Rumi

An open-source energy systems modelling platform developed by Prayas (Energy Group)

Postprocessing documentation

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1 Introduction

The postprocessing module of Rumi works on the outputs produced by the demand and supply modules, and produces some useful aggregations. In the current version, it provides three outputs; it computes the end-use emissions and the emissions from Energy Conversion Technology (ECT) for each specified emission type that has been specified in the model, in addition to the Total Primary Energy Supplied (TPES). The emission types of interest are specified as part of the common input file `EmissionTypes.csv`, with the default emission factors for these emission types being specified in the common input file `PhysicalCarrierEmissions.csv`. These default emission factors can be overridden for specific uses of each energy carrier. For example, if different emission factors are desired for their usage in a particular energy service technology, it is specified in the demand input file `ST_EmissionDetails.csv` and if different emissions factors are desired for their usage in a particular energy conversion technology, it is specified in the supply input file `ECT_EmissionDetails.csv`. The relevant inputs are taken from the model instance and scenario that is specified on the command line. The required demand and supply outputs are by default again taken from the specified model instance and scenario; in case either the demand or the supply outputs (or both) were produced to a different folder, the user can specify this by using the appropriate command line parameters (see the `README.md` file available in the root directory of the Rumi platform repository).

Emissions are only associated with physical energy carriers, and these may arise in two different situations. One is when the energy carrier is used for some end-use and the second is when the energy carrier is used as an input to some energy conversion technology. The postprocessing command computes these two kinds of emissions into separate files as described in the next section.

2 Outputs of the postprocessing component

The output files produced by the postprocessing component are placed by default in a directory called `PostProcess/Output` under the root directory of the scenario that is specified, though this can be

over-ridden by the user through a command line parameter (see the `README.md` file available in the root directory of the Rumi platform repository). The following table lists all the output files that are produced and a brief description of each.

File name	Description
EndUseEmissions.csv	For each physical energy carrier and emission type, the emissions from that physical carrier for each demand sector, energy service, service technology, consumer type, geographic unit and time unit. Notes: ● The service technology column would be empty if the energy demand is not specified in a bottom-up manner for some demand sector and energy service. ● In case, the entire end-use demand file is provided exogenously (i.e. not computed by the Rumi demand module), then the columns corresponding to the demand sector, energy service and service technology would be absent because this information is not provided. ● In bottom-up demand output, demand of service technologies will be split into domestic and imported variants in same ratio as EnergyDemandMetDom and EnergyDemandMetImp provided by supply module output.
ECTEmissions.csv	File provides emission for each physical energy carrier, the energy convergence technology and emission type, wherever that physical carrier is used as an input EC to any energy conversion technology for each geographic unit and time unit.
TPES.csv	Total primary energy supply (TPES) based on domestic production and import of the primary energy carriers. It's essential to provide energy unit for TPES in 'config.yml' file to generate this output. This unit should be present in 'EnergyUnitConversion.csv' from Config folder. This enables computation of energy supply of primary carriers in same energy unit
NonEnergyEmissions.csv	This value gives non energy emissions for different service technologies. Note that it's the same file generate in demand processing and copied here for completeness. More details can be found in demand-documentation.pdf