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Combining modelling and participation to build transformational water management & agricultural adaptation scenarios in water stressed areas

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Combining modelling and participation to build transformational water management & agricultural adaptation scenarios in water stressed areas



Aude aval & médiane : 3288 km²
 - 130 Mm³ water withdrawals / ~ 30% deficit
 - 70% uptakes from agriculture (90% wine)

Ambition: put stakeholders at the core to imagine and foster transformation

Stakeholder engagement : A multi-actor group : water users, state, water managers & NGOs
 > 40 stakeholders/workshop ; > 200 stakeholders in contact

Problem statement

- climate change increases significantly the water needs by crops
- & induces developments of irrigation areas
- while water resources are getting scarce because of reduced and distributional shifts of rain patterns, particularly in the Mediterranean region

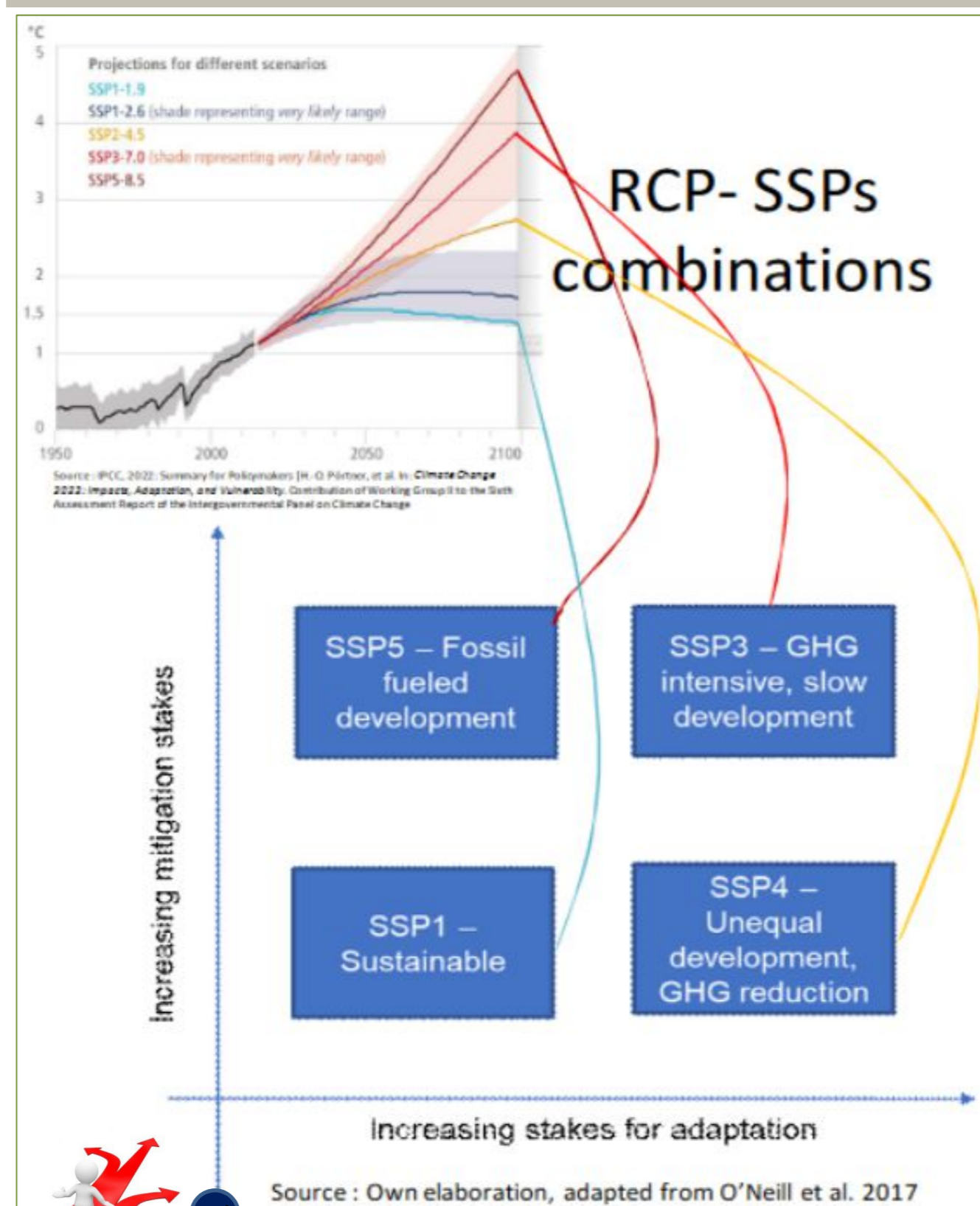
Aim

This approach & project aims at producing knowledge on alternative strategies but also ambitions to take part, and foster adaptation while participating to the ecosystem of adaptation.

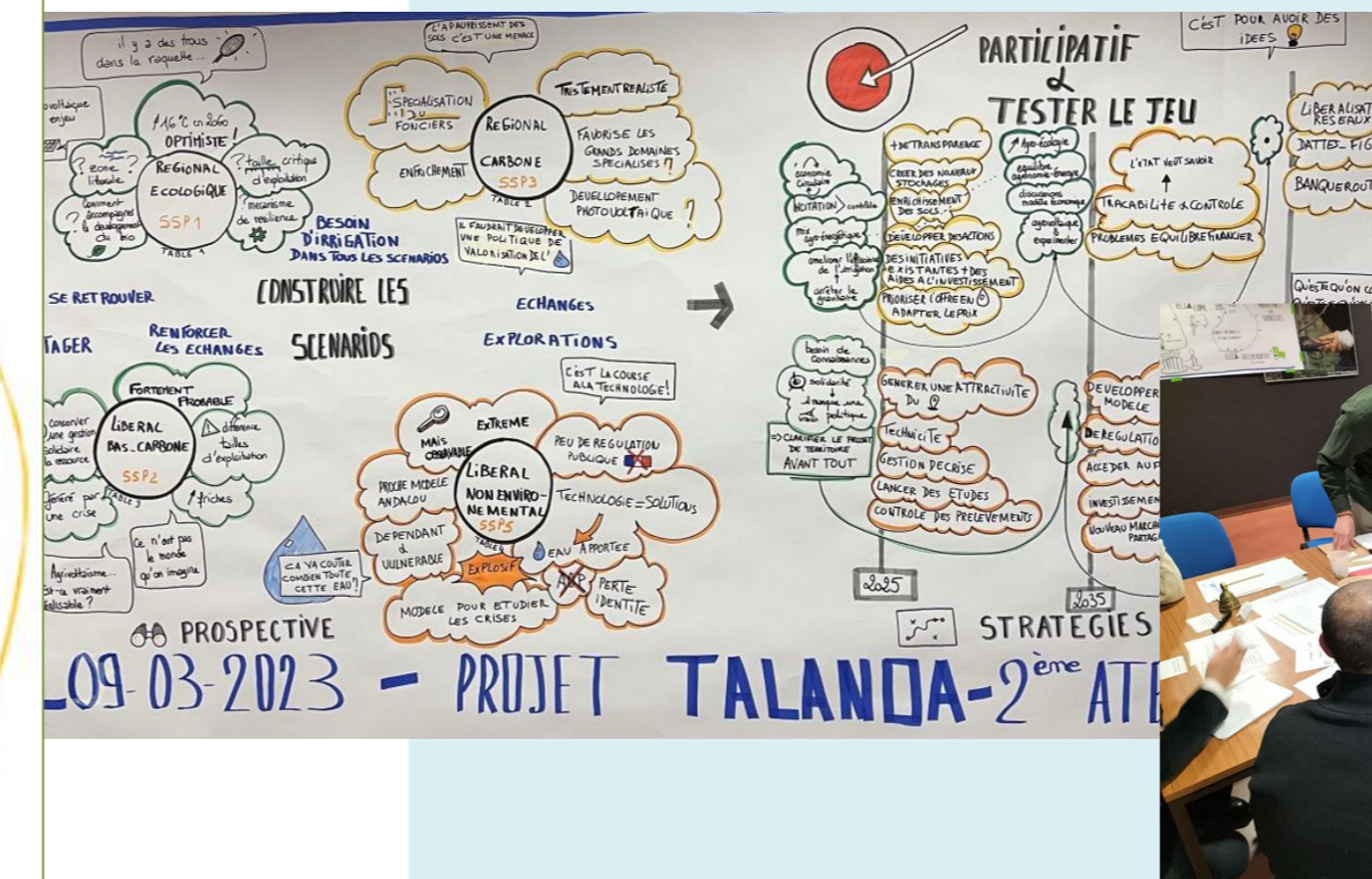
Research questions

- What are the robust and efficient strategies that would satisfy both the challenges of climate change adaptation by the farming sector and sustainable water management ?
- How to build and assess future scenarios and pathways of agricultural development and water demands and robust adaptation strategies ?

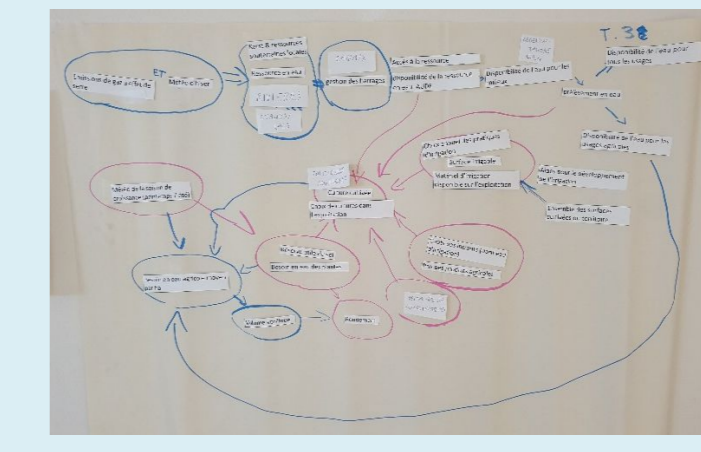
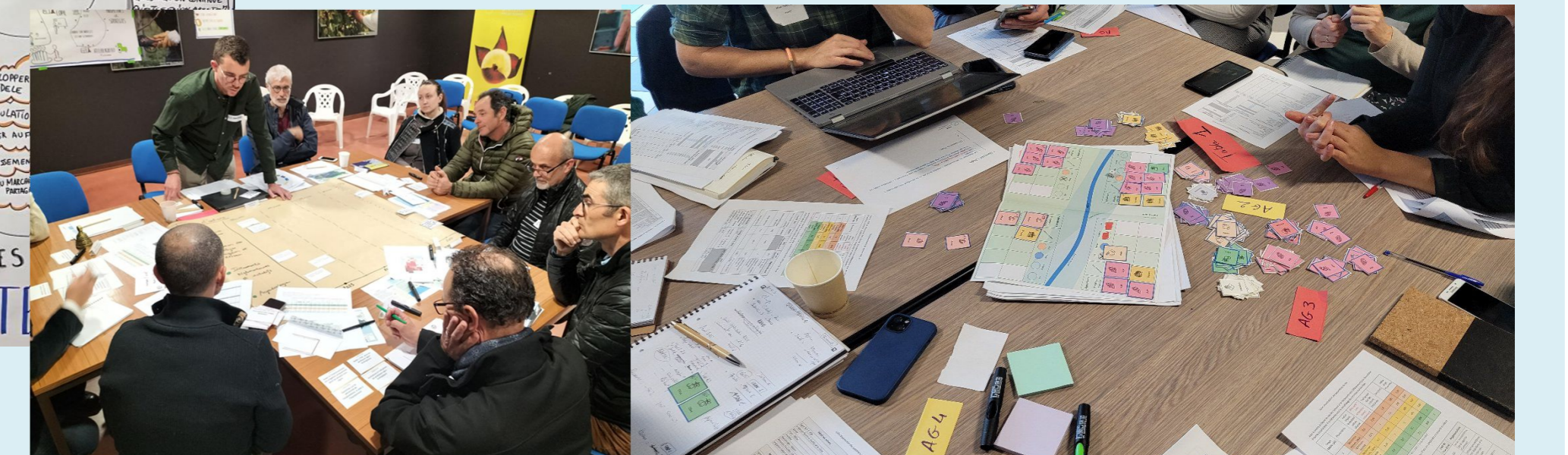
Downscaling shared-Socio-economic Pathways SSPs to the Aude basin



Stakeholders participation workshops : scenarios and adaptation strategies

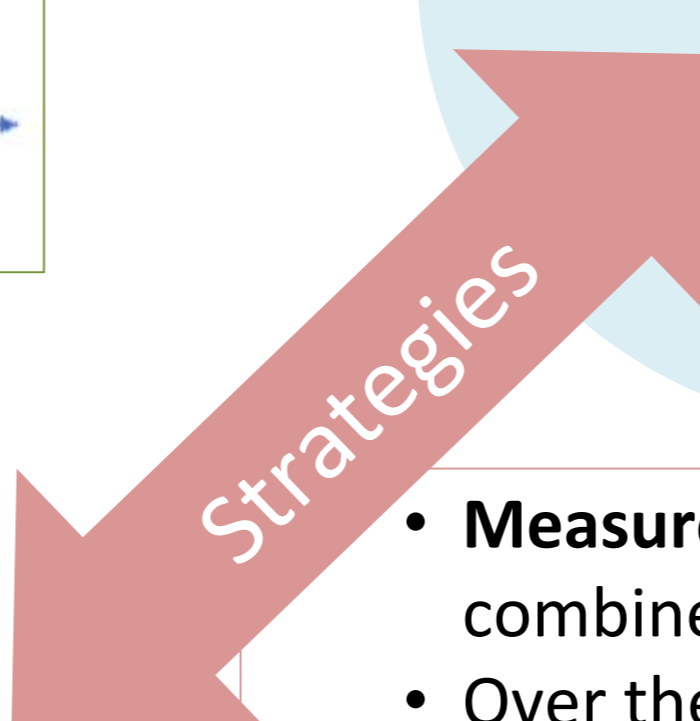
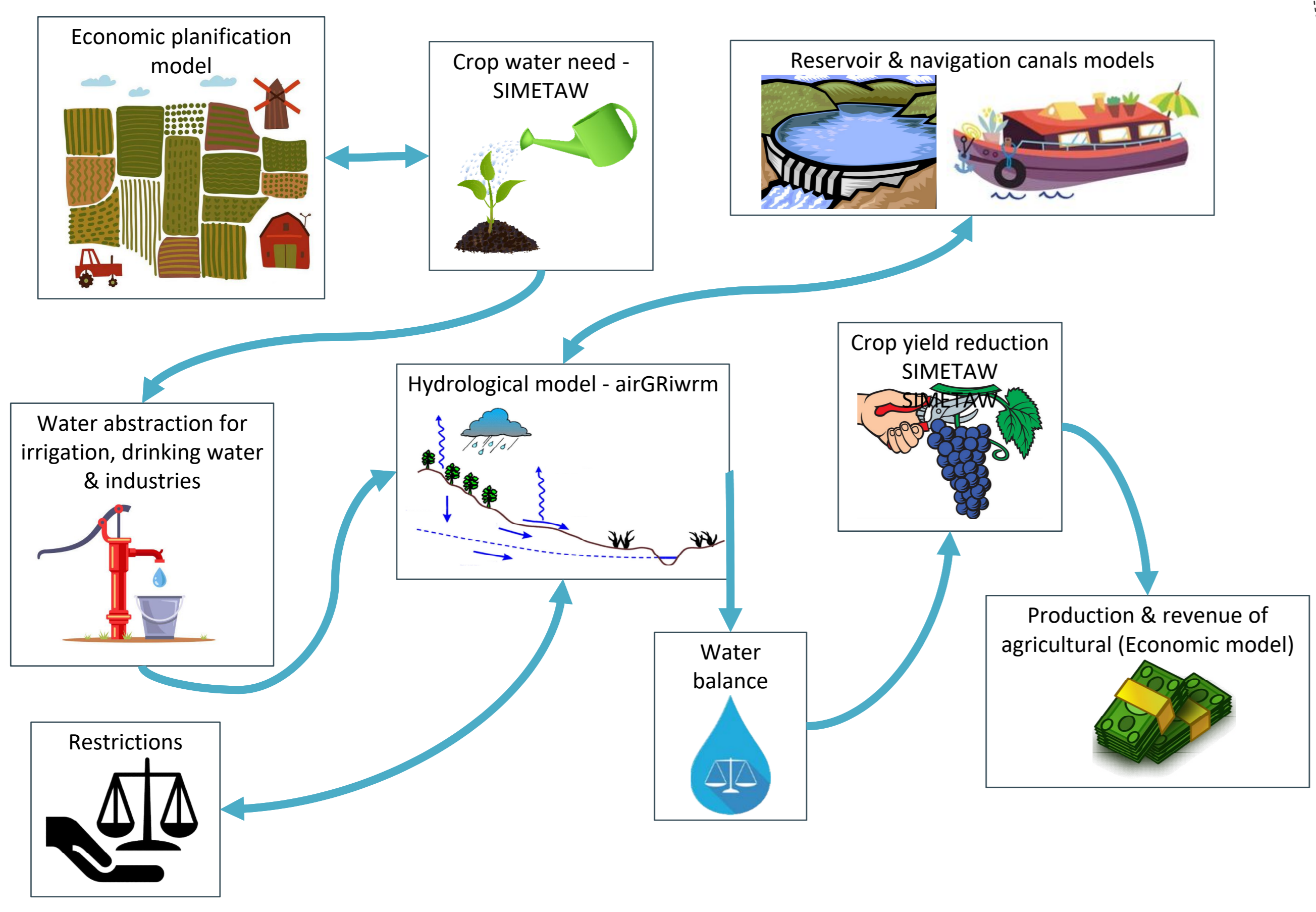


Serious games: Stakeholders imagine & assess adaptation strategies

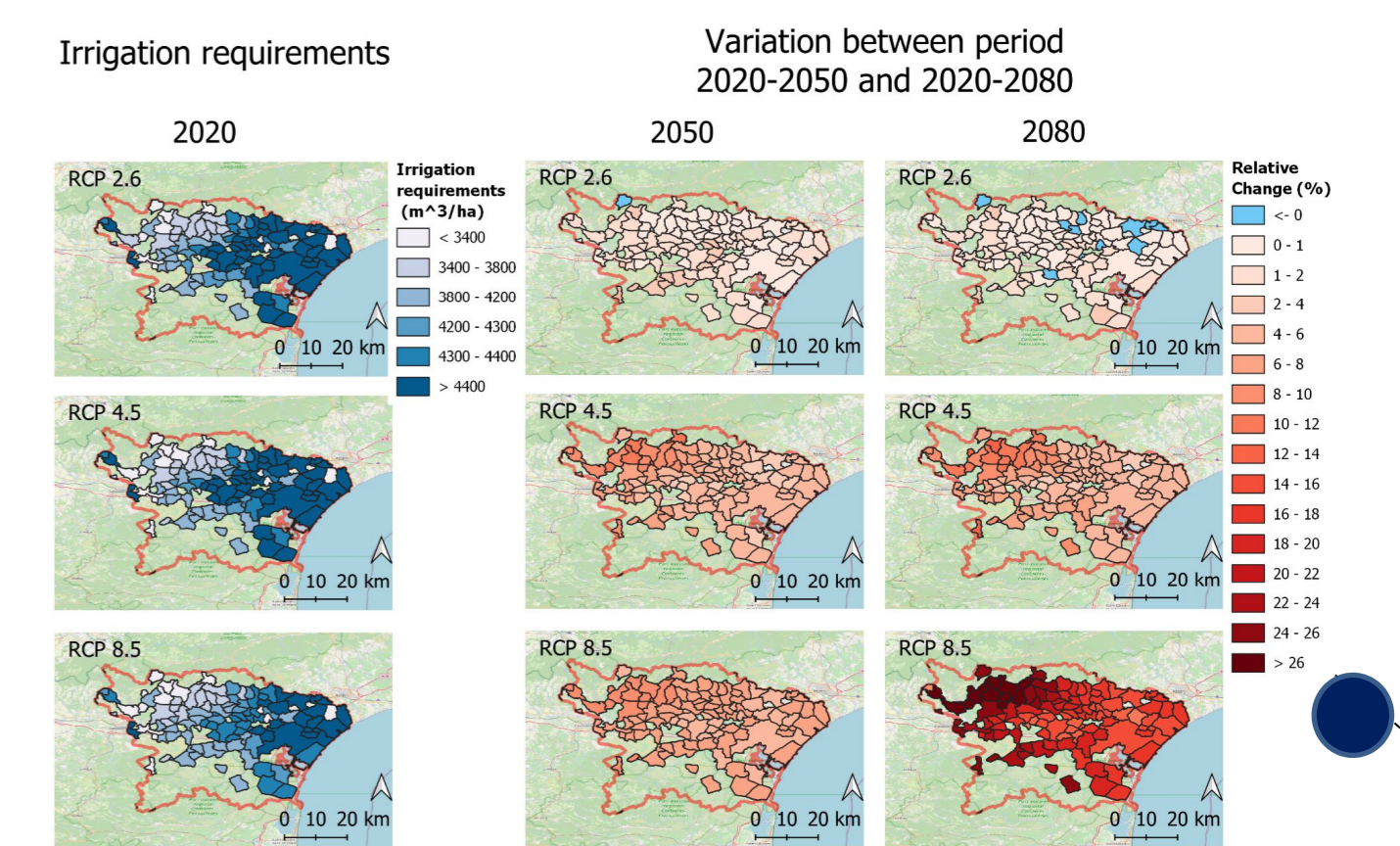


Exchanging on modeling with stakeholders

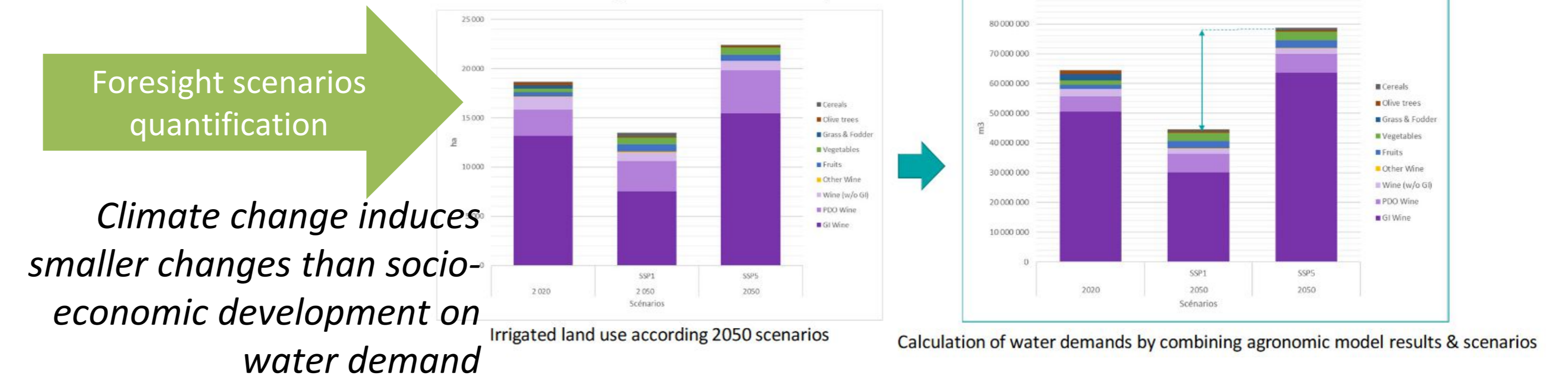
Coupling economic, agronomic, hydrological models



Measures (more than 100 identified) combined in strategies
 Over the 7 identified > 4 selected by the group :
Governance / agroecology / diversification / water resources development

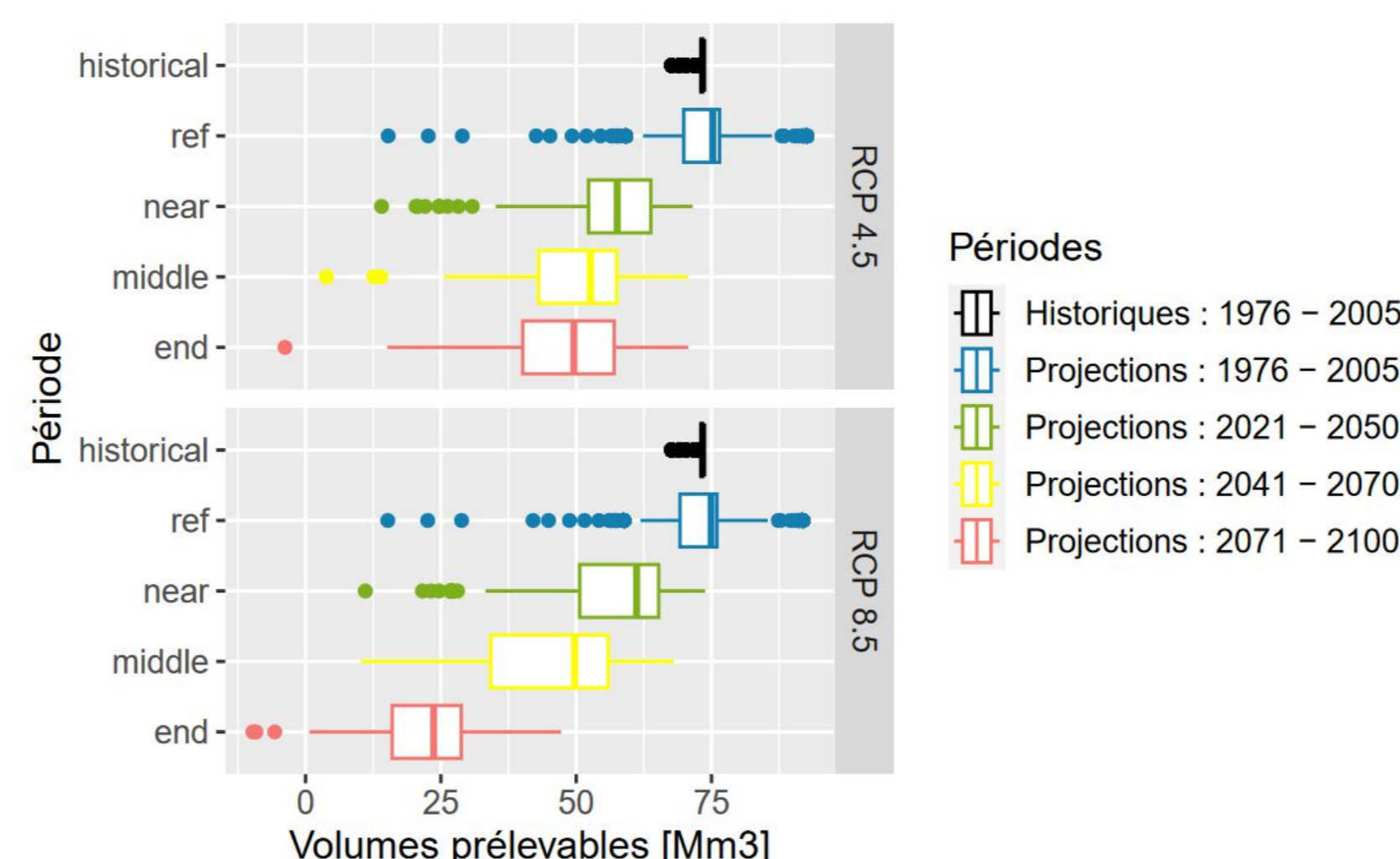


Combining foresight & agronomic model results



Foresight scenarios quantification
 Climate change induces smaller changes than socio-economic development on water demand

Hydrological model results (preliminary)
 Different water availabilities are projected depending on SSPs/RCPs



Perspectives
 * Finalisation of the integrated model
 * Co-design the follow-up of the interactions between researchers & stakeholders to boost engagement & assess robustness of alternative strategies & ensure impact
 => **Connection to policy** : Discussions with the public basin authority and the State to explore the role of TALANOA in the future Water Basin Management Plan (PTGE) study

