

2nd OnSSET Steering Committee – Trieste, Tuesday June 5, 2018

Minutes

Participants

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Main points discussed

1. Overview of actions and development of the tool over the past year

The participants discussed a number of advancements that were introduced to the OnSSET tool over the past year. These included:

- a. The development of code that looks into hybrid systems (Wind-diesel, PV-diesel).
- b. Changes of OnSSET functions in order to include dynamic evolution of time in the electrification analysis (including an estimate of when the grid is expected to arrive in each area).
- c. Changes of OnSSET master code in order to include electricity demand for productive uses (health, education and irrigation for agriculture).
- d. Changes of OnSSET functions in order to include fragility constraints in the optimization process of the electrification algorithm.
- e. Updates of the educational material including the new OnSSET online manual and the online interface hosted at onsset.org.

2. Technical issues, limitations and enhancements

The participants then discussed some of the limitations of the OnSSET tool and suggesting moving forward actions.

a. Modularity of OnSSET

Although OnSSET has a modular design, there are several limitations in the way the code is structured; this reduces the flexibility of the tool in several ways, especially when it comes to the involvement of external collaborators able and/or willing to add new functionalities to the tool.

Actions to be taken:

- Develop a schematic diagram of OnSSET aiming to capture and communicate in a clearer way the basic elements of the tool (input/output data, functions and flows).

- Create and circulate among the members of the steering committee, a working document (google doc) to collect ideas and suggestions around modularity and how to enhance the model's structure in order to increase flexibility and easiness of use to a diverse set of users.

b. Least cost electrification algorithm

The selection of the least cost electrification in OnSSET is based on the calculation of LCoE indicators for sets of technologies. There was a robust discussion around the use of LCoE and the limitations it incurs to the electrification process - especially when time steps are included in the analysis.

Actions to be taken:

- Clearly define and document the policy and/or planning questions that the OnSSET model should be able to provide an answer for. This will help narrow down the research focus and provide guidelines on the type and way new optimization algorithms will be incorporated into the model.
- Investigate the performance and functionality of alternative methods of selecting the least cost option for electrification (e.g. an annualized cost indicator calculated based on the total cost optimal solution, develop solution space and select the optimal pathway based on an advanced prioritization algorithm etc.).

c. Representation of the demand

The publically available version of OnSSET only considers residential (household) demand. The estimate of the demand is limited to the projection of the population and electrification target per area (grid cell). There were two actions identified to overcome this limited representation of demand.

Actions to be taken:

- Modify OnSSET code in a way that will facilitate the integration of additional demand nodes (agriculture, services, productive uses etc.) that are important elements and may influence the optimal electrification solution but also the decision making process.
- Collaborate with research partners (e.g. WRI) in order to identify the most critical parameters influencing electricity demand in rural (unelectrified) areas. Use the findings in order to enhance demand representation in the OnSSET model.

d. Soft linking OnSSET with other modelling tools

A clear goal for future work – in order to increase the usefulness of OnSSET – is to ensure that its outputs are easily absorbed into other analysis. Increasing the interoperability of OnSSET output data was identified as a potential next step.

Actions to be taken:

- Investigate the option of interlinking OnSSET with other modelling tools used for electrification planning (LEAP; HOMMER; WEAP; GAEZ; RETScreen; OSeMOSYS etc.).

3. Organization of the OnSSET community

OnSSET community is gradually growing both in absolute numbers but also in terms of diversity of users. The community is expected to further increase with new “high-profile” projects (e.g. Global electrification platform) and upcoming publications (e.g. peer reviewed articles, reports, working papers etc.). The need to create a framework to support a dynamic community was thus highlighted as essential.

Actions to be taken:

- Further develop GitHub repository as a means of keeping track of new advancements on the code. Explore its functionalities (e.g. issues, wiki) in order to record limitations, errors and suggestions by developers but also make new advancements available to all users within the community.
- As advances would be included in ‘branches’ of the main repository, a selection process for including those into the main repro is needed. A resulting action is to create a protocol that clearly defines the review process and provides guidelines on how new additions will be incorporated into the master code file.
- Further develop and maintain the online user manual at ReadTheDocs. Encourage the involvement of users in improving the readability, usefulness and functionality of the manual.
- Create and circulate with the steering committee members, a working document that will record the strengths and weaknesses of the OnSSET tool. After being finalized, this document will be published in OnSSET’s dissemination channels. This will allow users to better understand its capabilities and limitations.
- Use the newsletter in order to disseminate the latest news regarding the tool and its applications. Encourage OnSSET users to share their experiences with the community; interesting applications of the tool should be considered for publication in the official newsletter or get published at OnSSET’s website (onsset.org).

4. Academic excellence

As the application of OnSSET is expanding within the academic community, it is essential that some sort of quality assessment is set in place, as well as regular stock take. Further contributions need to be clearly attributed.

Actions to be taken

- Create a protocol to ensure that the use of OnSSET, as well as its ‘additions’, are referenced properly with appropriate acknowledgement of the development team and supporting partners.
- Initiate and organize the process of preparing an annual, multi-author paper that will compile all recent developments of the OnSSET tool (and review their strengths and weaknesses). This

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paper aims to work as a glue between the active community members and providing a space to developers working and updating the code to publish their work.