# MGET Model – Installation and Usage Guide

MGET (Multi-Gas Model for the Energy Transition) is an implementation in GAMS that extends the Global Gas Model (GGM) by integrating hydrogen. It enables users to evaluate the impact of different hydrogen uptake strategies and decarbonization efforts.

Currently, the model includes two scenarios based on the Iberian Peninsula (Spanish Case):

* Moderate Hydrogen Uptake Scenario
* Ambitious Hydrogen Uptake Scenario

This guide provides installation and execution instructions for running the MGET model in GAMS. It does not cover model methodology or data assumptions.

For a detailed explanation of the model structure, input data, and scenario design, refer to the Spanish Gas Data document (PDF file) provided in the project repository.

## Installing and Running the Model

1. Download the MGET model package: GGM\_main.zip.
2. Extract the ZIP file to a working directory on your computer. You will see the following directory structure:

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| --- |
| 📂 GGM-main  ├── 📂 cases  │ └── 📂 Spain\_case  │ ├── 📄 case\_config.gms # Scenario setup for Spain  │ └── 📂 input\_data  │ ├── 📄 2040.gms # Horizon definition  │ ├── 📄 scen\_Spain\_2040\_4\_0\_dmd.gms  │ ├── 📄 scen\_Spain\_2040\_4\_0\_sup.gms  │ ├── 📄 scen\_Spain\_2040\_4\_2\_dmd.gms  │ ├── 📄 scen\_Spain\_2040\_4\_2\_sup.gms  │ └── 📄 Spain.xlsx # Excel input file for case  ├── 📂 documents # Additional documentation  ├── 📂 gdx # Model outputs in GDX format  ├── 📂 results # Optional post-processed results  ├── 📄 MGET.gms # Main GAMS model  ├── 📄 MGET.gsp # The GAMS project file  ├── 📄 load\_input\_from\_Excel.gms # Reads input from Excel  ├── 📄 read\_data.txt # Mapping Excel to GAMS  ├── 📄 report.gms # Output reporting script  ├── 📄 verify\_nodes\_arcs.gms # Input checks and verification  ├── 📄 MGET.log # Run log (generated)  └── 📄 README.md # Quick usage guide |

1. If you do not already have GAMS installed, download it from [GAMS Download Page](https://www.gams.com/download/) and follow the installation instructions.
2. Open MGET.gsp (see below)
3. From GAMS open the main model file MGET.gms.
4. To set up scenario navigate to cases/Spain\_case/case\_config.gms.  
   To switch between scenarios, change the line:

$SETGLOBAL *scen* 2 /\* Decarb & H2 scenario: 0 = Moderate, 2 = Ambitious \*/

## Model Files

Here’s a breakdown of the key files included in the model:

#### Main Model Files

|  |  |  |
| --- | --- | --- |
| **File Name** | **Comment** | **Description** |
| MGET.gms | Main model file (setup optimization) | Set moderate (0) or ambitious (2) scenario via :  $SETGLOBAL *scen 2*  Set max computation time  **option** **reslim**=7200;  Currently using cplex  **mip**=cplex |
| load\_input\_from\_Excel.gms | Loads all input data | Reads input data from external Excel files. |
| *data/%hor%.gms* | Defines time horizon | Example: 2040.gms sets the time horizon to the year 2040. |
| *data/scen\_*%string%*\_sup.gms*  *data/scen\_*%string%*\_dmd.gms* | Scenario files for specific “string” combinations | scen\_Spain\_2040\_4\_0\_sup.gms  scen\_Spain\_2040\_4\_2\_sup.gms  scen\_Spain\_2040\_4\_0\_dmd.gms  scen\_Spain\_2040\_4\_2\_dmd.gms |
| Verify\_nodes\_arcs.gms | Test file | Validates model input structure (nodes & arcs). |
| report.gms | Reporting file | Generates output reports summarizing model results. |

#### Input Files

|  |  |  |
| --- | --- | --- |
| **File Name** | **Comment** | **Description** |
| Spain.xlsx | Input data file for the Spanish case | Except for scenarios; these are hard-coded in the include files  *scen\_*%string%*\_sup.*  *scen\_*%string%*\_dmd.* |

#### Scenarios

The MGET model includes two hydrogen uptake scenarios for the Spanish case:

* **Moderate hydrogen scenario** (scen = 0)
* Ambitious hydrogen scenario (scen = 2)

Set the scenario in MGET.gms using:

|  |
| --- |
| $SETGLOBAL data Spain /\* TEST,MGET,Spain,Blending \*/  $SETGLOBAL hor 2040 /\* Last year in planning horizon \*/  $SETGLOBAL oper 4 /\* Operational hours \*/  $SETGLOBAL scen 2 /\* Decarb & H2 scenario 0 Moderate, 2 Ambitious \*/ |