PAUL SCHERRER INSTITUT

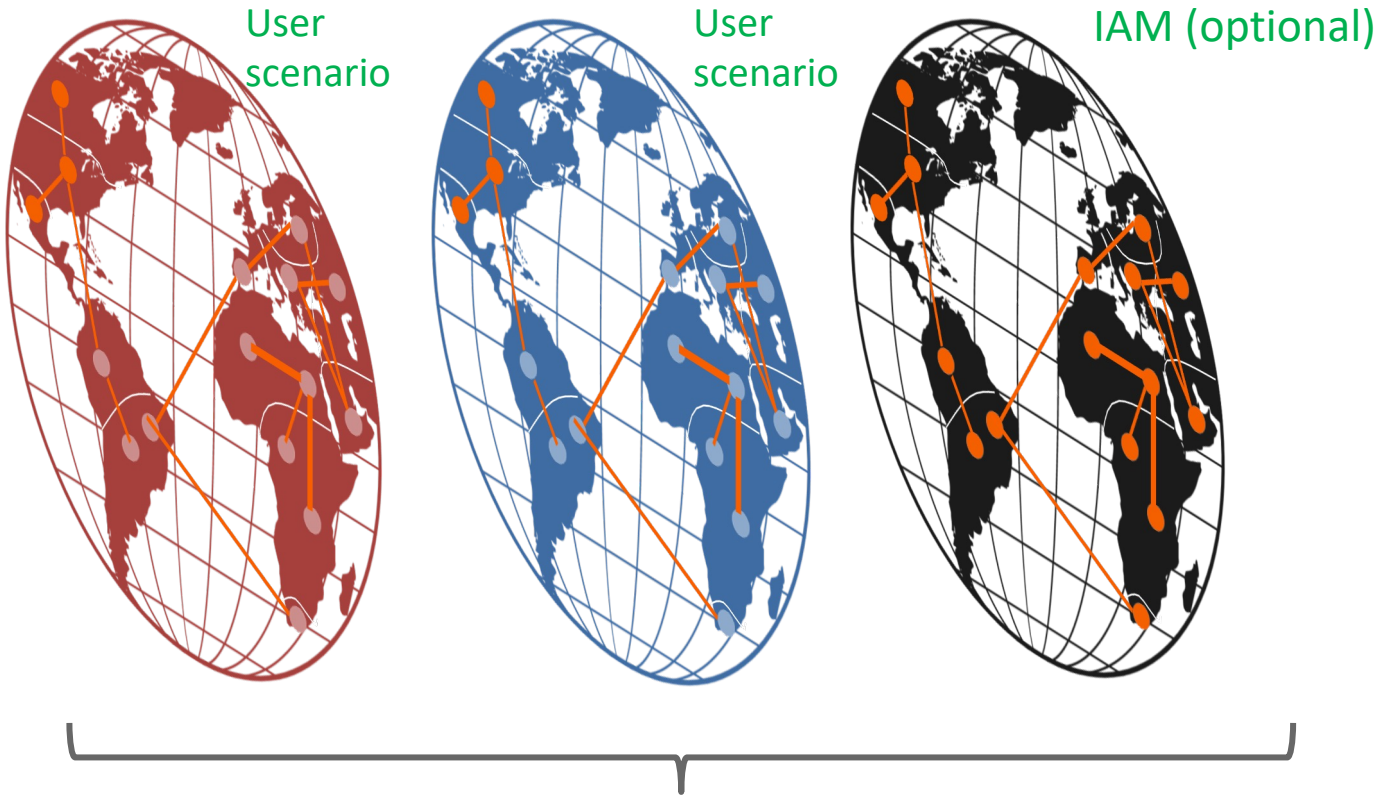
PSI

Romain Sacchi :: Postdoctoral researcher :: Technology Assessment :: Paul Scherrer Institut

Prospective life-cycle assessment databases based on custom scenarios

21.08.2023

User-generated scenarios



Scenarios

datapackage.json

```
{
    "profile": "data-package",
    "name": "ammonia-prospective-scenarios",
    "title": "Ammonia decarbonisation pathways…",
    "description": "Implementation of…",
    "source":"Boyce, J. C. (2022). Ammonia…",
    "version": "0.0.1",
    "contributors":[
        {
        "title": "Johanna C. Boyce",
        "email": ”some.email@umail.leidenuniv.nl"
    }
    ],
    "dependencies": {
        "premise": ">=1.3.0"
    },
```

Scenario data

Inventories

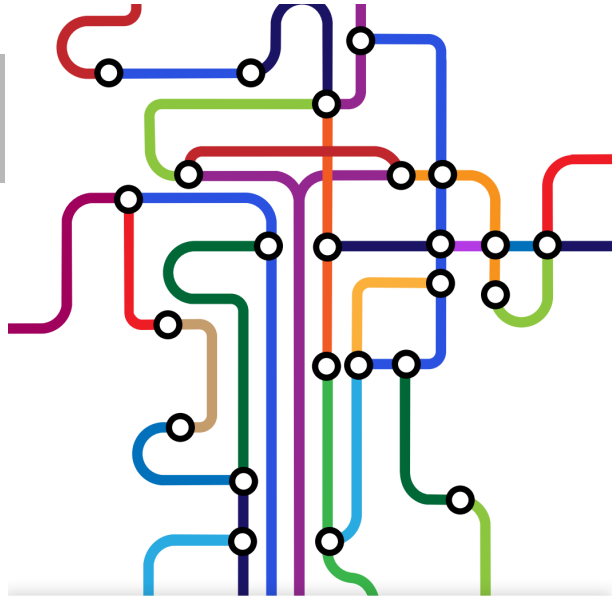
Configuration

1

2

5

The Swiss case

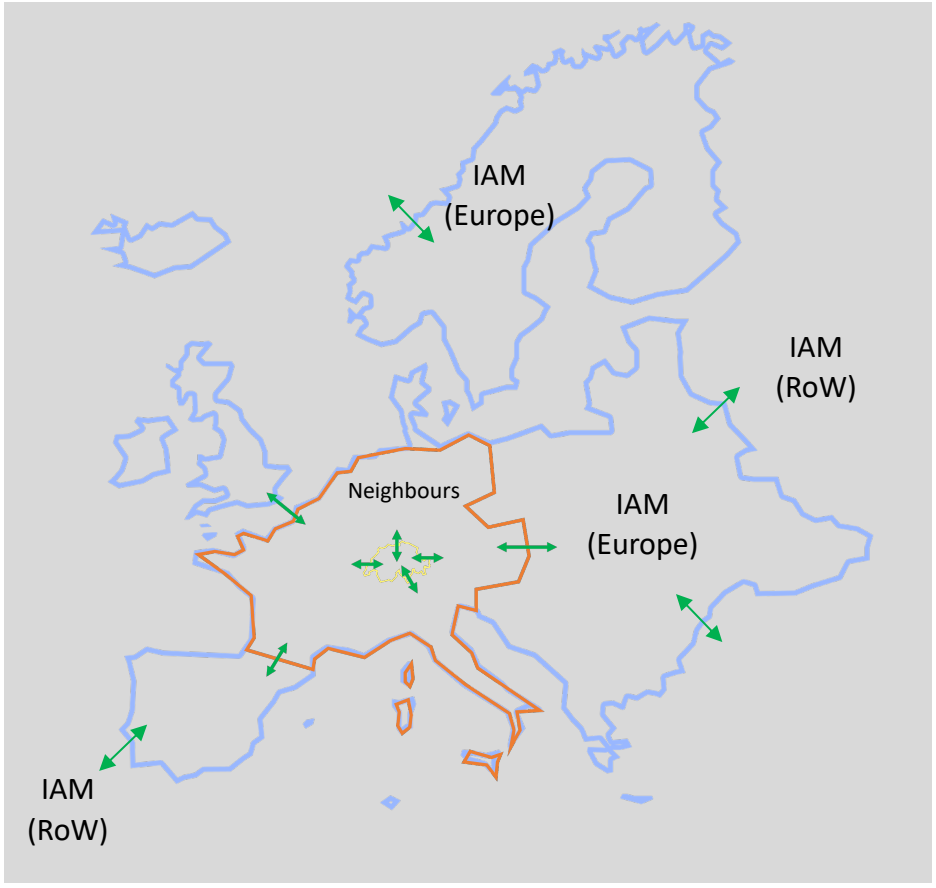


PERSPECTIVES ÉNERGÉTIQUES 2050+

RÉSUMÉ DES PRINCIPAUX RÉSULTATS

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Office fédéral de l'énergie OFEN



The Swiss case

Multiple scenarios to reach carbon neutrality by 2050.

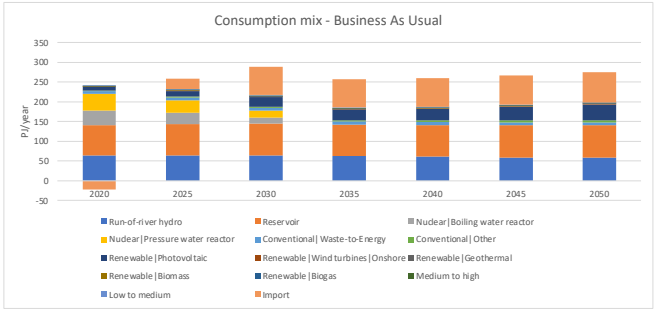
Business As Usual scenario

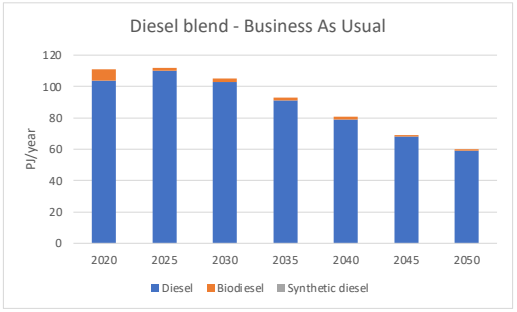
- a continuation of measures and instruments in place until the end of 2018
- does not foresee additional or more stringent measures.
- The development of technologies (efficiency, installations, devices, vehicles, appliances, etc.) follows autonomous technical progress and are based on the legal bases in force at the end of 2018.

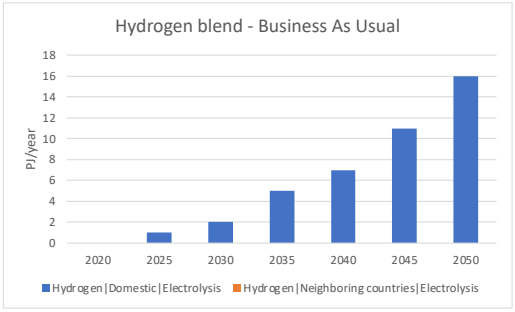
ZERO Basis

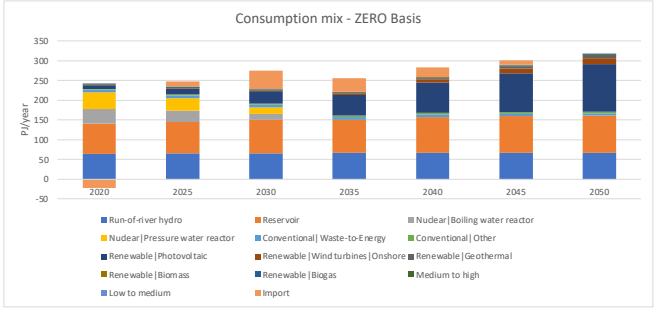
- foresees the rapid and comprehensive improvement of energy efficiency
- strengthening of the electrification of the energy system.
- ICEVs are replaced by BEVS
- fuel heaters are replaced by electric heat pumps and renewable energy heat networks.
- Electricity-based energy (synthetic fuels and combustibles, hydrogen) are also being used more
- Switzerland is able to cover its electricity consumption with domestic production. The remaining greenhouse gas emissions in the areas of industry and agriculture are offset by carbon capture and storage technologies.

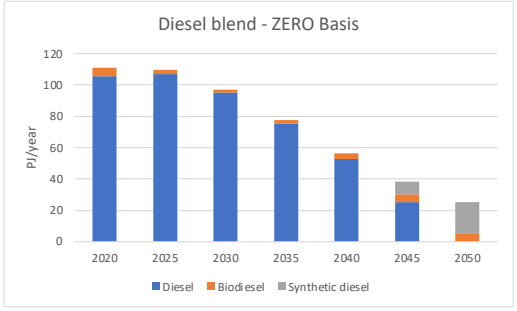
The Swiss case

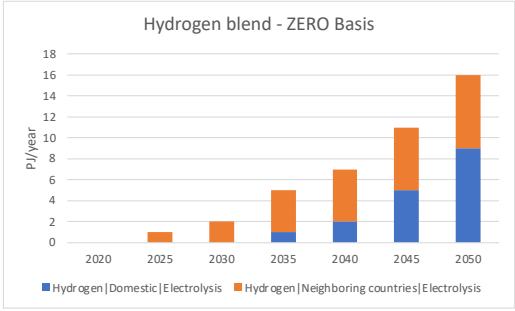








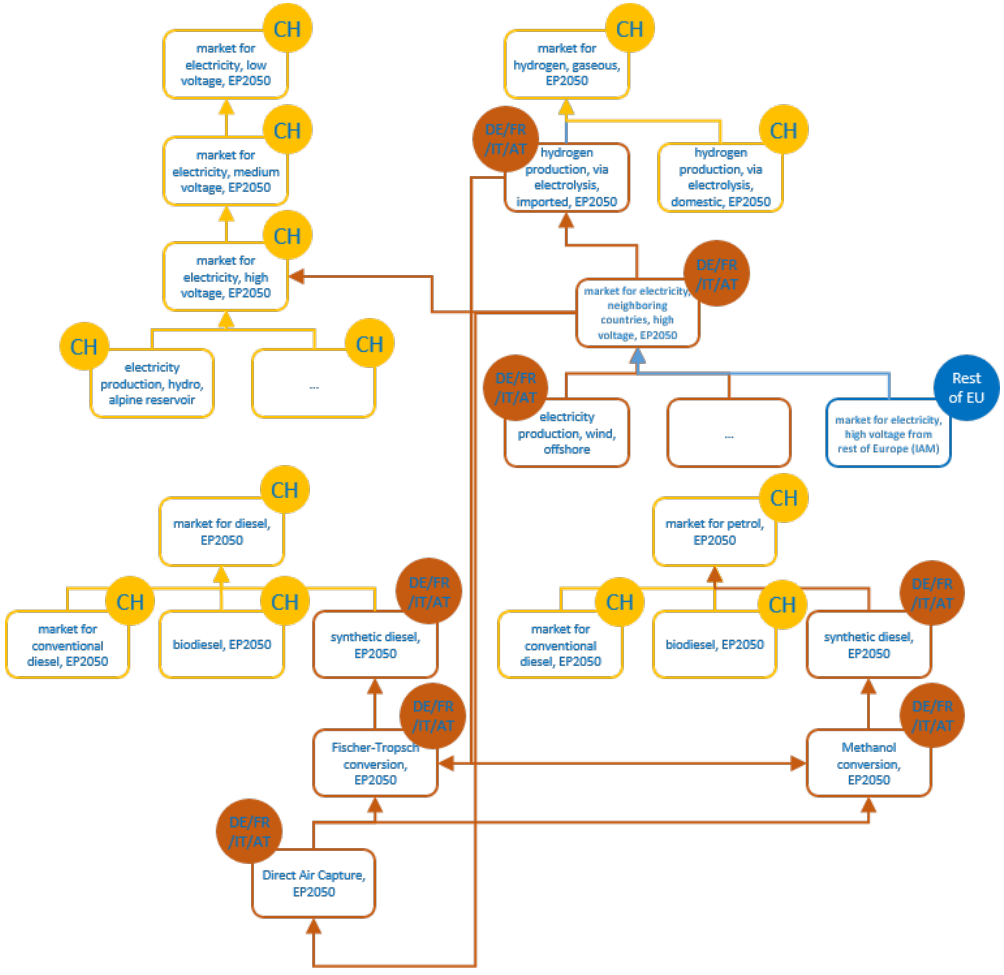




The Swiss case

- Automatic building of datasets network
- Adjusting efficiency, emission factors
- Relinking

- Exchanged flows change over time and across scenairos
- Efficiencies change over time and across scenarios



The Swiss case

Your turn!

- Either implement the Swiss scenarios and cretate prospective databases for each narrative.
- Or create your own scenario.

```
from datapackage import Package

fp = https://raw.githubusercontent.com/premise-community-scenarios/energy-perspective-2050-switzerland/main/datapackage.json

ep2050 = Package(fp)

ndb = NewDatabase(
      …,
      external_scenarios=[
           ep2050
       ]
)
```

Wir schaffen Wissen – heute für morgen

Technology Assessment Group

https://www.psi.ch/en/ta

Questions?

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