

Instructions for reproduction

1. See [requirements.txt](#) for package requirements; Python 3.12.8 was used for running the model; this version of the model has been run on a virtual machine, as specified below

CPU	Intel Xeon 8358 @ 2.6 GHz, 12 vCPUs
RAM	64 GB RAM
OP	Windows Server 2022 Standard

Note that while the model might run on computers with lower specifications, at least 32 GB of RAM is recommended due to the memory intensity of the matrix operations. The model might throw errors and might fail to run with less memory.

2. Run the [run.cmd](#) file, this will produce the result files in the [GLORIA_results](#) folder, and print the main result file in the [gdp_results_overall.csv](#) file, which is used to produce Figure 3 in the paper.

Figures 1 and 2 in the paper are reproductions from previously published work. Table 1 is input assumptions to the model.

Data availability statement:

1. MINDSET 2.0 Model Input Data (GLORIA Template)

- Filename(s): Gloria_template directory and sub-directories (except 'Scenarios')
- Source: World Bank MINDSET team, based on a wide range of original sources
- URL: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6188978
- Access date: March 2026
- Citation: Kiss-Dobronyi, Bence and Brancher, Marco and Dorband, Ira Irina and Pollitt, Hector and Byambasuren, Binneriya and Lin, Xinru and Hartvig, Áron Dénes and Lehr, Ulrike, MINDSET 2.0 Model Documentation (February 04, 2026). Available at SSRN: <https://ssrn.com/abstract=6188978> or <http://dx.doi.org/10.2139/ssrn.6188978>
- License: Official Use Only, available from Development Data Hub
- Access Instructions: Copy to the GLORIA_template folder to use

2. Global Resource Input Output Assessment (GLORIA) database

- Filename(s): Gloria_db folder and all files within
- Source: Industrial Ecology Virtual Laboratory
- URL: <https://ielab.info/labs/ielab-gloria>
- Access date: April 2023 (version v57)
- Citation: Industrial Ecology Virtual Lab. 2021. "Global Resource Input Output Assessment (GLORIA) database". https://ielab.info/assets/resources/Technical_Documentation_GLORIA_20210913.pdf
- License: Freely available for research purposes, with registration
- Access Instructions: Full MRIO database used for the MINDSET model. Copy to the GLORIA_db folder to use

3. Scenario Input Files (Mongolia Worst-Case)

- Filename(s): Scenarios folder (MNG_worst_case_coal_Y1.xlsx, MNG_worst_case_coal_Y2.xlsx, MNG_worst_case_coal_Y3.xlsx, MNG_worst_case_flood.xlsx, MNG_worst_case_Y1.xlsx, MNG_worst_case_Y2.xlsx, MNG_worst_case_Y3.xlsx)
- Source: World Bank MINDSET team
- Access date: March 2026
- Access Instructions: Included in the package
- Notes: Each file sets up part of the worst-case scenario for Mongolia. Y1, Y2, and Y3 in the file names indicate the year of the shock. Coal shocks are modeled as a direct loss of final demand, while the flood shock (year 3) and dzud impacts capture net trade effects — either lost exports or lost production replaced by imports. Dzud impacts are derived by subtracting the coal and flood shocks from the full scenario totals. All scenario changes are made to the worksheet "fd_trade", with inputs defined by sector using the GLORIA classification.