**A short guide to a set of models that can be used to study the significance of reserve-dependent capital efficiency, cross-sector competition, and mineral security considerations in mineral industry transformation:**

The paper titled “Reserve-dependent Capital Efficiency, Cross-Sector Competition, and Mineral Security Considerations in Mineral Industry Transition” by Rasmus Bang (Department of Business and Management Science, Norwegian School of Economics) and Lars Kristian Trellevik (System Dynamics Group, Department of Geography, University of Bergen), presents a conceptual dynamic optimization model to investigate the significance of reserve-dependent capital efficiency and cross-sector competition in mineral industry transformation – from onshore to combined onshore and offshore mining. We have made our codes and data files available on GITHUB for interested readers and modelers. This short guide gives a quick overview of the files used to produce the results presented in the paper. In addition, it suggests an approach to get familiar with the files.

**The relevant GITHUB directory contains 5 files excluding this file:**

* 3 GAMS files (the models with reserve-independence, reserve-dependence, and mineral security considerations).
* 1 CSV file (to store results temporarily for use in finding the Cournot Nash solutions in both model versions).
* 1 EXCEL file (to store results for plotting).

\* The GAMS code will automatically generate some files when run. One of these files will contain the model results in a user-friendly format, which can be copy-pasted into other files according to instructions.

**We suggest the following approach to get familiar with the files, models, and results:**

* Store all files in a folder on your computer. Do not rename any of the files (this will give rise to errors when running the various codes).
* Open either of the GAMS files (Reserve\_independent\_model\_scenarios.gms, Reserve\_dependent\_model\_scenarios.gms, or reserve-dependent\_mineral\_security\_model\_scenarios.gms) and read the instructions on how to use the models. These instructions are written into the code.
* Solve a monopoly scenario in one of the model versions by following the instructions in GAMS (wait with solving duopoly scenarios until you are familiar with the files).
* Store the results obtained through the above step in the EXCEL file (DATA\_TEMPLATE.XLSX) and plot the results in your preferred software.
* Solve a duopoly scenario in one of the model versions by following the instructions in GAMS (this will require several rounds of running the model, storing temporary results, changing model settings according to the instructions in GAMS, and re-running the model). It is highly important to be precise during this iterative and repetitive optimization process. Follow the above two steps to plot the results.
* Now, tweak and play!