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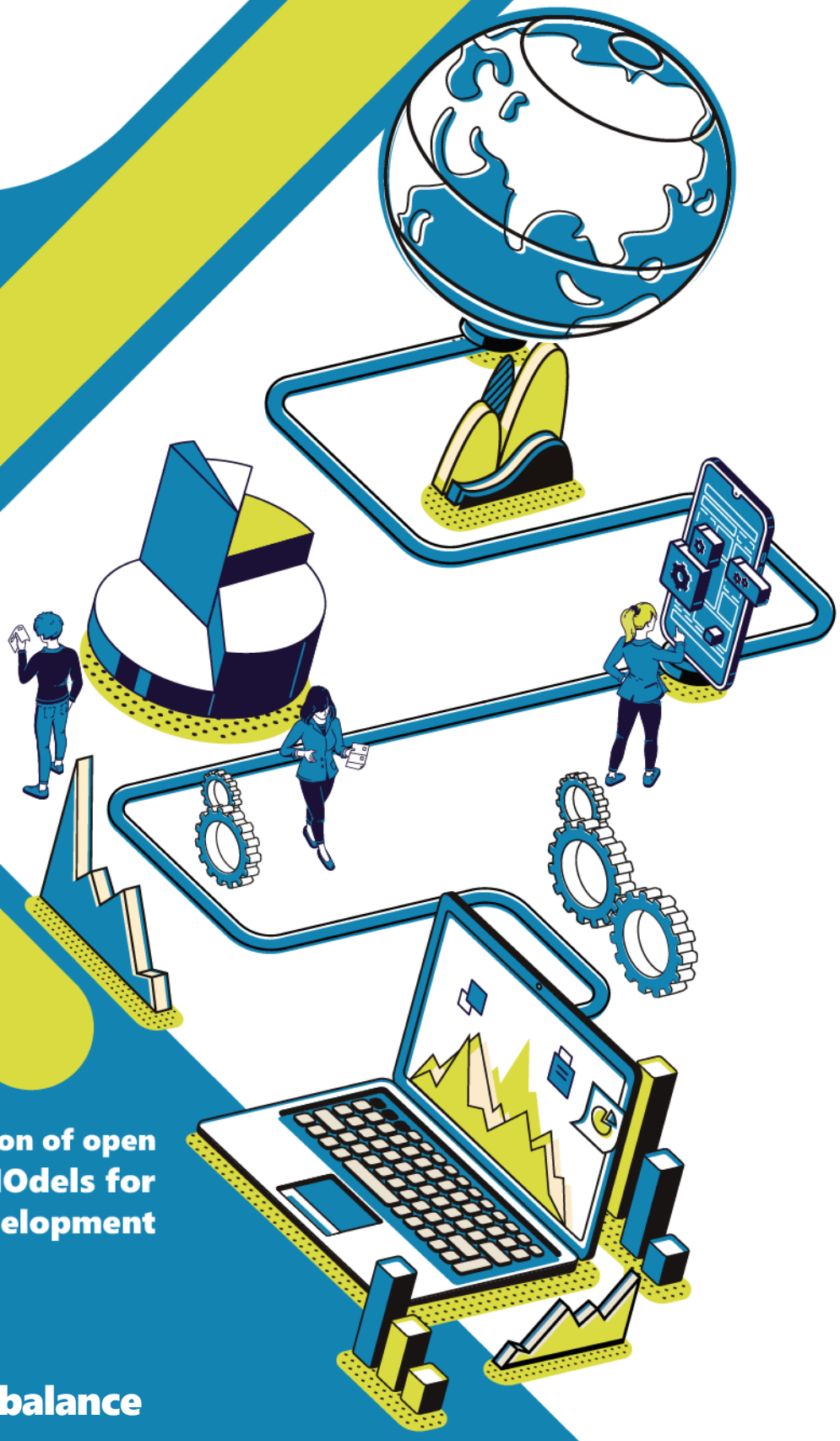

Delivering the next generation of open Integrated Assessment MOdels for Net-zero, sustainable Development

OMNIA Model energy balance methodology

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1. Energy balance methodology

The energy balance used in the OMNIA model is derived from two distinct data sources: the UNSD Energy Balance and the UNSD Energy Statistics (United Nations (a), 2025; United Nations (b), 2025). We combined these datasets because the Energy Balance provides a solid structural framework but with low commodity granularity, while Energy Statistics offer a higher level of detail in terms of energy carriers, but without a predefined balance structure. For instance, the Energy Balance includes aggregate categories such as “oil products”; we retained these total values but disaggregated them into individual fuels (e.g., gasoline, diesel) using the corresponding data from the Energy Statistics.

As the two datasets are not fully numerically aligned, we calculated the shares of each detailed fuel within the aggregate categories based on the Energy Statistics and then applied these shares to disaggregate the Energy Balance accordingly.

Once the disaggregation was complete, we encountered some inconsistencies: partly due to statistical differences in the Energy balance, and partly since the fuel-level balances in Energy Statistics do not always fully reconcile. To address these issues, that typically amount to a small percentage of the fuel supply in specific countries, we made minor adjustments to the primary production and import volumes of the affected fuels. These adjustments were proportionally distributed based on the relative contribution of each supply source within the national fuel mix.

2. Reference dataset used

United Nations (a). (2025). Energy Balance Visualization. Retrieved June 3, 2025, from https://unstats.un.org/unsd/energystats/dataPortal/

United Nations (b). (2025). UNdata - Energy Statistics. Retrieved March 25, 2025, from https://data.un.org/SdmxBrowser/start

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