

openmod: Open energy system data

Break-out group results, 13.4.2015

Short Term Steps

first we can use the wiki and put links there as well as own scripts to process the data; the form of the link and the comments to the link should be standardized; they should contain at least:

<http://wiki.openmod-initiative.org/wiki/Data>

Create Template on Semantic Wiki for Datasets with

Common Meta-Data (Demand, Wind, Sun, Power plants)

- Link / Data itself
- Subject
 - Renewable time series [tags]
 - Wind
 - Solar
 - Demand [tags]
 - Price time series [tags]
 - Coal time series
 - Gas time series
 - Costs [tags]
 - Conventional technology costs
 - Renewable technology costs
- Historical or scenario [tags]
- License [tags]
- Spatial scope [tags]
- Time range [tags]
- Last update [tags]
- Last access [tags]
- Format [tags]
- API available [tags]
- Quality [tags]
- Post-processing scripts [tags]
- Units [tags]
- What is missing ("Free text") [Signed]
- good feature / bad features ("Free text")

- Examples of scientific papers/reports using this data set
- Users of openmod-initiative (?)
- Comment
- Original author of wiki page

Additionally time series have

Common Meta-Data Time Series

- Temporal resolution [tags]
- Spatial resolution [tags]
- Time zone (UTC, Local time) [tags]

... and GIS have

Common Meta-Data GIS

- Type of grid

Openmod - terminology

<http://wiki.openmod-initiative.org/wiki/terminology>

make a glossary and discuss wording/definitions => agree on a wording
e.g.

processed data / secondary data

data which is processed through to tools or calculations or combination with other data sets to get data that we can use for the models

Platform - portal

producer - transformer (what to use in the modelling speech ? for power plants or also PTG/PTH and other storages?)

scenario (possibilistisch)

prognosis (deterministisch)

disturbance value

external parameter

2nd Break out group - short term perspective

Data (all historical):

Infrastructure units	
generation	power plant capacity, fuel prices,
temporal dist. (storage etc.)	power-to-gas, hydrogen
spatial dist. (grids etc.)	
consumption	
Other	imports/exports

Process

- agree on minimum data description (see “Common-Meta-Data” above)
- users are free to access data, contribute new data and edit existing data (e.g. equivalent to wikipedia)
 - set up forms to contribute data links to the wiki
 - set up forms to view single datasets
 - set up forms to edit, flag (e.g. missing data) and comment on datasets (git-like?)
- pre-defined tags (not free to change without prior discussion - this is to prevent a growing mess of too many redundant tags)
- layout: search field + table of main categories with some allocated key tags
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Brainstorming of meaningful tags

Generation capacity, demand, grid, storage capacity, wind, solar, nuclear, coal, lignite, gas, biomass, hydrogen, hydro, thermal, heating, district heating, hourly, daily, weekly, monthly, annually, cooling, time series, control reserve, spot market, region name, fuel cost, year

Brainstorming of required data

Generation capacity

- power plant data

- location
- commissioning date
- efficiency
- fuel
- generator type (GT, ST, CCGT, engine,...)
- CHP type (BP, EXT)
- electricity generation capacity
- heat generation capacity (or cb/cv values)
- annual power/heat production
- voltage level of connection point
- power curves for wind or solar
- overall national generation capacity (for verification)
 - by fuel and type
 - timeseries or overall production by fuel

Grid

- NTC (net transfer capacities)
- Voltage level
- Location of sub-station
- Location of cables
- Transfer Technology (AC/DC)
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Demand

- Electricity demand
 - hourly
 - by geographical resolution (city, county, country, region)
 - by sector
- Heating/cooling demand
 - hourly,
 - by geographical resolution (city, county, country, region)
- Transportation
 - no. of vehicles by vehicle type
 - passenger kms.
 - emissions standards
 - fuel blending standards
- Policy measures
 - feed-in tariffs

- CO2 tax
- Macro-economic
 - GDP
 - population
 - population density

Renewable Timeseries:(hourly resolution)

- Wind Feed-In
 - onshore
 - offshore
- PV Feed-In
- CSP Feed-In
- Biomass
 - solid
 - gasification
 - gas
 - liquid
- Hydro
 - run-off river
 - pumped storage
 - reservoir
- Aggregation Level
 - local
 - region
 - state
 - national
 - international
- Storage technologies
 - Power-to-Gas
 - Electrolyzation
 - Methanization
 - Gas storage
 - Combustion/Fuel cell
 - Hydrogen
 - Pumped hydro
 - Batteries

- Compressed air
- Mechanical (flywheel,...)
- Magnetic (SMES,...)

Long-term vision

Cover the full process:

input => process => output (input to models)

Central Server

Everything transparent

Input

- Directly linked to sources

Output

- Metadata
- API-based
- download as CSV
- examples how to use it in different modelling languages (GAMS, Python, etc.)

Processing

- Processing of data totally transparent
 - documented, with references to academic/whatever sources of why things are correct the way we do them
 - Showing all calculations and modifications we do to input data sources

Further points

- Types of data: “Exogenous” and “endogenous” (for model verification)

- Comply with international initiatives who are already working in the field, i.e. Open Knowledge Foundation regarding standards on CSV files, data repositories, etc.
- Central server
- Terminology: Clear definition and categories
- Provide high degree of usability: Always address user perspective
- Workable design: We start with all input needed for a concrete model first, and make it more versatile later. (Depends on working mode: Only realistic if done in a paid project rather than by a loosely collaborating group.)

Challenges

- Participation
- Incentives to contribute
- Peer-review challenge: How to tackle conflicts / disagreements
- Discontinuous updates: What to do when the Source data has changed and the changes done to it don't apply any more.

Further ideas:

- Have a "request data" form, where people can ask for data, which they're looking for

2nd Break Out Group Long Term Vision, Tuesday

- Klimarechenzentrum/Meteorology as example
 - funded Server
- dataserve.org
- OKFN as Working Group "Open Energy" <https://okfn.org/get-involved/working-groups/>
 - perhaps CKAN as funded hosted software solution through OKFN
- OpenIE is already hosting a CKAN on Open Energy data

E-Mail to OKFN:

Possible options

- Fully dissolve the openmod initiative into an OKFN working group on "Open Energy"
- Only use selected resources that OKFN might provide us with: Hosted CKAN, mailing list, etc...
- Do our own stuff