

The Swiss Energy Strategy 2050 requires fundamental transformation of the Swiss energy system and partly of industrial production, while avoiding greenhouse gas emissions and achieving its goals.

## How sustainable is the future Swiss energy system and how resilient is it to potential disruptive events?

### SURE at a glance

- Consists of **10 research partners**, under the lead of PSI, from 2021 to 2027
- Uses an integrated and holistic assessment framework
- Engages diverse **stakeholders** (e.g. associations)
- Employs quantitative and qualitative **analysis tools** extended with **legal, social and political analyses**
- Investigates **long-term transformation pathways** and possible future **shock events** for the energy system
- Analyses of scenarios for **Switzerland and selected case studies**

### Long-term pathway scenarios which

- Capture major developments in a **long-term perspective**
- Describe **storylines** across economy, society, technology, environment, policy dimensions
- Can be **explorative** and **normative**
- Enable **“what-if” analyses** and are not forecasts

### Four SURE Pathway Scenarios (SPS):

#### SPS1: Team Sprint - Focus on Sustainability

- World gradually implements green strategies
- High regional and energy market integration
- Social behaviour supporting sustainability actions

#### SPS2: Mountain Hike - Focus on Energy Security

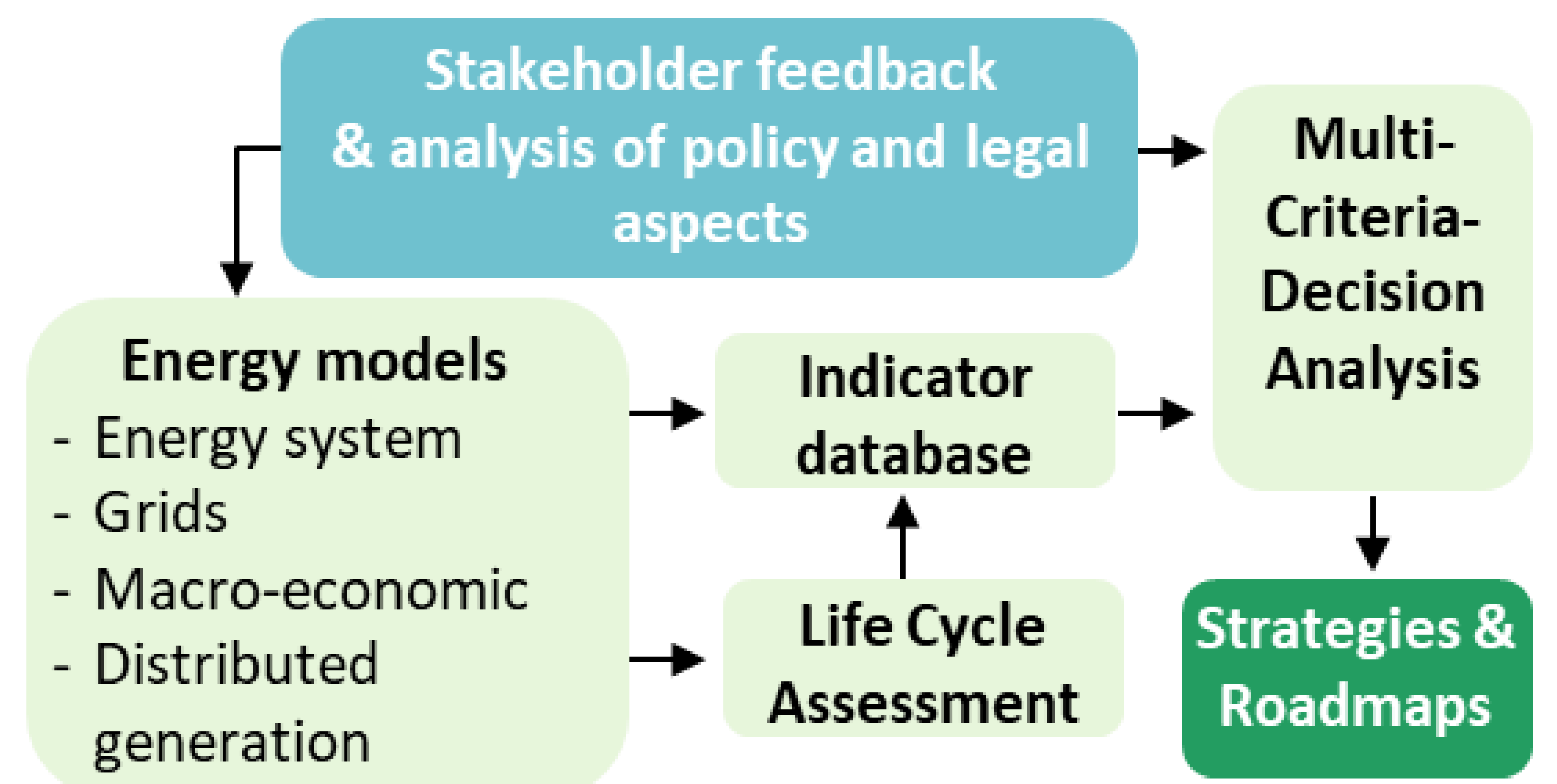
- World gravitates toward a multi-polar order
- Regional conflicts increase energy security concerns
- Social behaviour willing to “pay for more security”

#### SPS3: Single Trail Run - Fragmented Regions

- Regions implement climate policies at different speeds
- Moderate regional and energy market integration
- Social behaviour supporting local energy markets

#### SPS4: Walk & Talk - Current Trends & Policies

- World follows a path not markedly different from today
- Geopolitical situation as of today
- Social behaviour in favor of proven technical options



### Shock scenarios

- Occur **suddenly** to a pathway and is characterized by time, location, duration, and intensity
- Cover **several shock dimensions**: economy, environment, technosphere, society, politics
- Are **transient** or **disruptive**
- Are applied to **several pathway scenarios**

### Five shock scenarios:

#### Financial shock

- Sudden deterioration of exchange rates between Asia and RoW
- Impacts commodities and techs costs at all economic sectors
- Increase the cost of imports 10-40% in Asian capital market

#### Heat wave

- High temperatures and record low precipitation
- Increases electricity, stresses the grid, disrupts hydropower
- 4-6 months of drought, 5-14 days within 2-3 weeks of heat wave

#### Cold spell

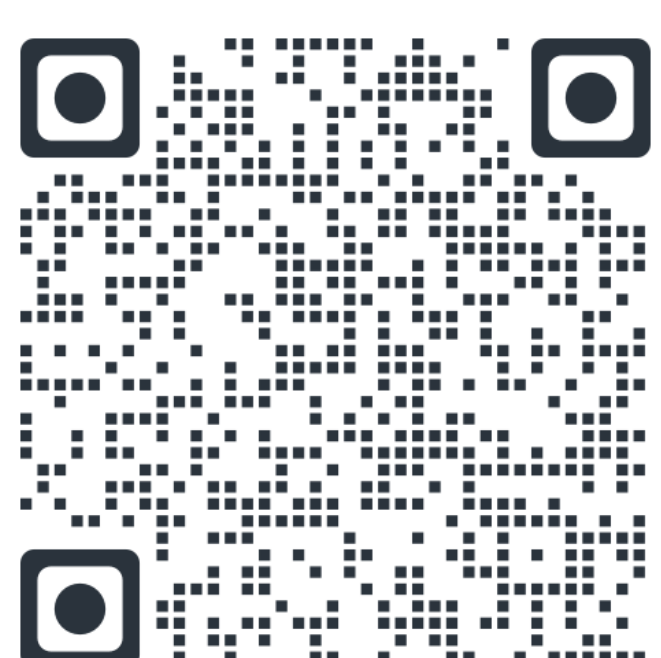
- Sudden cold wave and dry fall
- Increases electricity and heat, disrupts energy & mobility infra
- 2-6 weeks of cold wave

#### Societal change

- Sudden population growth in CH due to (climate) refugees
- 10.4 million in 2035, high socioeconomic inequality
- 60-80% of the refugees in CH live in energy & mobility poverty

#### Nuclear power re-introduction

- A political decision around 2030s to re-introduce nuclear
- Variants: from not further pushing the phase-out of nuclear power to a strong and dynamic promotion of nuclear



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