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

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Not-for-profit bodies

Rivers & Fisheries Trusts

WaterAid

Scottish Flood Forum

Water Safety Scotland

Scottish Swimming

Citizens Advice Scotland

National Trust for Scotland

Zero Waste Scotland

Scottish Wildlife Trust

Woodland Trust

Outdoor Access

Scottish Coastal Forum

Marine Conservation Society

Scottish Environment Link

Home Energy Scotland

Nat. Farmers Union Scotland

Partnerships

Farming and Water Scotland

NetRegs



Hydro Nation Scholars Programme

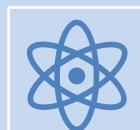
Developing a participatory future-proofing framework for resilient water governance in Scotland

1. Background

Water Governance: A Wicked Problem



Complexity



Diversity



Uncertainty

2. Water Governance Stakeholders

Multistakeholder Bodies Alliance Water Stewardship Property Flood Resilience Delivery Group (PFRDG) **UK Irrigation Association** Hydro Nation Forum

Private

Sector

Bodies

Community and

Individuals

Domestic users

Agriculture & farming

users

Industrial users

Recreational users

Private water users

Research and Educational Bodies Universities Research Institutes

Water Governance in Scotland

Environmental and Conservation **Bodies**

> **Commercial/Trade Bodies** Scottish Water Horizons Scotch Whisky Association **Business Energy Scotland**

> > Scottish Renewables

Scottish Chemical Industry

Scottish Canoe Association

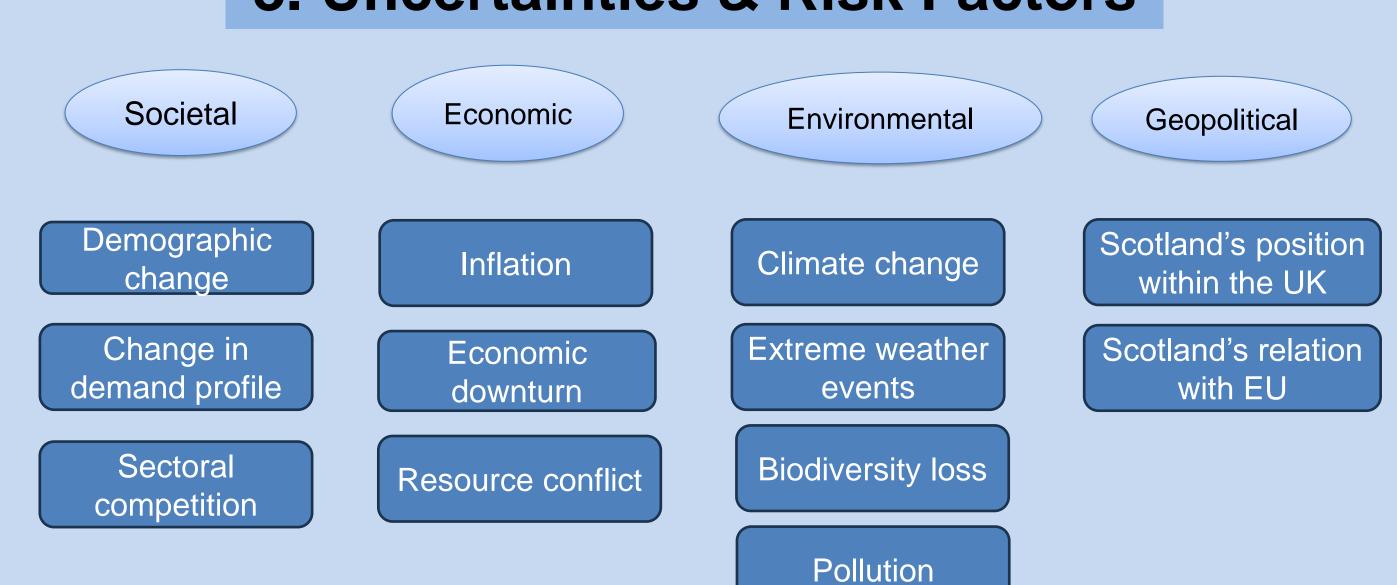
Angling Scotland

Public Sector/Statutory Bodies Scottish Government Scottish Water Scottish Environment Protection Agency (SEPA) Drinking Water Quality Regulator for Scotland Water Industry Commission for Scotland **NatureScot Scottish Canals** Consumer Scotland Convention of Scottish Local Authorities (COSLA) District & Sub-district Flood Risk Advisory Groups Forestry and Land Scotland Highlands and Islands Enterprise Scottish Local Authorities National Park Authorities Public Health Authorities Ready Scotland Scottish Enterprise Scottish Land Commission Scottish Public Services Ombudsman South of Scotland Enterprise Agriculture and Rural Economy Directorate District Salmon Fishery Boards (DSFBs)

Visit Scotland

Scottish Aquaculture Council

3. Uncertainties & Risk Factors



4. Objectives

- Define and analyse the water governance components for Scotland
- Map key stakeholders and interrelationships
- Co-develop plausible future scenarios informed by socio-economic, environmental & geopolitical trajectories—with potential risks
- Assess the resilience and robustness of the system
- Devise strategies to make the system adaptive to shocks & uncertainties.

5. Project Plan

Framework Development

Defining the system Identifying the elements and their interconnectedness

Stakeholder Analysis

Interest-influence matrix Actor-linkage matrix

Scenario Building

Exploratory Scenario Planning

- Business as usual
- Changes with low disturbance
- Changes with high disturbance
- Massive and abrupt changes

Stress-testing

Assessing the resilience and robustness of the system

Literature review Expert interviews

Semi-structured interviews Content analysis & WCM Stakeholder workshop

DELPHI

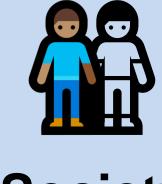
Historical data analysis Scenario workshop

Data analysis Strategy workshop

6. Contribution







Academia

Society

7. 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.





