sweet swiss energy research for the energy transition

PATHFNDR

Energy System

# PATHFNDR scenarios

**Work package 1**

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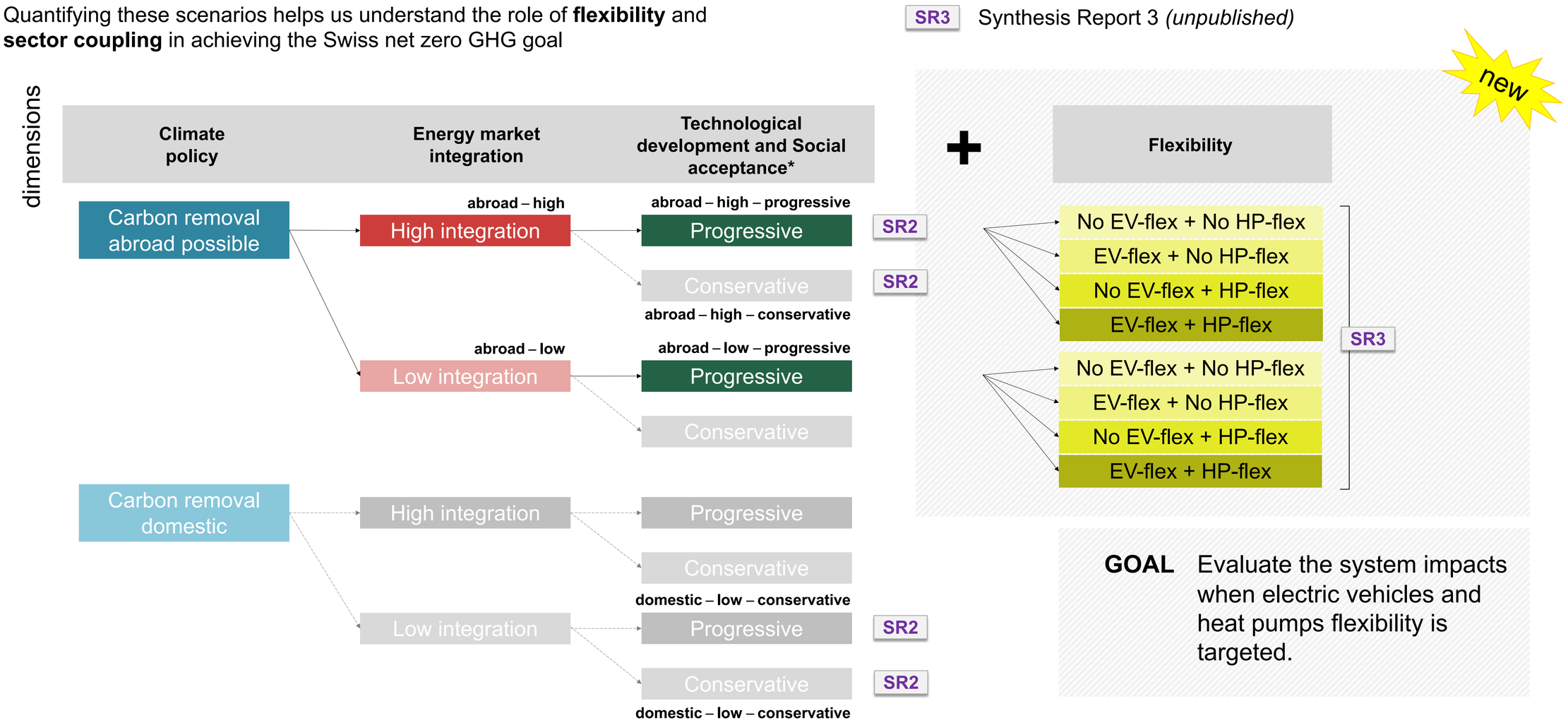
## What are PATHFNDR scenarios?

- Scenarios are **alternative developments** of the future energy system
- Quantifying these scenarios helps us understand the role of **flexibility** and **sector coupling** in achieving the Swiss net zero GHG goal

SR2 Synthesis Report 2 [1]

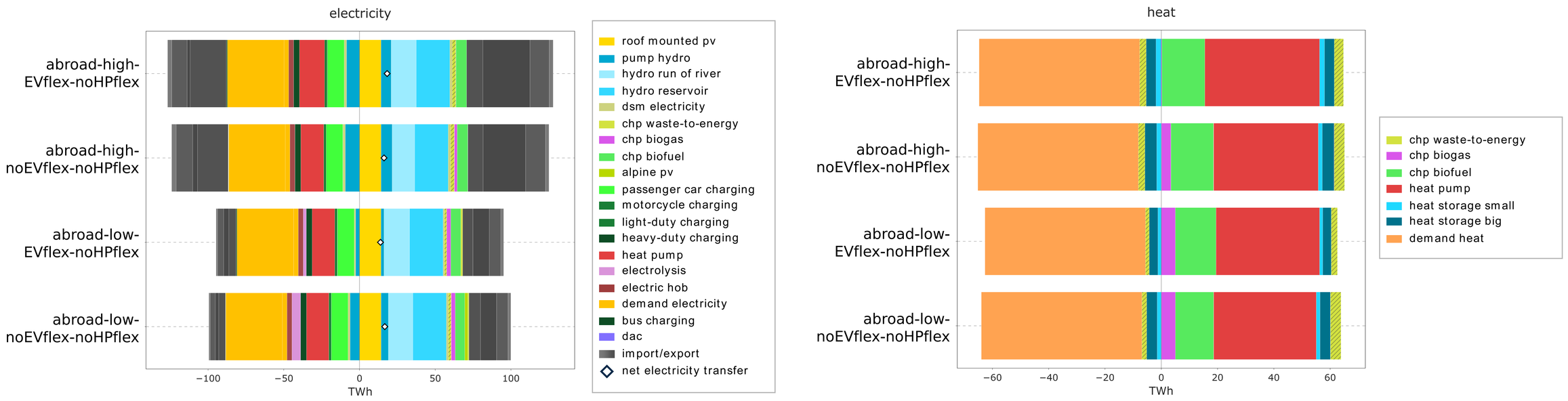
SR3 Synthesis Report 3 *(unpublished)*




**GOAL** Evaluate the system impacts when electric vehicles and heat pumps flexibility is targeted.

* In the Synthesis Report 2, *Flexibility* was included into the *Technological development and Social acceptance* dimension

## The impact of EV flexibility on sector-coupling (tentative results)




- Direct **electrification** is the cost-optimal solution for **transport** and **heat** decarbonization.
- **Trasmission** lines and **CHP** plants provide **additional flexibility** when EV charging is not flexible.
- **Alpine PV** kicks in when fuel import/export and NTCs are constrained.
- **EV flexibility** (when NTCs are not restricted) reduces the need for flexibility in the power sector that means **less CHP plants** deployment and **higher heat pump** penetration in the heat sector.
- Higher **EV flexibility reduces** the need for **heat storage** utilization

## REFERENCES

[1] Sanvito et al., (2023) The role of flexibility and sector coupling in the Swiss energy system
[2] Sanvito et al., (2024) Scenario dimensions and scenario construction process - v24.03

## CONTACT

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## ACKNOWLEDGMENTS

This work was performed by the PATHFNDR consortium, which is sponsored by the Swiss Federal Office of Energy's SWEET programme.