WORKSHOP

Building a resilient energy transition for Switzerland: How do we get there?

15 MAY 2025, 9AM - 3PM

ETH Zurich, Room E101 – LEE, Leonhardstrasse 21

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What is RECIPE

A consortium **funded by the Swiss Federal Office of Energy (SFOE)** under the **SWEET Call 1-2023** on "**critical infrastructures, climate change, and resilience of the Swiss energy system**"

Nov 2024 → Oct 2030

Part of the **NCCS-Impacts programme** of the **National Centre for Climate Services (NCCS)**

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RECIPE objectives

WHAT
Risks associated with the **energy transition** and **climate change**.

TIME FOCUS
The **next 25-30 years**.

OUTPUT 1
Quantify: criticality of each energy infrastructure in terms of impacts on the Swiss economy, society, vital resources & ecosystem.

OUTPUT 2
Identify: combinations of **hazards** to which the Swiss energy system is **vulnerable**.

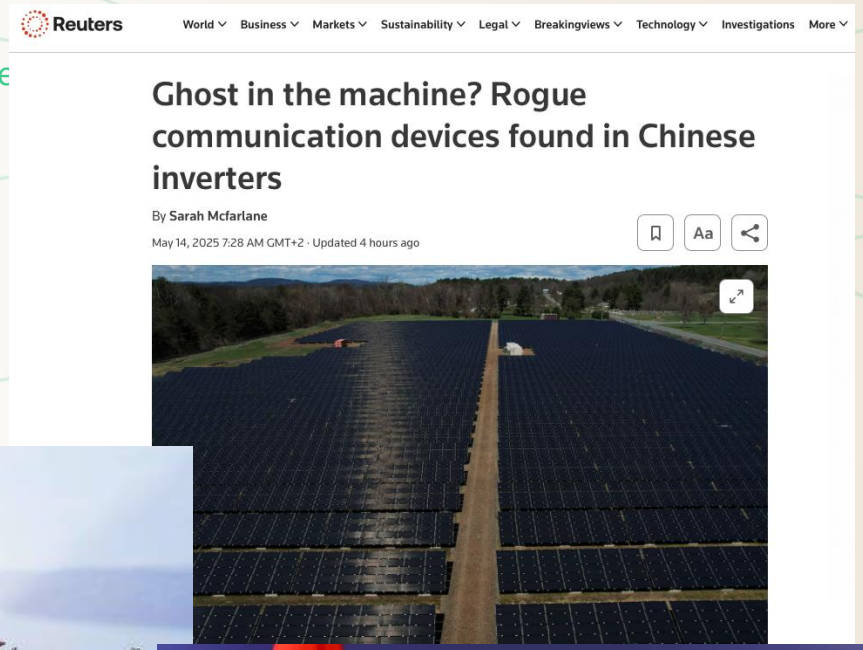
OUTPUT 3
Propose: resilience enhancement measures to help Swiss stakeholders effectively and timely address the identified risks.

High expectations from our funder

From SFOE - Information on supplementary budget reduction due to the Federal Council's proposed austerity measures

«… RECIPE … (was) excluded from the cuts partly because … (it is) more directly influenced by recent changes in SWEET **that increase impact orientation** and therefore **their work is more likely to have a higher impact**, and partly because (it) did not start until 2024 and therefore **could not yet submit applications for P+D projects** or the supplementary budget.»

RECIPE is timely!



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The Consortium

ETH zürich

- Risk and Reliability Engineering Lab (RRE)
- Research Center for Energy Networks (FEN)
- Institute for Atmospheric & Climate Science (IAC)
- Swiss Economic Institute (KOF)

EPFL

- Intelligent Maintenance & Operations Systems

n|w Fachhochschule Nordwestschweiz

- Institute for Market Supply & Consumer Decision-Making

HSLU Hochschule Luzern

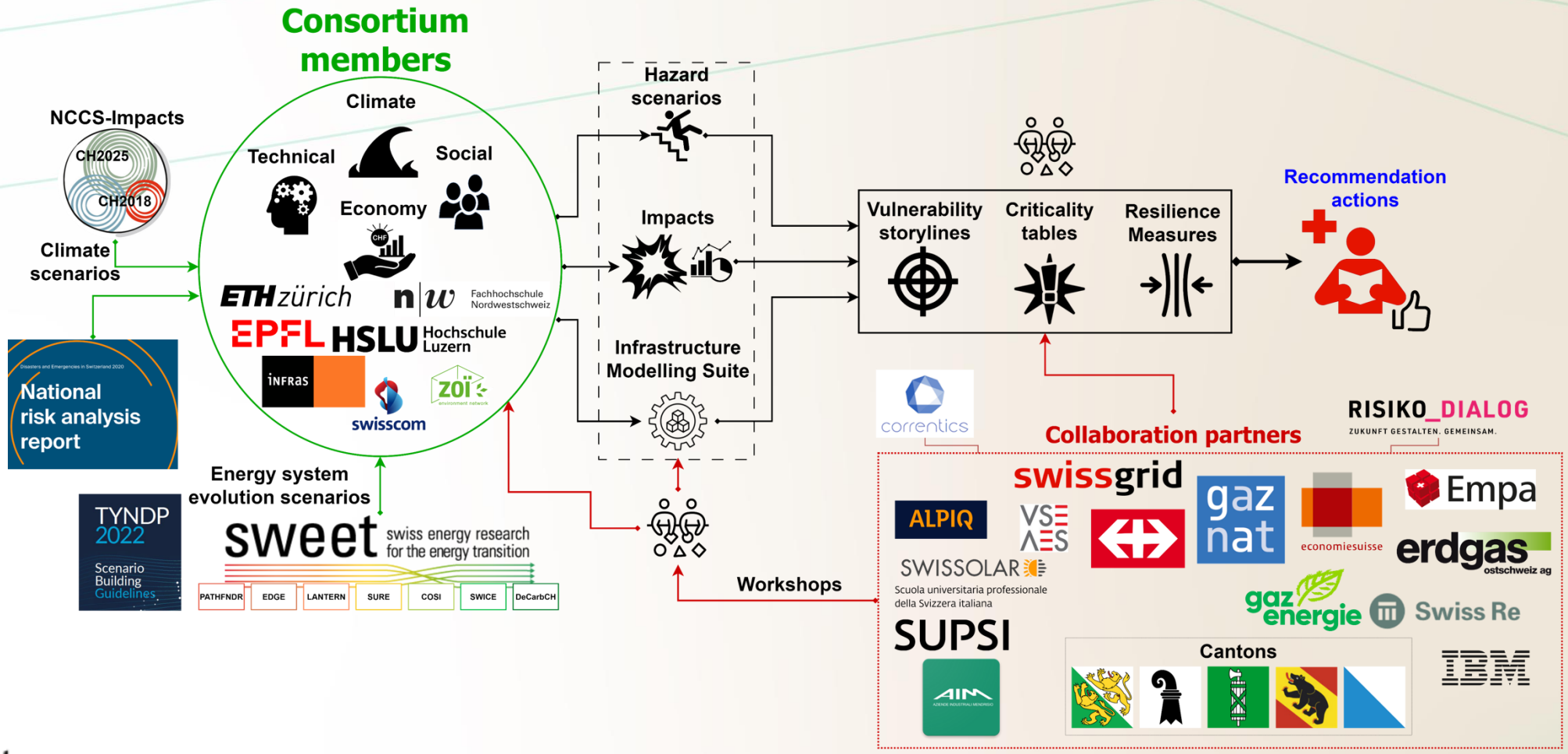
- Competence Center Digital Energy & Electric Power

swisscom

INFRAS

zoï environment network

The Extended Consortium



Modelling the energy supply system

Electricity | Gas | Generation | Storage | Transmission | Distribution | Switzerland | Europe

today → 2050

Studying the energy users

People | Businesses | Vital resources | Communication | Transport

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What can happen?

Hazard analysis

Climate change | Weather events

Component failures | Cyber attacks | AI anomalies

Terrorist attacks | Policy failures | Socio-economic hazards

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What can happen?

EXAMPLES

Hacker gaining access to control of distributed resources

Year with very low solar and water availability

European power system instability

Destructive weather event

And much more...

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What will be the impact?

Impact analysis

Cascade propagation to Swiss firms

People's perceptions and reactions

Disruptions in important services

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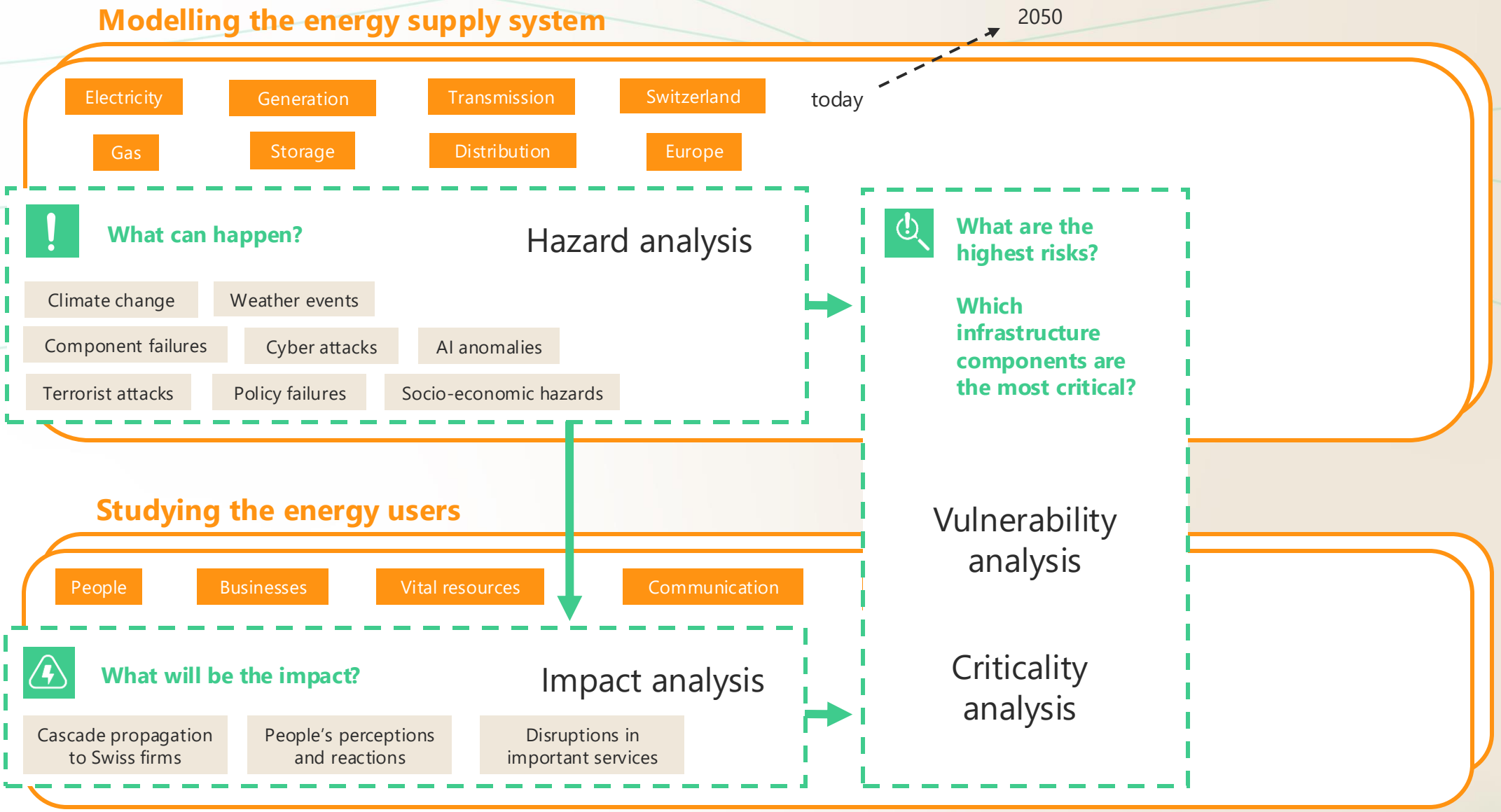

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What are the highest risks?

Which infrastructure components are the most critical?

Vulnerability analysis

Criticality analysis

How to enhance resilience?

Recommendations for measures to enhance resilience

Policy-makers and regulators

Decision-makers

Knowledge users

General public

Multipliers

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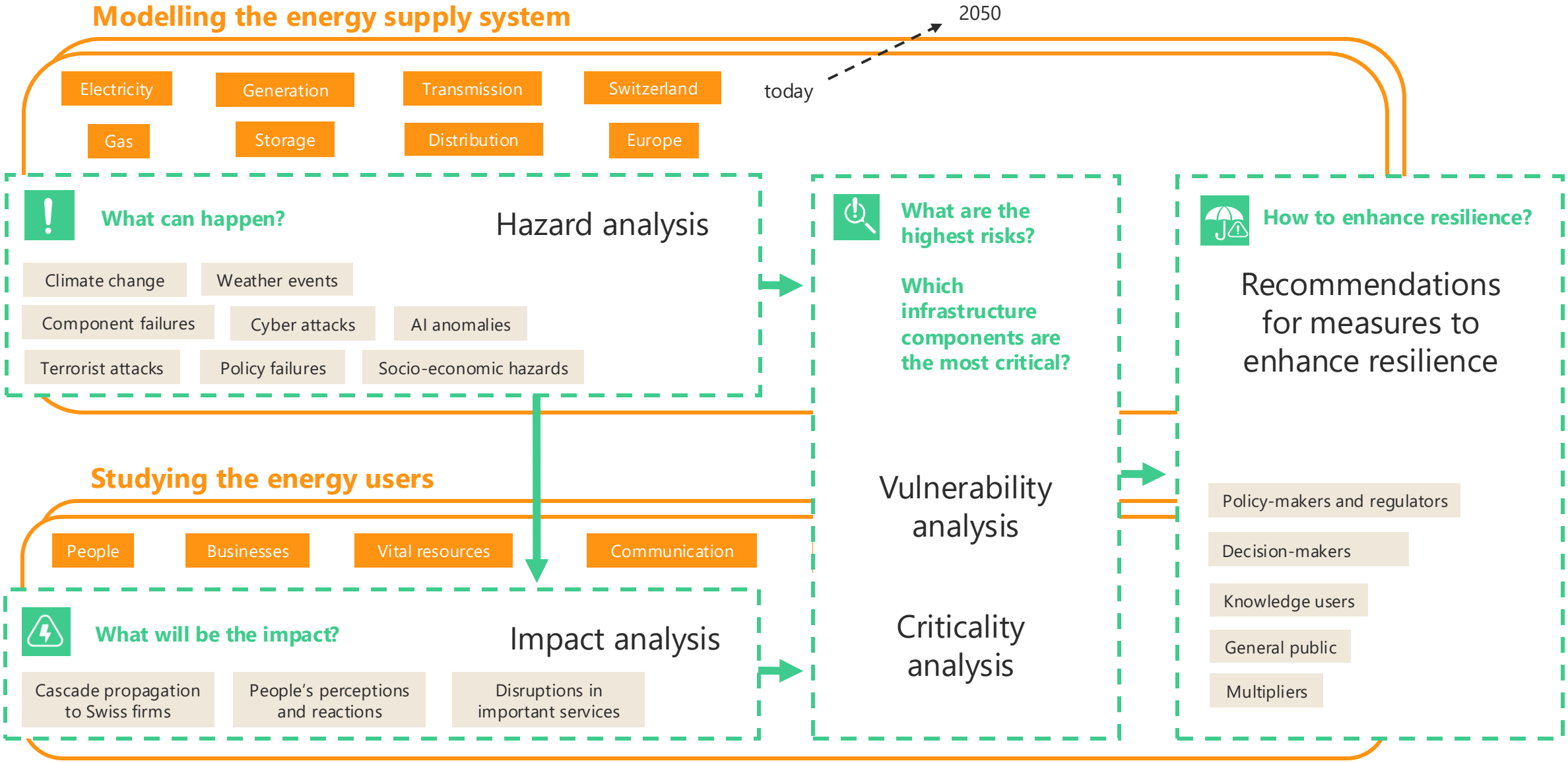

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How to enhance resilience?

EXAMPLES

Investments in flexible generation / storage

Ability of local energy systems to operate in fully islanded mode

Increase resilience of energy users (telecom, hospital, firms, etc.)

Power system restoration processes

And much more...

Target audience & outcomes

Policy-makers and regulators	Integrate RECIPE's recommendations into **legislation**, **governance**, and **resource allocation**.
Decision-makers involved in energy supply and use	Incorporate RECIPE's results or recommendations into **strategic decisions** and adapt their **operations and services**.
Knowledge users	Further develop RECIPE's results and drive **innovation** and informed **decision-making** supporting the energy transition.
General public and multipliers	Support the energy transition in **democratic** processes.
Multipliers	**Disseminate** RECIPE's results and recommendations to target audiences.

Target audience & outcomes

EXAMPLES

Resilience-proof investments in energy infrastructure.

Articles in newspapers.

New regulations / market structures that ensure that the resources providing resilience are there.

Adaptation of emergency preparation practices.

Associations use RECIPE's findings when engaging in policy discussions.

Better understanding of cyber- and AI-threats to the energy system.

Win you as an expert - interview to follow

- A study team from INFRAS and the FHNW is currently conducting expert interviews to analyze the effects of disruptions to the Swiss energy system on the Swiss population and the supply of vital goods.
- We are looking for interview partners: Would you like to share your expertise on this topic?
- We will reach out to workshop participants.

Contact persons:

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INFRAS

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n|w Fachhochschule Nordwestschweiz
Hochschule für Angewandte Psychologie

Extend RECIPE with P+D / implementation projects

- We aim at complementing the already planned research work performed in RECIPE with selected implementation projects, P+D projects, and/or case studies.
- Do you have specific project ideas or case studies stemming from you organization relevant to increasing the energy system resilience?
- Please reach out to us and we will provide more details on this inspiring exchange.

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www.sweet-recipe.ch

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