Multi-scale water resources planning in England and Wales

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WATER INFRASTRUCTURE AND RESILIENCE
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Schematic illustrating interconnected considerations for water resources planning in England and Wales. Supply aspects include climate change, proposed schemes such as desalination and the Abingdon reservoir. Supply-network related aspects include the proposed Severn-Thames transfer. Environmental aspects include the chalk streams. Demand related aspects include population growth in the Ox-Cam Arc and irrigation demands in the agriculturally productive regions in East Anglia.

The Environment Agency projected a shortfall of 3.5 billion litres per day for England by 2050.

Although the UK is known for being wet, rainfall is unevenly distributed and the most populous regions with the greatest demand are also the driest.

Water resources planning needs to ensure a resilient water supply that is able to provide for a growing population under future drought conditions in a way that supports the environment. In light of the projected deficits, regulators have called on water companies to reduce leakage, encourage demand reduction, and invest in new infrastructure such as new reservoirs, desalination, inter-basin transfers, and effluent re-use schemes.

"£21 billion investment could avoid £40 billion in emergency costs over the next 30 years"

National Infrastructure Commission

Some of the schemes proposed require collaboration across current planning boundaries. To meet this challenge, five regional groups were established to align their water resources plans to close the projected national deficit.

However, aligning the higher level, regional plans with zonal and local level planning presents a challenge. Local planning considers a wider set of problems at a more granular level. The differences in aims, objectives, strategies, values, and working practices may lead to tensions between the different scales of decision-making.

Research aim: To understand multi-scale Water Resources governance in England and Wales (2020-2023) and propose how decision making can be optimised and aligned across scales.

Qualitative analysis will be carried out to evaluate the planning approaches being used (see box). Alongside evaluating the changing landscape of water resources governance this project aims to explore how decision making methods can help align plans across multiple scales.

Different decision making tools and methods such as multi-criteria analysis, robust optimisation, and adaptive planning can be used to break down complex decisions, explore trade offs between options, and help select resilient strategies.

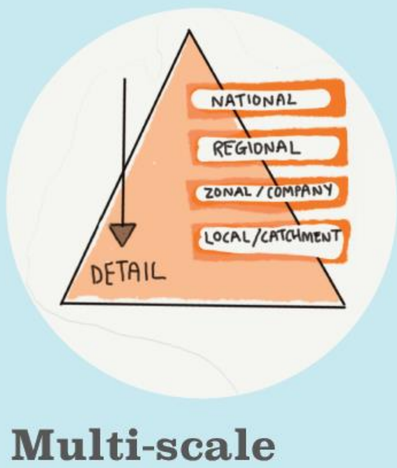
Outcomes of this research will help identify how these tools can be applied in a real world setting to create aligned plans that represent best value for everyone.

QUALITATIVE ANALYSIS

The companies and regulators are meeting between Aug-Dec 2021 to align regional plans ahead of the consultation stages.

I plan on interviewing some of the key actors before and after this process to capture the views of those involved.

The analysis will help to illuminate any lessons that can be learnt from current approaches, and if any barriers exist to successful multi-scale water resources planning.

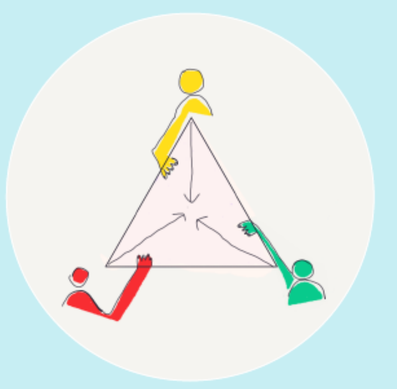


Multi-scale

Plans must align across scales despite different levels of granularity.

Multi-criteria

Planing should incorporate multiple objectives such as environmental net gain, social wellbeing, and carbon (net) zero.



Democratic and participatory

Planning should reflect the values of all stakeholders.

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