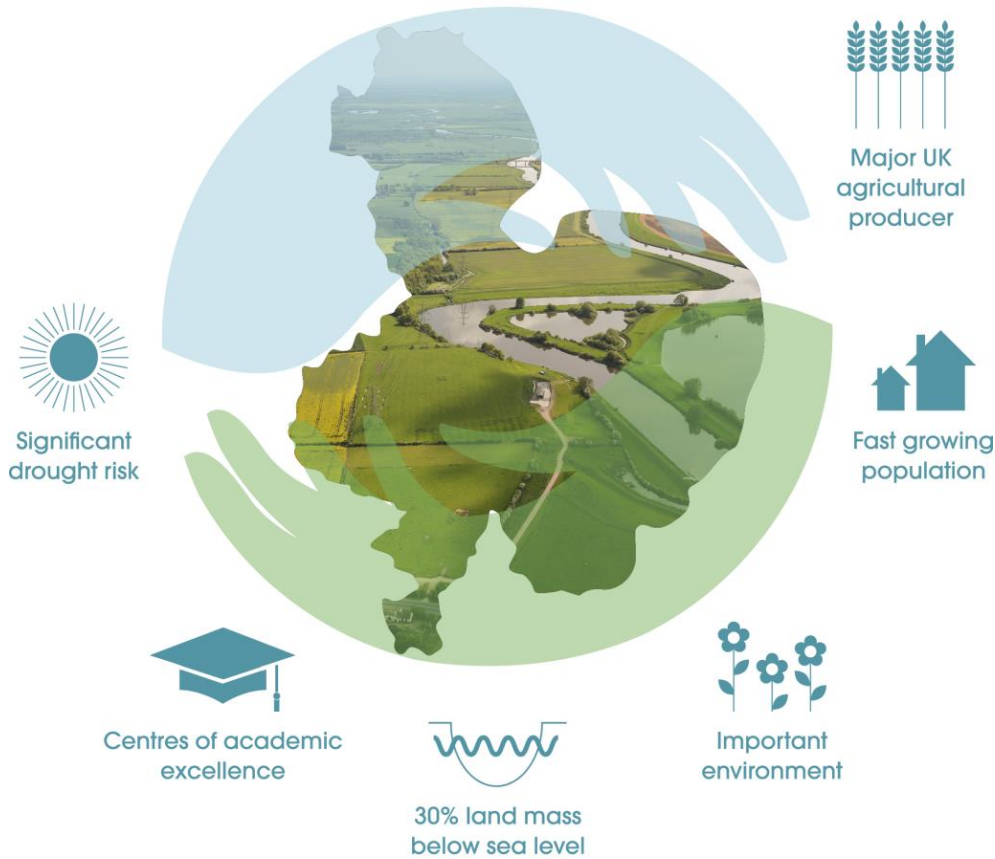




WATER RESOURCES EAST

A NEW, COLLABORATIVE APPROACH TO WATER STEWARDSHIP UNDER DEEP UNCERTAINTY

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MISSION

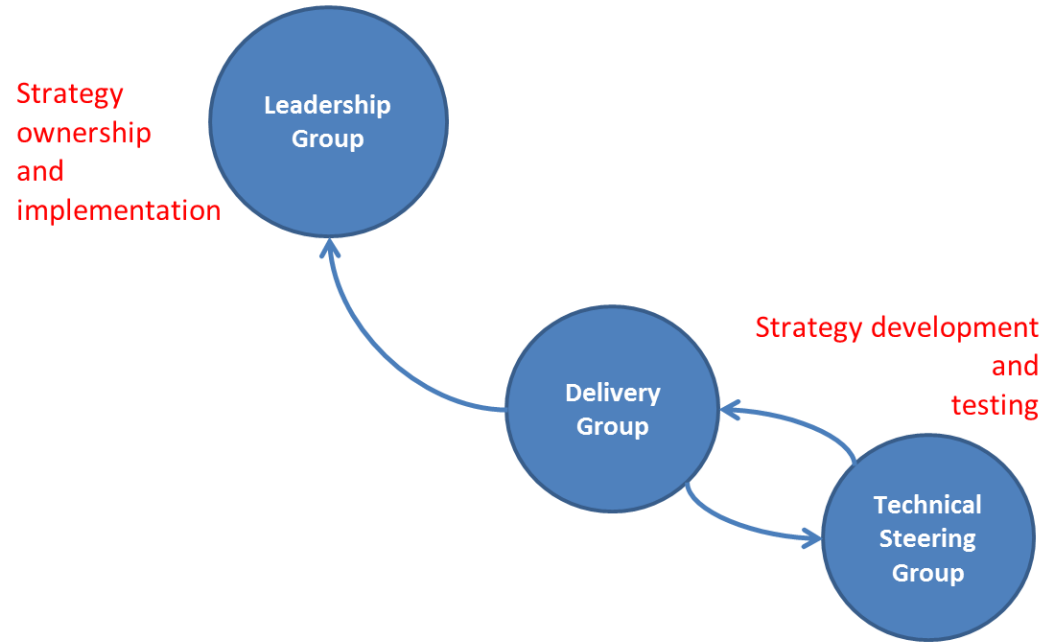
- To work in partnership to safeguard a sustainable supply of water for the East of England, resilient to future challenges and enabling the area's communities, environment and economy to reach their full potential

OBJECTIVES

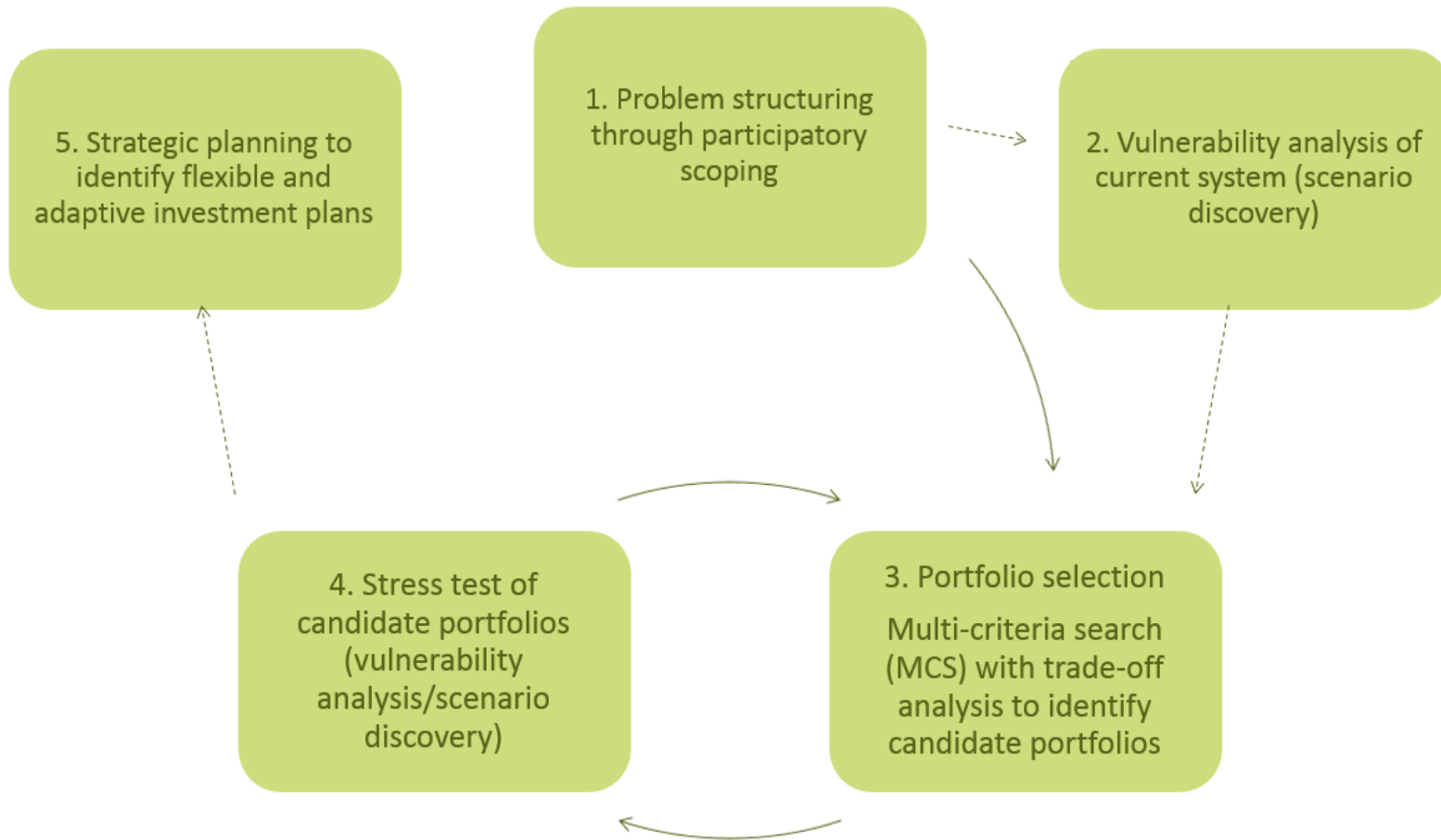
- Encouraging collective ownership of the future challenges faced by abstractors
- More efficient planning, provision and use of infrastructure
- Sharing of ideas, expertise and best practice between sectors
- Facilitating multi-sector investment approaches to ensure water resources are resilient to future challenges
- More affordable investment programmes

DECISION MAKING FRAMEWORK

- Collaborative
- Performance based:
 - Using a water resource simulator
 - With multiple criteria for success
 - Trade-offs to select schemes
- Water, energy, agriculture and environment sectors represented along with government and regulators



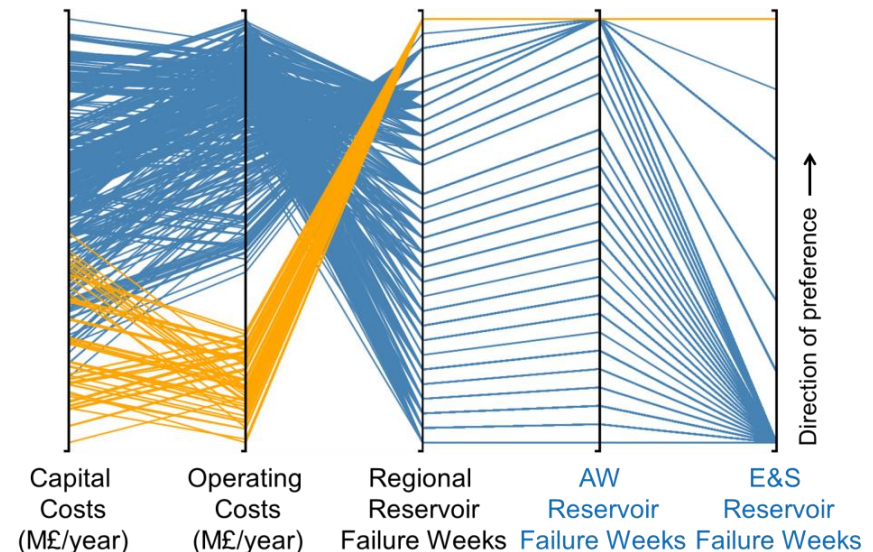
DECISION MAKING APPROACH



TECHNICAL DEVELOPMENT

- Developed a **regional, strategic simulator** to support collaborative multi-sector decision making. This is a computer model that represents strategically important supplies and demands of water and future possible options
- Considered **396 unique scenarios**. Each scenario is evaluated over 200 stochastically generated 91-year weather records, which include droughts worse than those experienced in the historic record.
- Partners have identified **performance metrics** against which to measure how well portfolios meet their needs. These have been **traded-off** using a web-based portal and workshops.

Scenario Type	Scenario
Time slice	2040's, 2060's and 2080's
Emission scenario	Low, medium and high
Climate	11 UKCP09 climate scenarios
Socio-economic	High and low growth Sustainable and uncontrolled demand
Drought related effects	200 91-year stochastic weather traces



KEY LEARNING POINTS

- Need to **simplify and articulate “the problem”**:
 - By summarising implications of scenarios
 - In language stakeholders can understand
- However, **not always easy to identify scenario contribution** in system model
- Distinction between **uncertainties that were quantified** (in 396 scenarios and 200, 91-year weather records) and **others that could not be** easily (e.g. data quality) or not at all (e.g. aspects of technological innovation)
- **Simulator complexity** included multi-sectors and dynamic groundwater, but this meant only 12 selected scenarios could be used in the Search
- **There are scenarios that always cause problems**: one in particular was isolated to constrain problem
- Stakeholders have very **different issues, risk tolerance and solution preference**
- Do not underestimate the **status quo!**
- With large future uncertainties, **need very large number or/and size of options**
- **Iterative approaches are best**: to modelling and stakeholder trade-offs
- **Identifying and addressing key trade-offs** will facilitate strategy development
- **Significant time and resources** are required

CRITICAL FACTORS IN ADOPTING LONG-TERM DECISION APPROACH

- Significant **long-term uncertainties**
- Need to **avoid stranded assets** whilst **ensuring security of supply**
- **Long infrastructure lead-in times**
- **Collaborative approach**: need for stakeholder understanding and buy-in
- **Different sectors operate at different speeds**
- **Blend of approaches required**: analytical and 'on the ground' e.g. catchment

