Output files in OnSSET

The Open Source Spatial Electrification Tool (OnSSET) can be installed on a local machine and requires a series of GIS input data and parameters (https://onsset.readthedocs.io/en/latest/data_preparation.html) Most of the of the open source spatial data available for several African countries can be downloaded from https://energydata.info/dataset and other sources are available at https://onsset.readthedocs.io/en/latest/data_acquisition.html.
Uploading the scenarios of the model requires summarizing the values from different OnSSET output files for each country according to the variables and scenario defined in OpenModAfrica.

The scenarios of the OnSSET model for the different countries can be downloaded by using the Global Electrification Platform (GEP) web site at https://electrifynow.energydata.info/.

The descriptions of the files generated by OnSSET and examples of the implementation of the OnSSET model can be found at https://github.com/global-electrification-platform and https://global-electrification-platform.github.io/docs/preparing-the-data/scenario-results/.

OnSSET can also be used to create new scenarios by using different parameters and input data, by following the specifications and documentation published at http://www.onsset.org/get-started.html.

Scenarios File naming convention

OnSSET generates one file for each possible scenario and the names of the output files include the information necessary to identify and describe the different scenarios.
The file name matches the pattern **CC-V_T_S_G_P_I_R.csv**, in which the different descriptive components of the scenarios are separated by the underscore character "_" according to the following specifications.

CC

The first two letter are the two letters country codes followed by "-":
https://en.wikipedia.org/wiki/ISO_3166-1_alpha-2

V

The integer number is the progressive version of the GEP model (implementation of OnSSET). The most recent version is 2, the version 1 files are superseded and no longer used.

T

Target electricity consumption level (0,1,2). Definition: Examines the electricity demand target expressed in kWh/capita/year. The top-down scenarios introduce consistent Tier based demand targets across all settlements based on their urban (U) and rural (R) status. In the low demand scenario, the urban demand target is informed by the average consumption observed in currently electrified areas in the country, translated into the nearest access Tier (e.g. U4 – Urban Tier 4). Low rural demand target is always set to Tier 1 (e.g. R1 – Rural Tier 1). The high demand target scenario reflects more aggressive goals. Urban demand target is increased by 1 Tier, unless already Tier 5 while rural demand target is increased, while rural demand target is increased by 2 Tiers. The bottom-up scenario assigns a unique demand target (kWh/cap/year) in each settlement, based on local poverty rate and GDP level.

0: Bottom-up demand target (Poverty GDP)

1: Top-down demand target- Low (example U4R1)

2: Top-down demand target – High (example U5R3)

S

Social & Commercial uses

0: Social and productive uses demand included

1: Residential demand only

G

Grid generating cost of electricity.

0: Estimated on grid cost (example 0.052 $/kWh)

1: High on grid cost (example 0.052 $/kWh)

P

PV System cost

0: Expected PV cost

1: Low PV cost (-50%)

I

Intermediate investment plan

0: Not capped

1: Capped annual connections

Definition: Indicates the electrification rate to be achieved in the first few years of the analysis (2025). In GEP it is assumed that final electrification rate is 100%, analysis considers 10 years (2020-2030) with an intermediate time step of 5 years. Not capped scenario assumes that the electrification rate increases linearly over the modelling years; no restrictions are set in terms of feasible grid connections per year. Capped growth scenario assumes that the electrification rate increases as in the first scenario but is subject to grid connections limitation, equal to 2.5% of population per year. In this case, grid electrified population slowly ramps up over the years of analysis following often an S-like curve.

R

Rollout plan

0: Nationwide Least Cost approach

1: Grid connection within 2 km

More information related to the different input parameters can be found in the documentation of OnSSET at https://onsset.readthedocs.io/en/latest/index.html.