



Energy and Flexibility Modelling

Hands-on 7 (macOS)

Please use the following citation for:

- **This exercise**

Cannone, C., Tan, N., Kell, A., Howells, M. (2022, January). Hands-on 7 (macOS): Energy and Flexibility Modelling. <http://doi.org/10.5281/zenodo.5920579>

- **clicSANDMac Software**

Cannone, C., Tan, N., Kell, A., de Wet, N., Howells, M., Yeganyan, R. (2021). clicSANDMac [computer software]. <http://doi.org/10.5281/zenodo.5879056>

- **OSeMOSYS Google Forum**

Please sign up to the help Google forum [here](#). If you are stuck, please ask questions here. If you get ahead, please answer questions in the same forum. Please state that you are using the 'clicSAND' Interface.

Learning outcomes

By the end of this exercise, you will be able to represent the following in OSeMOSYS:

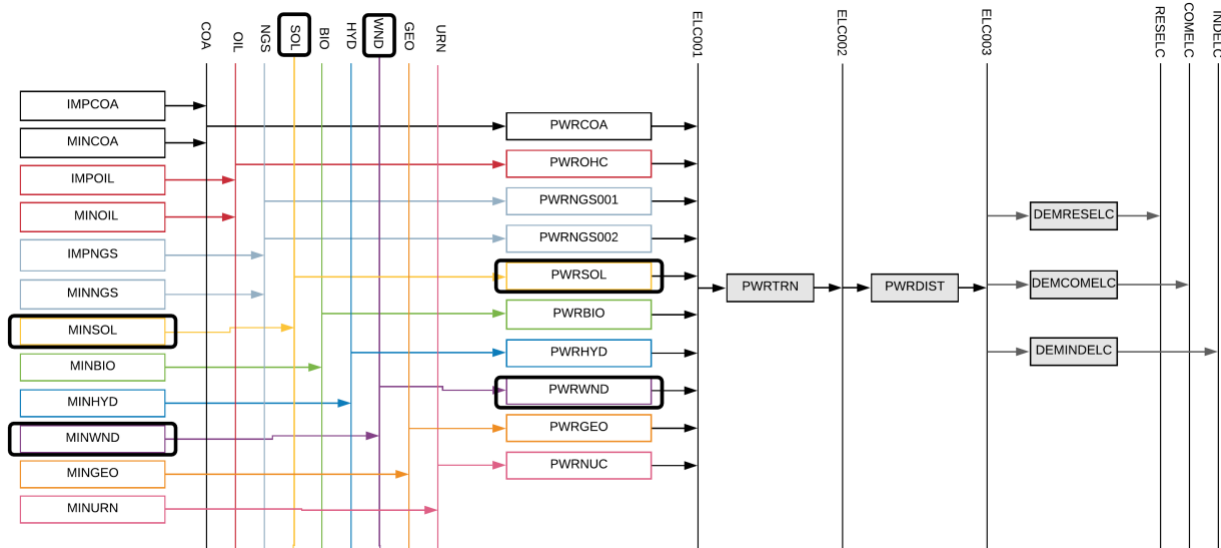
- 1) Solar power plants and the solar primary supply technology
- 2) Wind power plants and the wind primary supply technology

Add Solar and Wind Technologies

In this Hands-on we will add 4 technologies in total: 2 power plants (**PWRSOL**, **PWRWND**) and 4 primary supply technologies (**MINSOL**, **MINWND**). Two new fuels will be added to the



model: **SOL** (Solar energy) and **WND** (Wind energy). We will build the highlighted parts of the RES:



Try it: add 4 new technologies using the [Data prep file](#):

1. **MINSOL** – Solar Potential
2. **MINWIND** – Wind Potential
3. **PWRSOL** – Solar Power Plant
4. **PWRWIND** – Wind Power Plant

Repeat the same steps shown for Primary Supply Technology and Power Plants in **Hands-On 6**. Don't forget to add **Capacity Factors** and **Residual Capacity**! And of course, two new Commodities in the SETS sheet: **SOL** and **WND**!



Technologies		Commodities	
Code	Description	Code	Description
BACKSTOP	Backstop technology	ELC003	Electricity after distribution
MINCOA	Coal domestic production	COA	Coal
MINOIL	Oil domestic production	OIL	Oil fuel
MINNGS	Natural gas domestic production	NGS	Natural Gas
IMPCOA	Import of coal	ELC001	Electricity from power plants
IMPOIL	Import of oil	ELC002	Electricity after transmission
IMPNGS	Import of Natural gas	BIO	Biomass
PWRCOA	Coal power plant	HYD	Hydro
PWROHC	Light Fuel Oil Power Plant	GEO	Geothermal
PWRNGS001	Gas Power Plant (CCGT)	URN	Uranium
PWRNGS002	Gas Power Plant (SCGT)	SOL	Sun
PWRTRN	Electricity Transmission	WND	Wind
PWRDIST	Electricity Distribution	COM013	Additional Fuel
MINBIO	Biomass Extraction	COM014	Additional Fuel
PWRBIO	Biomass Power Plant	COM015	Additional Fuel
MINHYD	Hydro Potential	COM016	Additional Fuel
PRVHYD	Hydropower Plant	COM017	Additional Fuel
MINGEO	Geothermal Potential	COM018	Additional Fuel
PWRGEO	Geothermal Power Plant	COM019	Additional Fuel
MINURN	Uranium Potential	COM020	Additional Fuel
PWRNUC	Nuclear Power Plant	COM021	Additional Fuel
MINSOL	Solar Potential	COM022	Additional Fuel
PWRSOL	Solar Power Plant	COM023	Additional Fuel
MINWND	Wind Potential	COM024	Additional Fuel
PWRWND	Wind Power Plant	COM025	Additional Fuel
TEC025	Additional Technology	COM026	Additional Fuel
TEC026	Additional Technology	COM027	Additional Fuel
TEC027	Additional Technology	COM028	Additional Fuel
TEC028	Additional Technology	COM029	Additional Fuel

Run the model and check the results

This is the Annual Electricity Production graph you should get after running the Hands On 7 model – we can see now that Solar and Wind have a share in the energy mix.

