu/>

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