Utilisation of the online platform of KAPSARC as a repository of the SubRES data

Participating Partners: LTU, UCC, E4SMA, ENEL Foundation

Partners not from ETSAP : KAPSARC

Funding Sought from ETSAP: 25 500 Euro

Duration: 12 months

Ongoing Project: Excel technology database for energy system models integrated with a TIMES SubRES structure

Project collaboration between: Partners in the project: LTU, E4SMA, UCC, CSIRO, DEA, DTU, EIA, ESMIA, ICL (Imperial College London), IFE, IRENA, JRC.

Defined sectors, identified
- ✓ who have which information, and
- ✓ which information/attributes is needed for each sector?
- ✓ that we should be able to have parallel data (representing different model-levels and different regions)
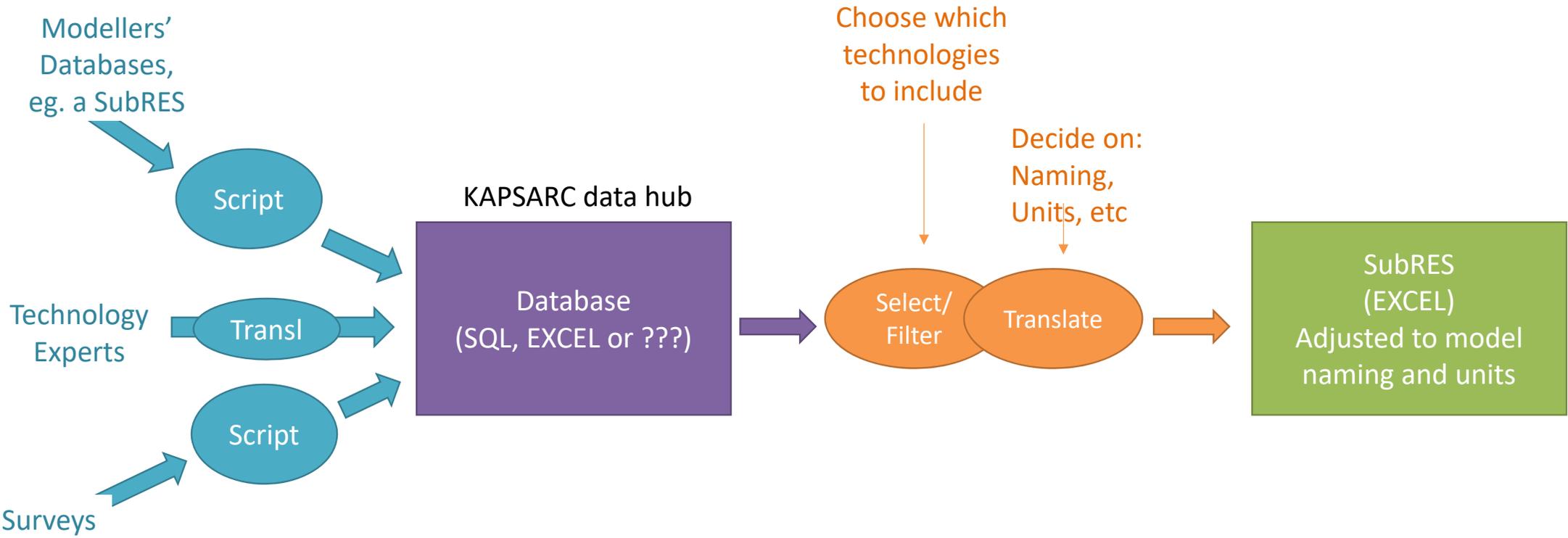
Data
- ✓ Gathered some of the data
- ✓ Published data for some industrial sectors
- ❑ Finalise the database structure (in Excel)
- ❑ Circulate the Excel file to everyone that would like to contribute to initial database

Database
- ✓ Several raised the need for a more proper database, to secure the usefulness and continuation of the database.
- ✓ Different models have different structure, so not straight forward to contribute with data (even if most modeler are willing to share)
- ✓ Discussions with KAPSARC was initiated
- ✓ Together with KAPSARC explored the possibility to store the ETSAP SubRESs on KAPSARCS platform, including a "Hello, World!" test.

Planed to end in JUNE 2021

Modellers'
Databases,
eg. a SubRES

Script

Technology
Experts

Transl

Surveys

Script

KAPSARC data hub

Database
(SQL, EXCEL or ???)

Choose which
technologies
to include

Decide on:
Naming,
Units, etc

Select/
Filter

Translate

SubRES
(EXCEL)
Adjusted to model
naming and units

◯ = A script doing
something

▭ = Structured
data

TASKS:

1) Uploading the data from the ongoing ETSAP SubRES project on the KAPSARC Model Data Editor platform.

2) Development of all the necessary processes (surveys, automatic data gathering etc) in order to ensure that the data are updated on a regular period (e.g. annually) with all the existing information.

3) Development of the necessary scripts to extract the data in a standard SubRES format readily useable by a TIMES model.

4) Look into different ways on how to – on an annual basis – facilitate a continuously review and update as well as enable possibilities to add new kinds of data-set for modelling.

DELIVERABLES:

1) Database on the KAPSARC Model Data Editor.

2) Processes for annual data review and update.

3) Scripts for extracting data from the KAPSARC Model Data Editor in a SubRES format.

4) Proposal on how to facilitate a continuously review and update an ETSAP SubRES database of data desirable and/or required to model energy transition.

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1) Innovation: Utilising the KAPSARC Model Data Hub, with the possibility of easily creating a database from data which are stored in excel files and then using a very well structured approach of updating the data through a versioning system is something, which was not done systematically before for inputs to energy system models. Possibility to easily review and choose between different dataset. Furthermore, the capability to export the data in a pre-defined format offers the unique possibility to generate SubRES excel files from the database to be used directly in a TIMES model.

2) & 3) Expected Benefits to ETSAP project partners, the ETSAP community and other modelling teams: A common, continuously updated future technologies repository, which will be peer reviewed to ensure the data quality, will be an invaluable tool for all modellers (not only the ETSAP community). Enable collecting, analysing and disseminating information and consistent data related to energy systems, energy technologies, energy and environment models and scenarios. In addition, an open database that is easy to refer to and find will add credibility to models based on the TIMES modelling platform.

5) Cost Effectiveness: The project will be co-funded by two of the participants, and the project will utilise the existing infrastructure in KAPSARC that is available at no cost to the research community.

4) Project relevance to the Annex XV topics

Tools Maintenance, Improving and Capacity Building:

- Increasing the transparency, openness and affordability of the TIMES model data sets.

- Make it easier for developing countries to get access to robust dataset

Research and Development

- By making it easier to collaborate within data-sharing and by supporting the existence of robust and reliable data-sets, modelling teams can (instead of gathering data) focus on advancing the state-of-the-art of energy systems analysis. A non-exhaustive list of topics includes:

- Pathways to net zero GHG emissions systems (demands having technology and energy commodity options in the model that can take us to net zero, and/or even net negative emissions).

- For the other topics presented in the Annex text (such as interaction of energy systems with materials use, land use, water, agriculture etc.) it is important to have a database deposit that easily can be expanded to cover new kinds of areas.

In addition:

- Availability of online user's support systems.

- Explore and develop collaboration opportunities worldwide. Promotion of common research on energy systems analysis, integration of existing tools in the present methodology and development of new tools, together with other groups active in the field.