# CURRENT AND PLANNED DEVELOPMENTS OF OSEMOSYS OPEN SOURCE ENERGY MODELLING SYSTEM

**Francesco Gardumi**, PhD

Division Of Energy Systems Analysis (KTH-dESA)
www.desa.kth.se
gardumi@kth.se

# STORAGE

**Existing set of equations for modelling storage:**

- Allows for different kinds of storage to be modelled (e.g. batteries, pumped-hydro, dams)
- Complies with daily limits even when time resolution is coarse

**Developments:**

- Application to hydro-cascade (ongoing)
- Application to rural energy planning (ongoing with Polimi)
- Better representation of physical limits (ongoing)
- Addition of losses proportional to time and stored energy (planned)

# SYSTEM FLEXIBILITY

**Existing add-ins for:**

- Reserve capacity dispatch
- Costs of power plant flexible operation: cost of starts, efficiency nonlinear function of the load, endogenously computed retrofits
- Reserve capacity demand function of the penetration of renewables

**Developments:**

- Reserve capacity demand function of variability of renewables (started)

# REDUCTION OF THE LP MATRIX

**Existing formulation of OSeMOSYS:**

- Solver (glpk) generates equations for all combinations of Technologies and Fuels, not only those for which user-specified connections
- Long generation times for LP matrix, large and sparse matrix

**Developments:**

- Launching ‘challenge’ to programming literates for re-writing code more efficiently (online in a few days, going to share link)

# REFINING GAMS AND PYTHON VERSIONS

**Published on GitHub:**

....


# THANK YOU