CLEWs

Hands-on lecture 9: Climate Change and Greenhouse Gas Emissions

Useful links:

1) Link to open Momani in the local computer
2) Discussion forum for OSeMOSYS

Pre-requisites:

1) Successful completion of all the activities under Hands-on lecture 8

Learning outcomes

By the end of this exercise, you will be able to:

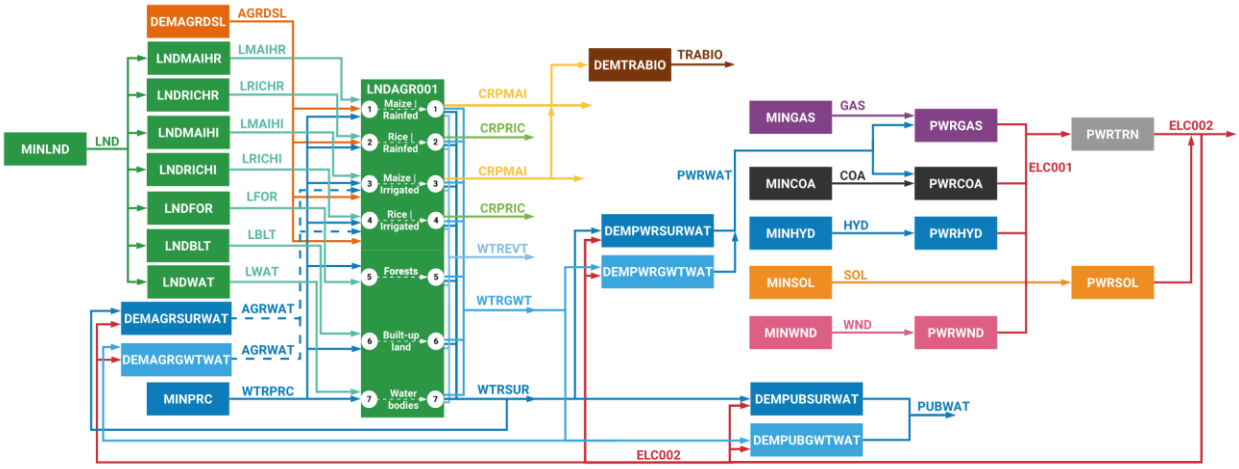
1) Quantify the level of emissions from different fuel sources
2) Compare the level of emissions from different sectors

Overview

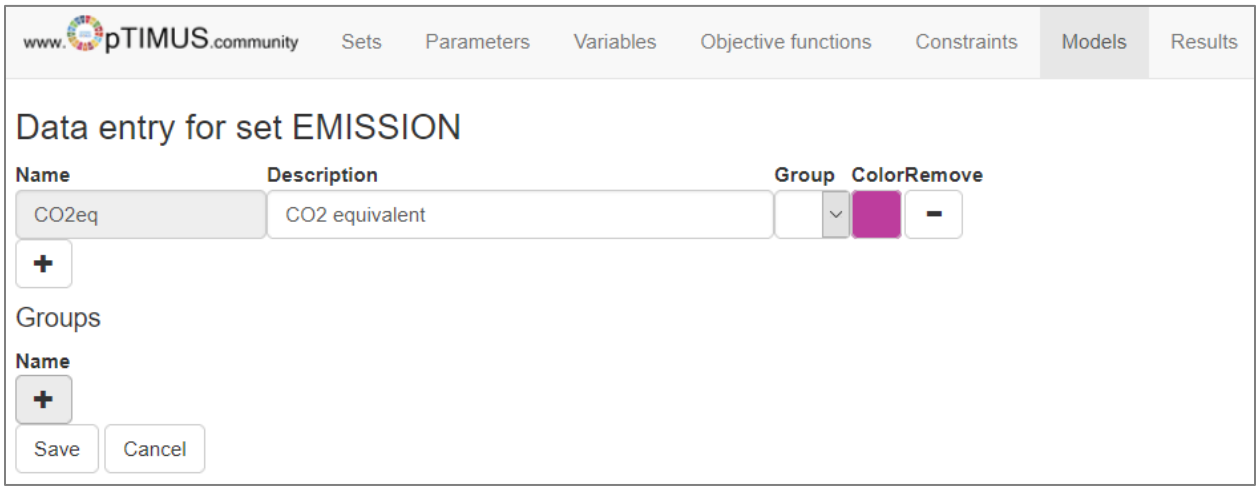
The previous activities wer focused on building an integrated model of energy, water, and land use systems. The activities here focus on the representation of the fourth and final aspect of CLEWs: climate.

Activity 1 – Emissions from energy use

This activity will introduce emissions and the parameters that can be used to represent them.



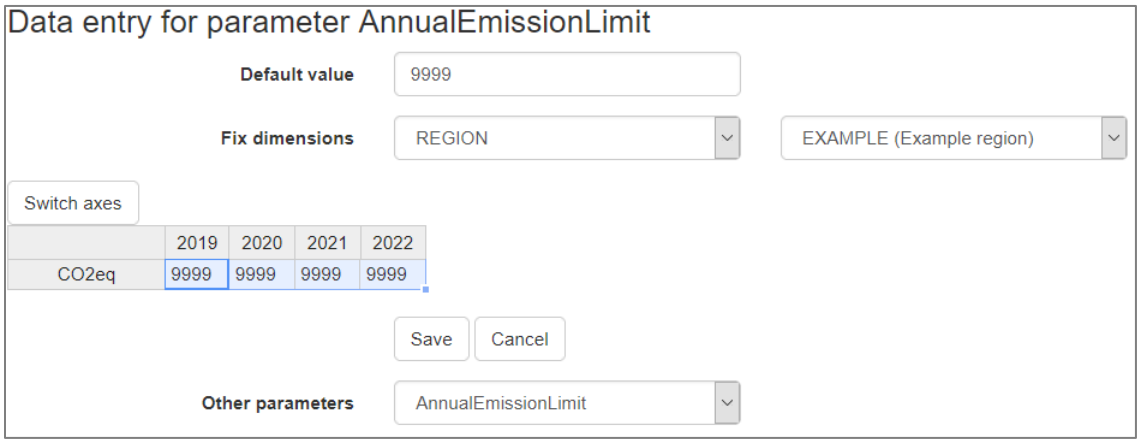
The first step to doing this is to add a new emission called '**CO2eq**'. To do this, choose your model from the list on the '**Models**' tab in MoManI. Then click '**Edit set data**'. Find the set '**EMISSION**'. Click '**Enter data**'. Click '**+**' to add an emission called '**CO2eq**'. Finally, click '**Save**'.

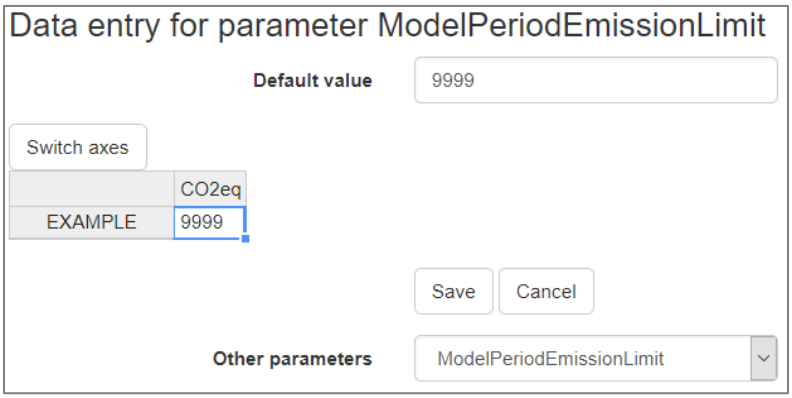


Next, add '**EmissionActivityRatios**' for the technologies **DEMAGRDSL**, **MINCOA**, and **MINGAS**.

Technology	Value	Parameter
DEMAGRDSL	0.08 million tonnes of CO2eq in mode 1	EmissionActivityRatio
MINGAS	0.06 million tonnes of CO2eq in mode 1	EmissionActivityRatio
MINCOA	0.10 million tonnes of CO2eq in mode 1	EmissionActivityRatio

Next, ensure that both the '**AnnualEmissionLimit**' and '**ModelPeriodEmissionLimit**' are set to 9999 (which translates to having no constraint on emissions). (NOTE: The **default value** can be updated to **9999** for both parameters as well





Activity 2 – Emissions from land use

In this activity, land use emissions will be introduced.

Technology	Value	Parameter
LNDMAIHR	1 unit of activity produces 0.34 million tonnes of CO2eq in mode 1	EmissionActivityRatio
LNDRICHR		
LNDMAIHI		
LNDRICHI		
LNDFOR	1 unit of activity absorbs 0.12 million tonnes of CO2eq in mode 1	EmissionActivityRatio (negative value)

Note that the emissions produced by all the agricultural land is the same. The forest land, however, absorbs emissions.