



open ENTRANCE

A common nomenclature for assessing low-carbon transition pathways in Europe and other useful tools for energy modelling

This presentation is available
at pure.iiasa.ac.at/16417/



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Integrating models across scales for energy transition scenarios

- Three ongoing Horizon 2020 projects related to “modelling in support to the transition to a low-carbon energy system in Europe”

openENTRANCE.eu, sentinel.energy, spine-model.org

- The Open Energy Platform provides a framework for transparent exchange and documentation of energy data

openenergy-platform.org

- The key requirement for model integration:

A common nomenclature and understanding of the data

The (usual) dimensions of energy modelling data

- The obvious parts of the data dimensions
 - Model & scenario identifier
 - Region: countries, NUTS-x, grid nodes
 - Time dimension: either continuous-time or representative time slices like “summer-day”
- The part that requires more thought...

How to describe what the data (timeseries) actually is?

- Varying number of dimensions depending on the data
- Concatenate all relevant dimensions into one “variable” name (string)
using a hierarchical tree, e.g, `Primary Energy|Coal|w/CCS`

Developing a common nomenclature as a community process

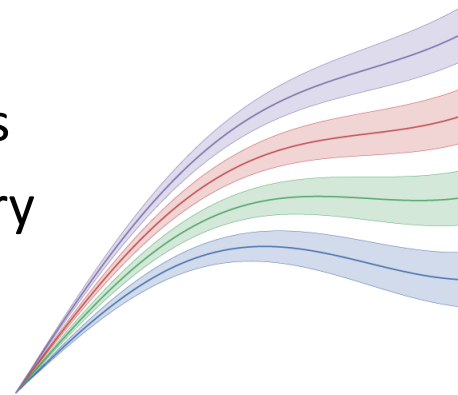
- *Aim: develop a nomenclature in a structure that is both intuitive and versatile*
- For a modeller asking "which descriptor should I use for ...?", she or he should find a decent (not perfect) answer within five minutes
- The repository should provide some additional features that are useful to researchers across domains
- For example, the repository includes a code snippet to turn the yaml dictionary files into ISO2-to-country mappings *including codes used by the European Commission*
- Check out github.com/openENTRANCE/nomenclature for more information!

pyam: An open-source package for streamlined workflows

Standardized processing, analysis & visualization of results from *your model!*

Features:

- Analysis and validation
- Categorization and indicators
- Visualization & plotting library
- Simple statistics package



pyam: analysis and visualization of integrated assessment scenarios

License Apache 2.0  passing docs passing coverage 85%

DOI [10.5281/zenodo.1470400](https://doi.org/10.5281/zenodo.1470400) JOSS [10.21105/joss.01095](https://doi.org/10.21105/joss.01095)

Repository hosted on



Community supported by



Documentation hosted by



pyam-iamc.readthedocs.io

 [#pyam_iamc](https://twitter.com/pyam_iamc)



More information:

Documentation: pyam-iamc.readthedocs.io

Scientific reference: M. Gidden and D. Huppmann (2019).

Journal of Open Source Software 4(33):1095. doi: [10.21105/joss.01095](https://doi.org/10.21105/joss.01095)

A shared repository for common unit conversions

Converting units is a common source of confusion (or worse) when preparing input data and analysing model results



- The python package **pint** “makes units easy” (see pint.readthedocs.io) but it does not cover all units frequently used in energy systems analysis and related fields (climate impact, currency conversion, etc.)

- Paul Kishimoto started an **iam-units** repo (see github.com/IAMconsortium/units) collecting additional units and making it available via a pip-installable package

```
>>> from iam_units import registry
>>> qty = registry('1.2 tce')
>>> qty
1.2 <Unit('tonne_of_coal_equivalent')>
>>> qty.to('GJ')
29.308 <Unit('gigajoule')>
```

A one-slide guide for better open & FAIR research



Five best-practice steps to make your research open & FAIR_{v1.0}

You may think that putting your work* on a website already makes it free & open.

But that's not quite true – follow these steps to implement best practice of **#openscience!**

* data sets, text, tables, figures & illustrations, source code, scientific software, ... even #Horizon2020 deliverables

1. Open

If you want your *work to be read, used & shared by others*, be explicit about it:
For text, data, figures, ... – use the [CC-BY license](#) | For code, visit choosealicense.com

2. Findable

To make it easy for others to find and cite your work,
get a [digital object identifier \(DOI\)](#) and add a *recommended citation*

3. Accessible

Depositing your work in an institutional repository or a service like [zenodo](#)
ensures that your work is still *available even after the end of the project*

4. Interoperable

Using established community standards, data formats and
software packages lets others *quickly understand and use your work*

5. Reusable

To make it easy for others to *build on your work*, make sure to
assign a version number and relevant (machine-readable) metadata



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Thank you for your attention!



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