

OMNIA

(Open-source MuNodus Integrated Assessment model)

MODEL OVERVIEW

The Open-source MuNodus Integrated Assessment model (OMNIA) is a customized, open global framework based on TIMES. It offers a technology-rich representation of the global energy system to evaluate energy and environmental dynamics in each covered sector. To explore wider impacts, OMNIA can be linked to external sectoral tools, including those for land use, power, behavior, and the circular economy. These linkages help evaluate aspects related to biomass availability in the energy system alongside land-use emissions, material circularity in industrial sectors, and the implications of behavioral choices on adopting low-carbon technologies in final end-uses. Moreover, it includes a water module to evaluate the interdependence between energy production and water consumption.

ACCESS

OMNIA:

<https://omnia-documentation.readthedocs.io/en/latest/>

GitHub:

<https://github.com/CLIMATE-DIAMOND/OMNIA>

Zenodo: <https://zenodo.org/records/16632818>

LICENSE

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OTHER INFORMATION

Time horizon: 2019-2050 with flexible temporal scope

Requires TIMES-based infrastructure for data handling

CONTACT DETAILS

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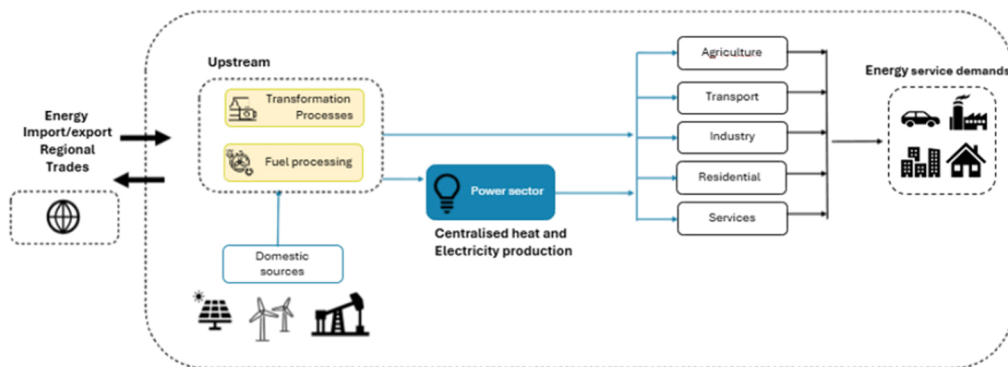
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High-level reference energy system of OMNIA for one region

SUPPORTED ANALYSES

- Exploring the implications of different future climate policies.
- Evaluating the deployment of low-carbon and renewable technology options across all energy sectors.
- Assessing policy impacts across energy, environmental, and social dimensions by soft-linking with other sectoral models.

WHAT'S NEW

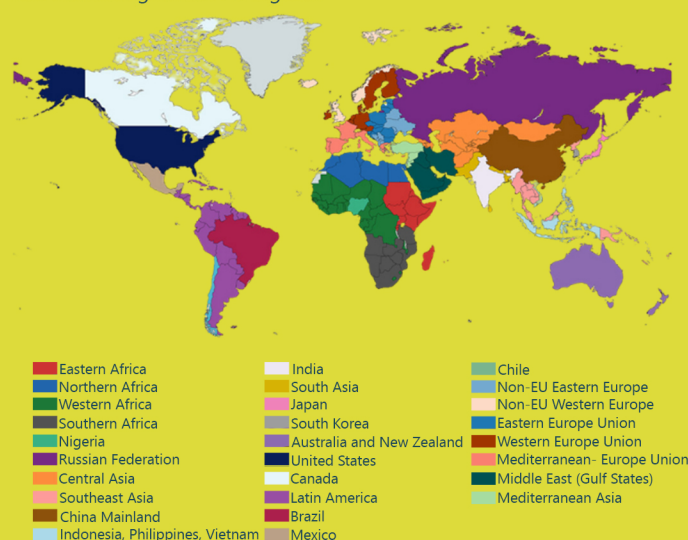
- Deeper sectoral and technological detail, finer spatial and temporal resolution, and greater overall robustness on top of the TIMES-GEO model. This provides a stronger capacity to simulate structural changes, extreme events, and behavioral shifts.
- New regional disaggregation and updated calibration.
- New water module.
- Soft link interaction between energy system and land-use; industrial sector circular economy; physical climate impacts; behavioural changes impact; power infrastructure investments.

SDG COVERAGE



REGION MAP

This model is designed to represent the full Global energy system and it is configured in 28 regions



SECTORS



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