

# Stress-testing Scotland's Multifunctional Water Resources Against Systemic Risks



Scottish Government  
gov.scot

**Sajid Karim**

UNESCO Centre for Water Law, Policy & Science, University of Dundee

Email: 2553034@dundee.ac.uk

Hydro Nation Scholars Programme

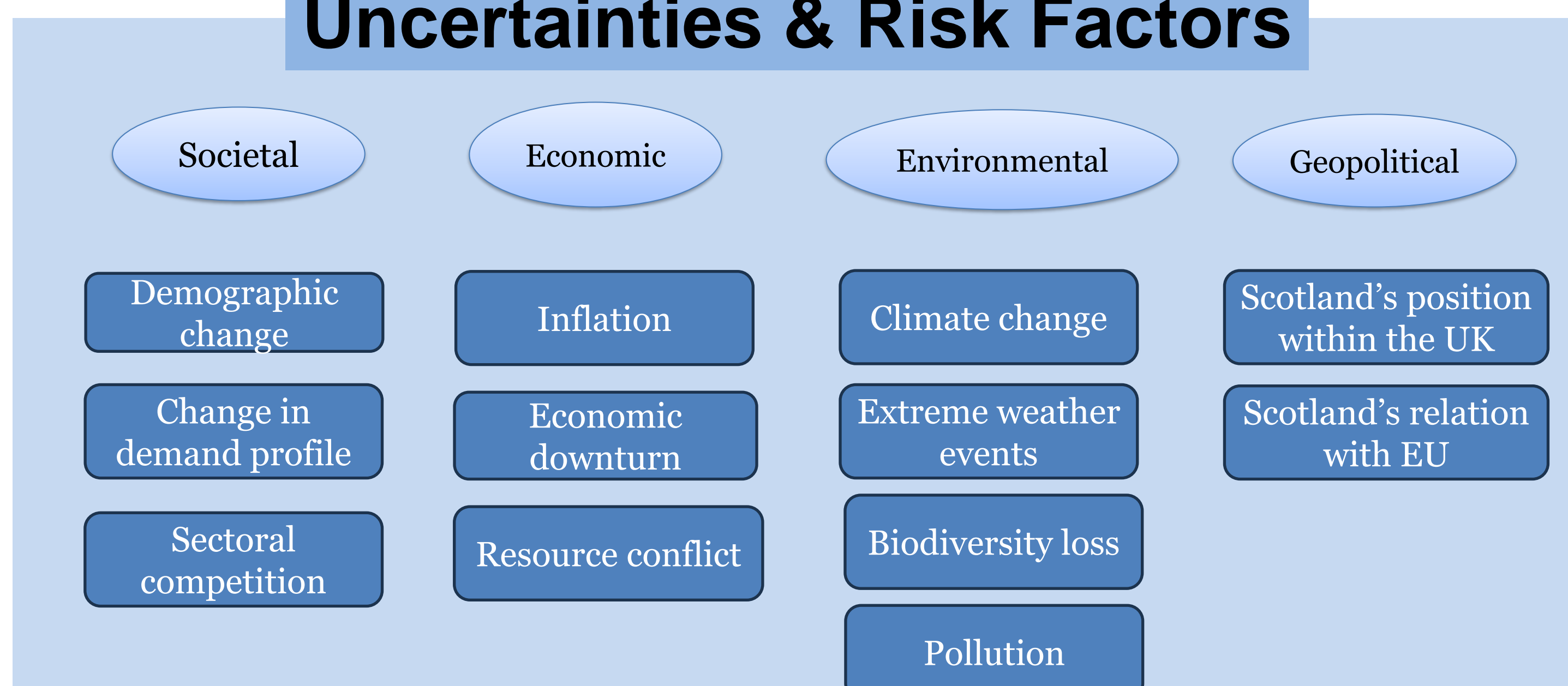
The aim of the research project is to stress test the resilience of Scotland's water governance to systemic risks and evaluate the robustness of its response options against future stresses and uncertainties.

## Water Governance Stakeholders



This simplified representation attempts to capture the diverse range of stakeholders involved in water governance in Scotland. This list is not exhaustive, and the categorisation is not mutually exclusive. Some stakeholders can fall under multiple categories.

## Uncertainties & Risk Factors



## Objectives

- ❑ Define and analyse the water governance system in Scotland across multiple levels and identify the synergies and trade-offs
- ❑ Map key stakeholders, their relationships, interactions and potential tensions, along with their roles within the system
- ❑ Develop future scenarios by considering societal, economic, geopolitical trajectories and environmental risk factors and
- ❑ Examine the resilience of Scotland's water governance against future scenarios, along with the robustness of its response options

## Project Plan

### Framework Development

- Defining the system
  - Identifying the elements and their interconnectedness

- Literature review
- Expert interviews

### Stakeholder Analysis

- Identification
- Characterisation
- Investigation

- Semi-structured interviews
- Content analysis & WCM
- Multi-stakeholder dialogues

### Scenario Building

- Exploratory Scenario Planning
  - Business as usual*
  - Changes with low disturbance*
  - Changes with high disturbance*
  - Massive and abrupt changes*

- DELPHI
- Historical data analysis
- Stakeholder workshops

### Stress-testing

- Resilience of water governance and robustness of response options

- Data analysis
- Stakeholder workshops

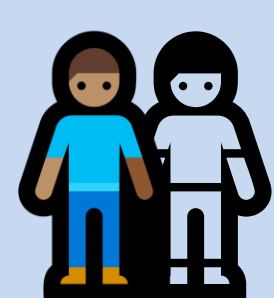
## Contribution



Decision-making



Academia



Society

## References

- ❑ Brown, I. et al. (2015) 'Identifying robust response options to manage environmental change using an ecosystem approach: a stress-testing case study for the UK', *Environmental Science and Policy*, 52, pp. 74-88.
- ❑ Kramer, K. et al. (2022) 'Roadmap to develop a stress test for forest ecosystem services supply', *One Earth*, 5(1), pp. 25-34.
- ❑ White, C. et al. (2017) 'Developing and piloting a UK Natural Capital Stress Test: Final Report', AECOM and Cambridge Econometrics for WWF-UK.

I wholeheartedly acknowledge the guidance of my two supervisors: Professor John Rowan, PhD, and Iain Brown, PhD, in developing and supervising the project and the Hydro Nation Scholars Programme for funding the project.



University of Dundee