

Using scenarios to expand our thinking about energy futures

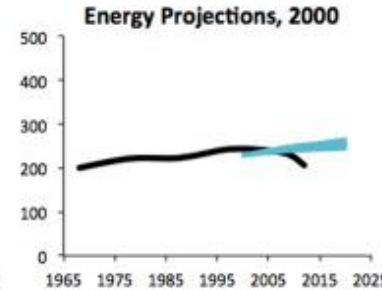
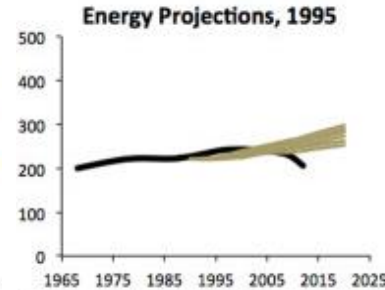
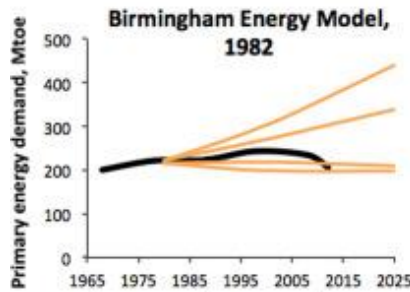
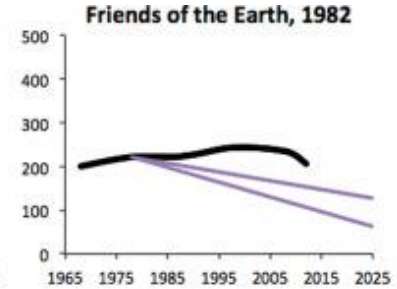
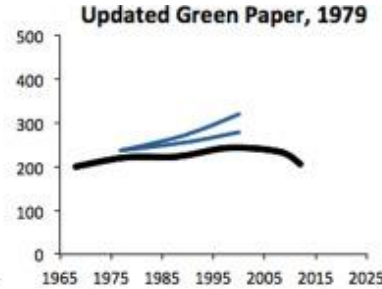
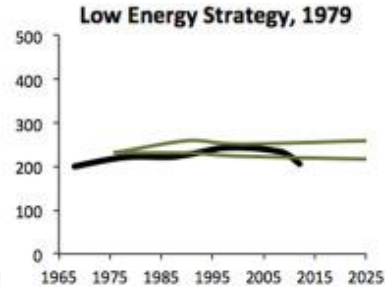
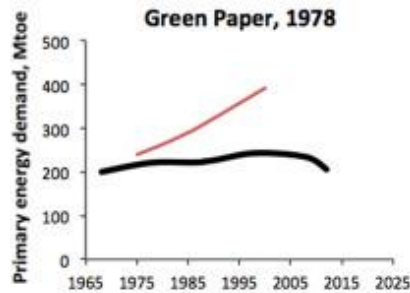


Prof. Evelina Trutnevyte

11 April 2019, IRENA LTES Forum



We need a diversity of energy scenarios to make decisions



— actual transition



Source: Trutnevyte et al. (2016) *Sustainable and Renewable Energy Reviews*

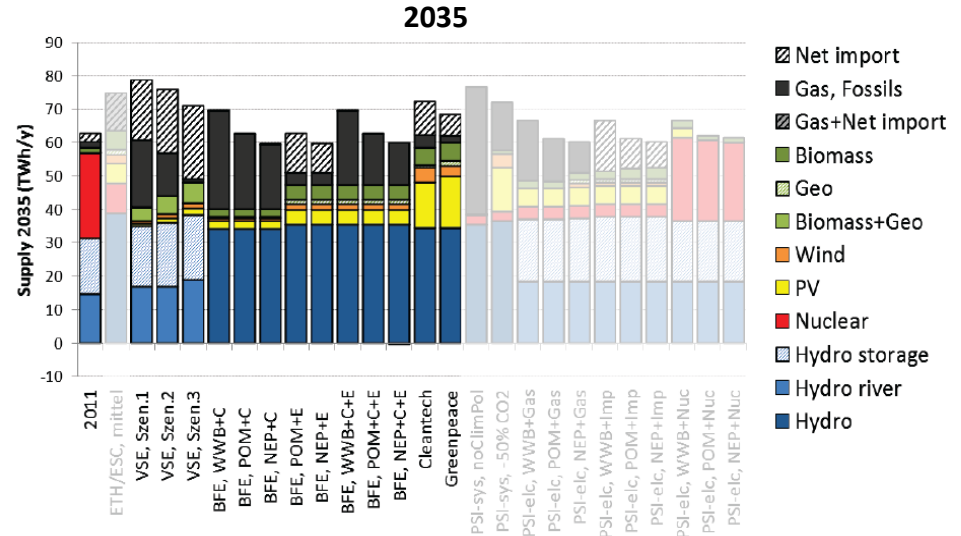
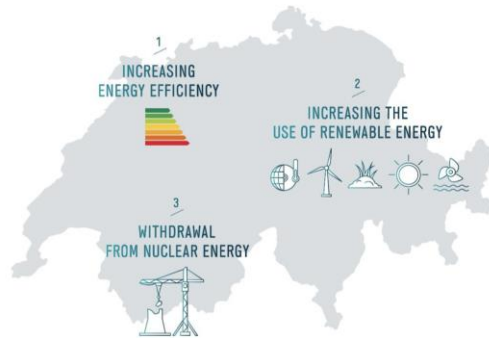
Swiss electricity supply scenarios at the beginning of Energy Strategy 2050

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

The Federal Authorities

Latest News
The Federal Authorities
Federal law
Documentation
Services
About this portal

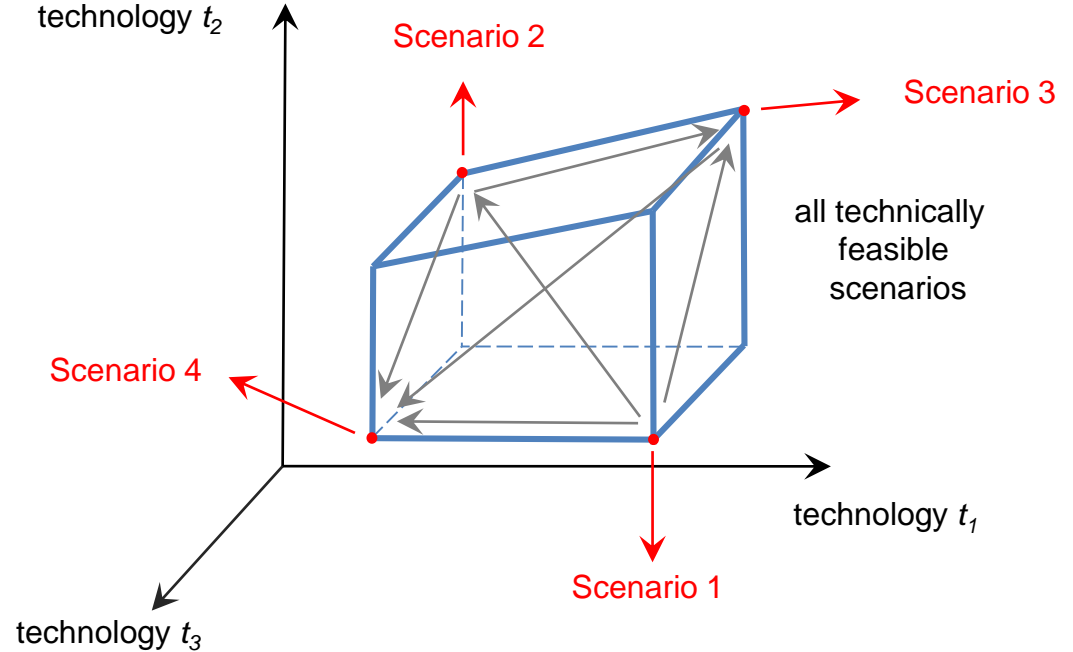
Federal Council decides to gradually phase out nuclear energy as part of its new energy strategy



Figures: Swiss Federal Office of Energy (2016), Densing et al. (2014)

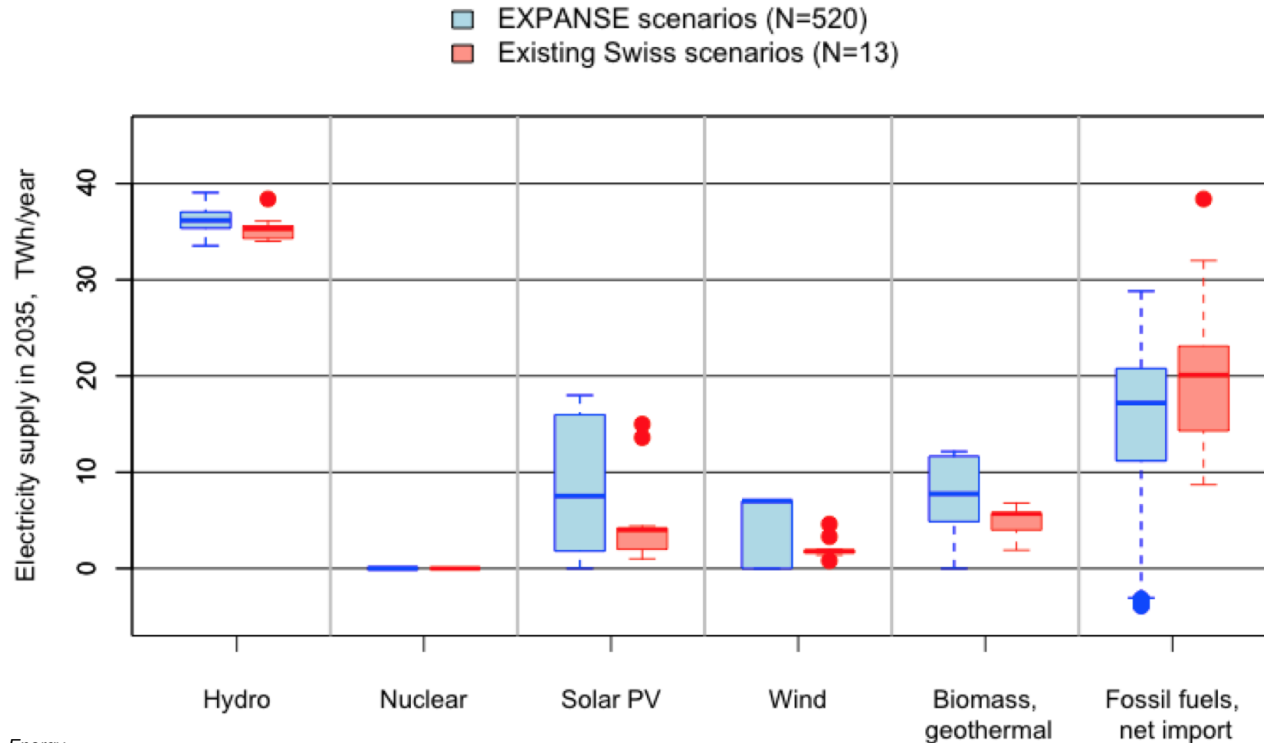
Methodology #1: EXPANSE model

- Bottom-up, technology-rich, perfect foresight electricity system model
- Modeling to Generate Alternatives technique (**new!**)



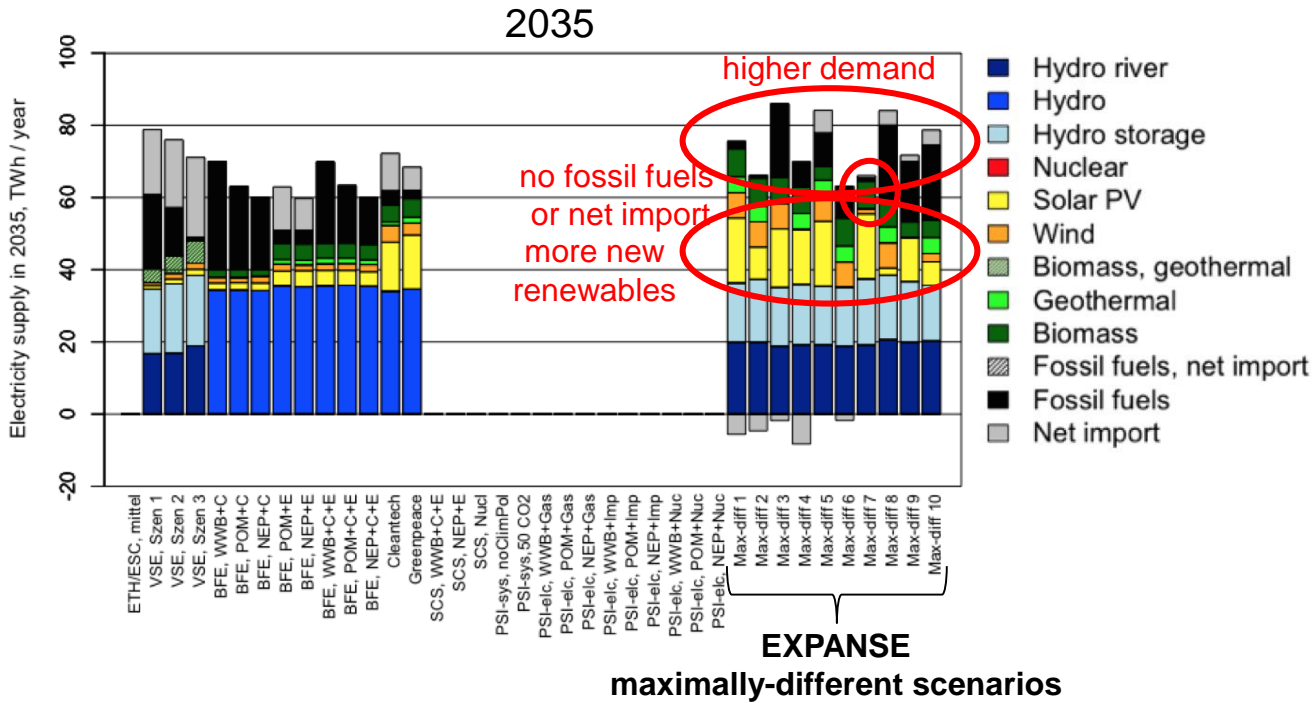
Source: Berntsen & Trutnevyte (2017) *Energy*, Trutnevyte (2016) *Energy*

Results #1: 520 Swiss electricity supply scenarios



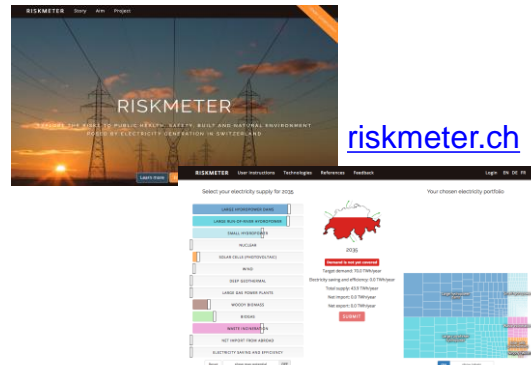
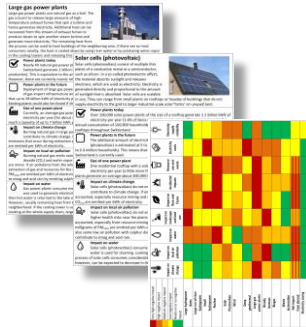
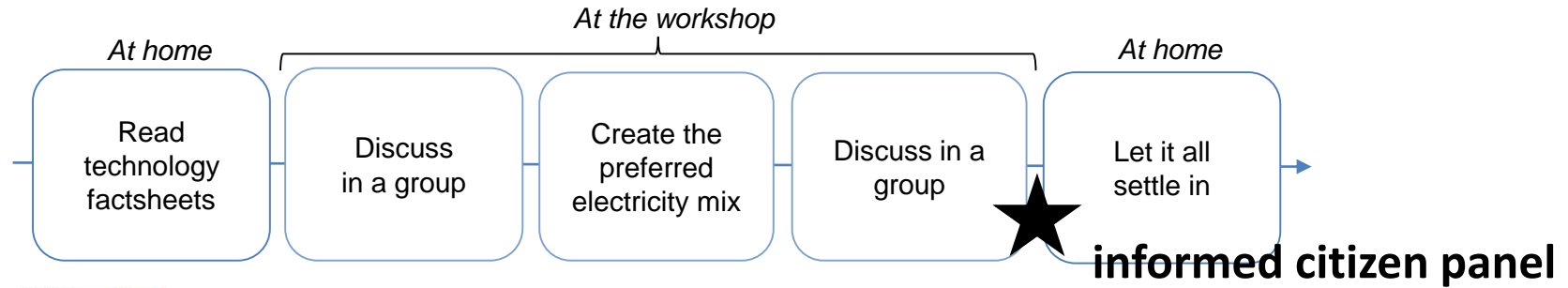
Source: Berntsen & Trutnevte (2017) *Energy*

Results #1: EXPANSE scenarios that are maximally different from the existing Swiss scenarios



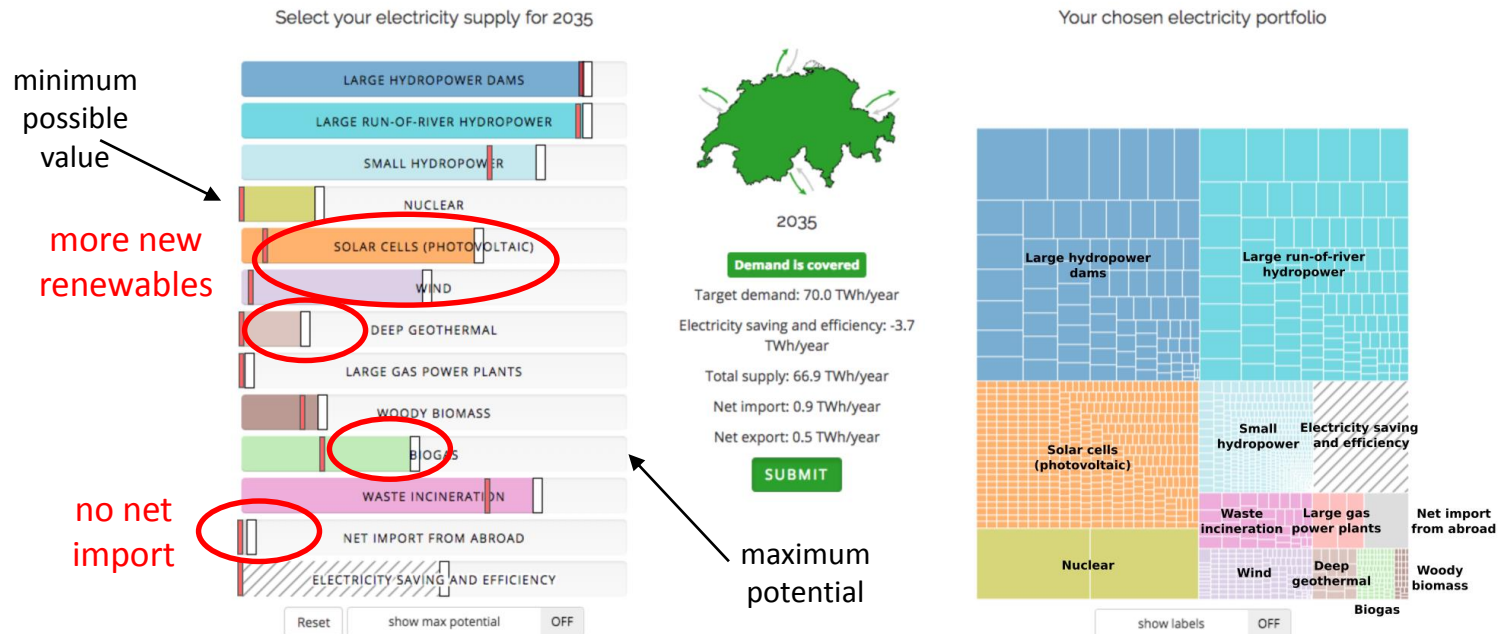
Source: Berntsen & Trutnevlyte (2017) *Energy*

Methodology #2: An informed citizen panel (N=46)



Source: Volken et al. (2018) *Environmental Science & Technology*

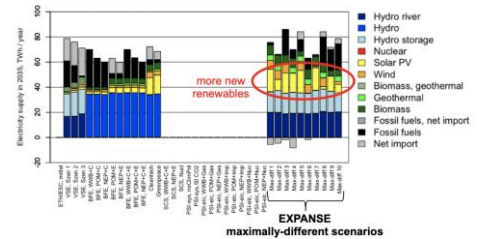
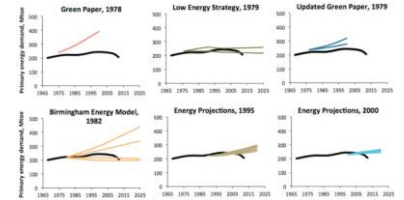
Results #2: An average preferred electricity scenario 2035



Source: Volken et al. (2018) *Environmental Science&Technology*

Summary of key messages

- We need a diversity of energy scenarios to make decisions because all scenarios challenge our thinking and can have impact
- **Two approaches to expand the pool of existing scenarios:**
 - Modeling to Generate Alternatives
 - Eliciting scenarios of (informed) citizens
- **Future work:** we should find ways to develop scenarios beyond what we have in current models



Please get in touch with
questions and comments!



Prof. Evelina Trutnevyte
Renewable Energy Systems, University of Geneva

Email: evelina.trutnevyte@unige.ch

Website: www.unige.ch/res

Twitter: @etrutnevyte