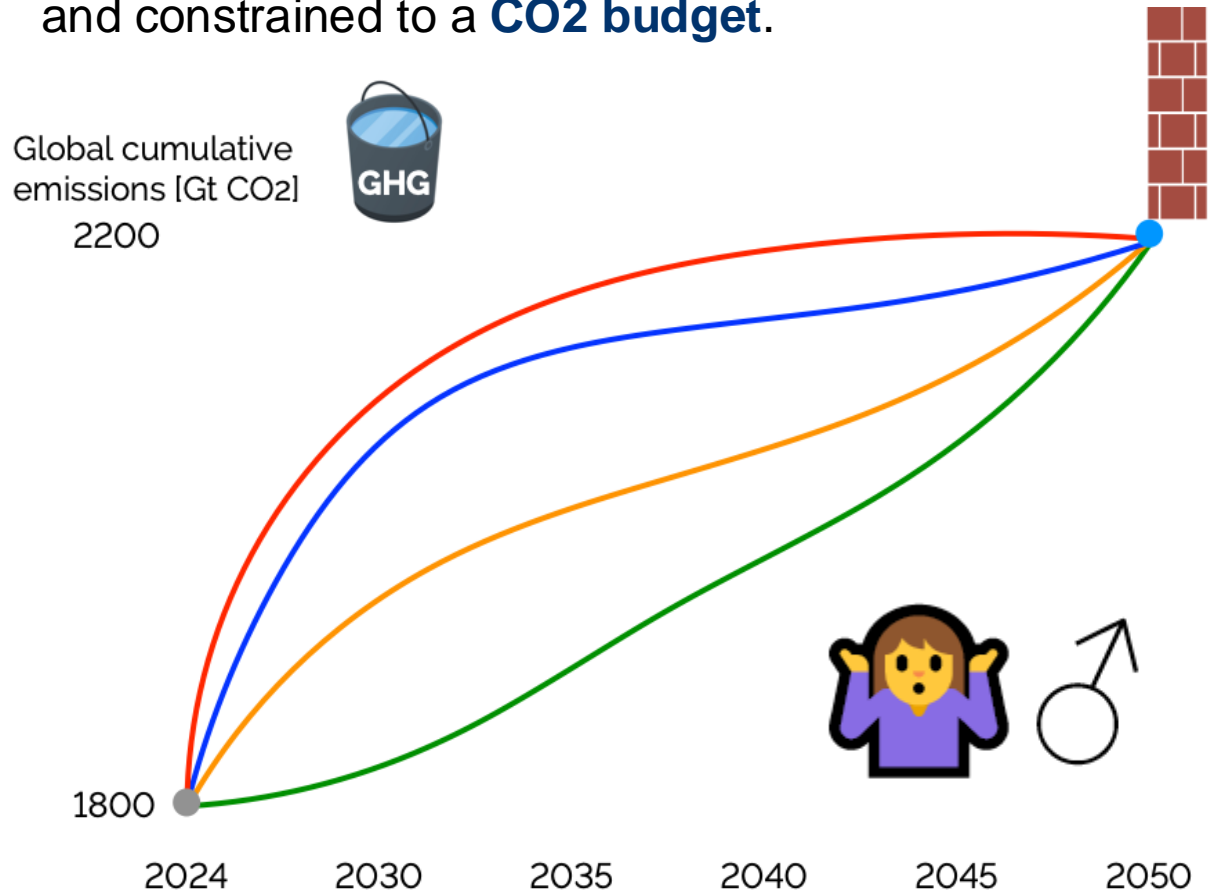


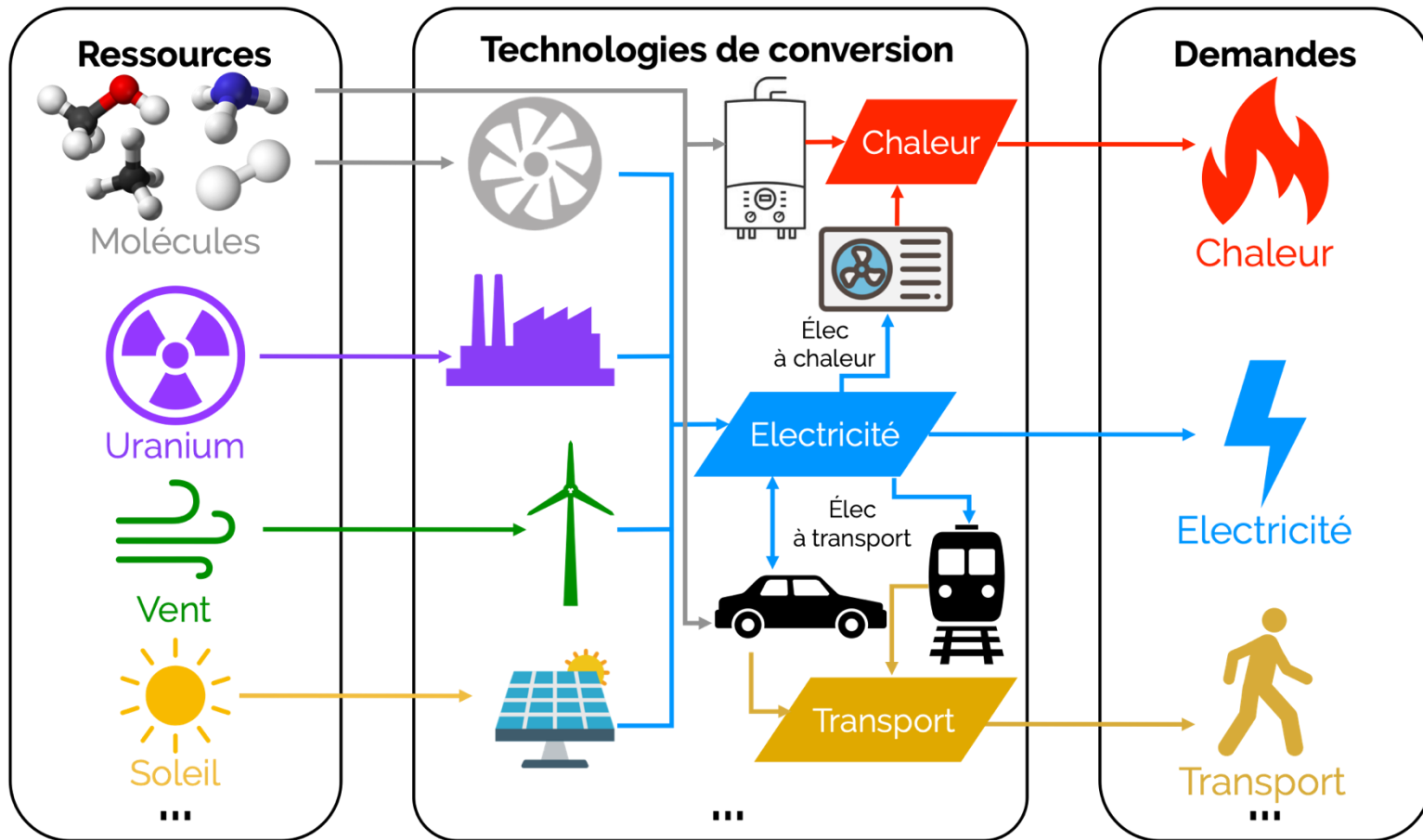
Exploration of uncertainty-aware energy transition pathways

Abstract of your research & picture of you:

- Post-doc at UCLouvain (just defended my thesis 🎓)
- How to assess the **robustness of policies** to support energy transition **under uncertainties** and constrained to a **CO2 budget**.



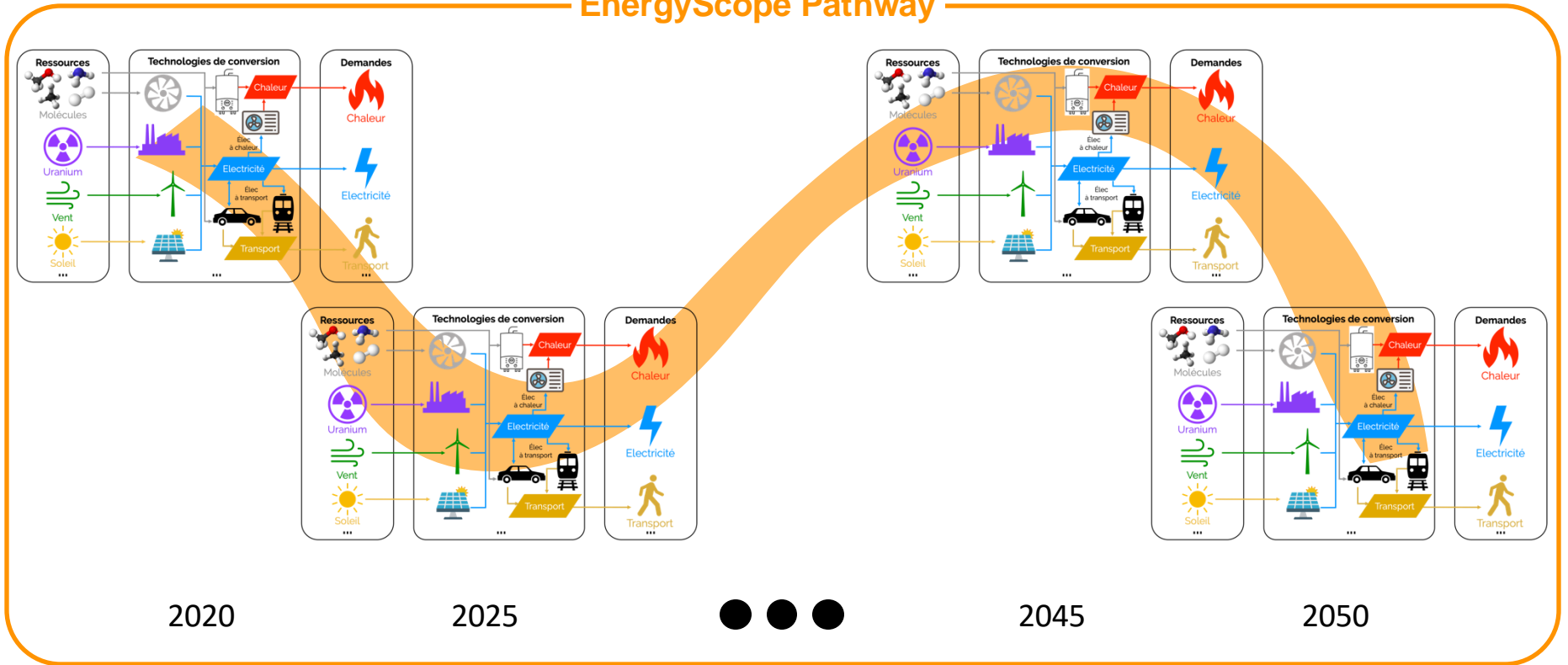
Methodology: From the optimisation of a target future year...



2050

Methodology: ... to a full transition pathway

EnergyScope Pathway



Methodology: Myopic pathway optimisation

Perfect foresight (PF)

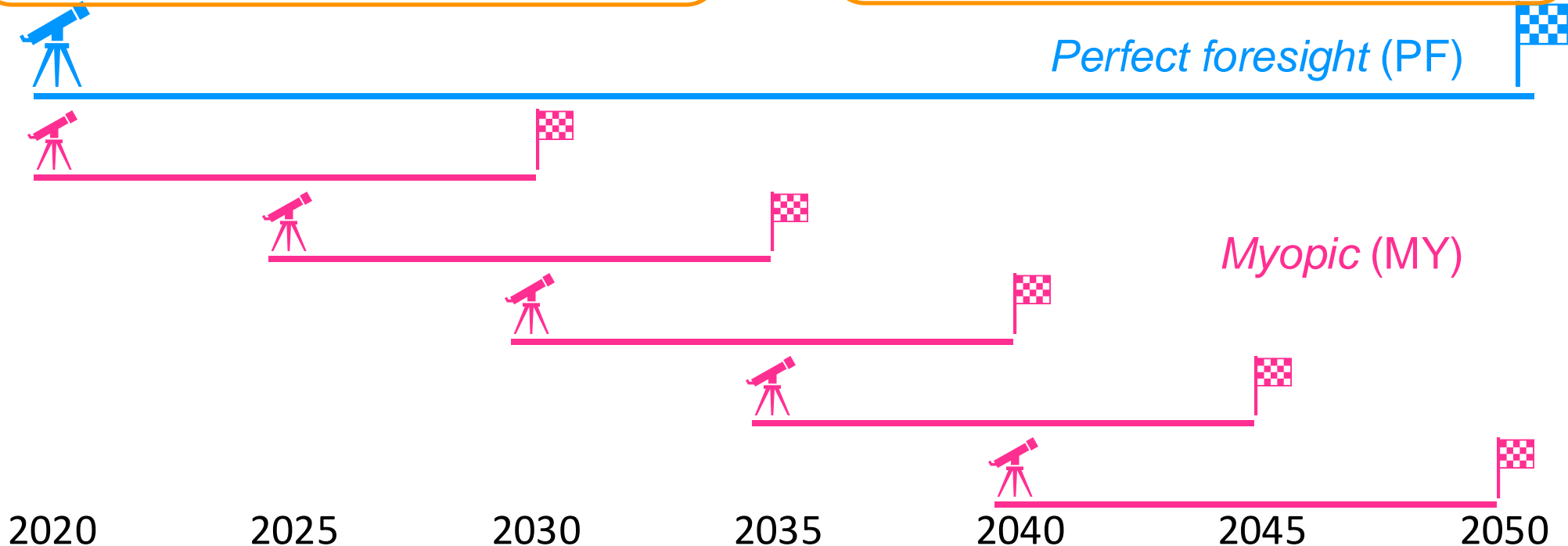
Complete knowledge on the whole horizon

Global optimisation of all the time-periods

Myopic (MY)

Limited knowledge on the whole horizon

Step-by-step optimisation



Methodology: Reinforcement Learning

Agent

What's the best sequence of actions to support energy transition under CO2 budget 🤔?

State

Action

Reward

Environment

State 0 – 2020 System

Action 1

Optimisation 2020-2030

State 1 – 2025 System

Reward 1



Action 5

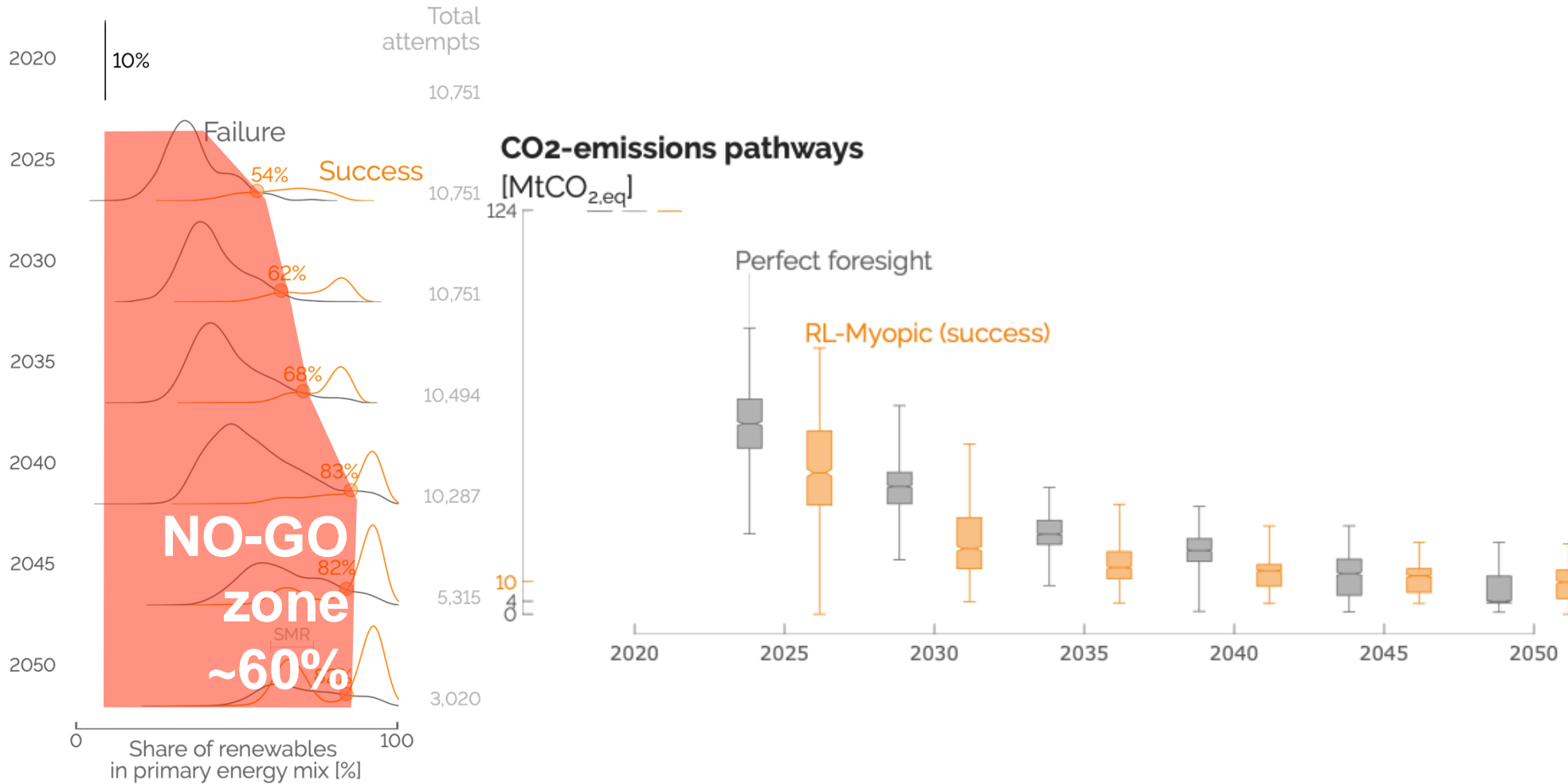
Optimisation 2040-2050

State 5 – 2050 System

Reward 5



Typical result: No-go zones & Urgency to act under myopic conditions



What I can bring and what I need:

- I can bring:
 - EnergyScope Pathway Perfect foresight & Myopic
 - Uncertainty quantification and global sensitivity analysis
 - Reinforcement Learning to optimise step-by-step energy policies
 - Principal Component Analysis to assess the robustness of technological roadmaps
- I need:
 - Documented and evolutive database