

## Rural Water Security: understanding water security challenges in Scotland and the potential for community action and social innovation

Dr Diana Valero  
The James Hutton Institute, Craigiebuckler, Aberdeen  
Email: diana.valero@hutton.ac.uk



“Water security”, in alignment to the human right to safe drinking water and the SDG 6, refers to the safeguarding of everybody’s access to enough safe water, at affordable cost while ensuring the protection of the natural environment.



- 4 dimensions of concern: quantity and quality of the water resources, and reliability and affordability of the provision.
- When access to water is compromised in any of those dimensions, which heavily impacts the health and wellbeing of people, we talk about “water insecurity”.

The climate crisis threatens access to water in overlapping and intersecting ways that are shaped by the risks of weather-driven impacts on water, and the interplay of geographical and social conditions that include water governance, management arrangements, and intersecting social and economic inequalities<sup>1</sup>.

Building on political ecology and focusing on rural Scotland, the Fellowship has developed a portfolio of studies that provides empirical and theoretical contributions in four main areas to advance integrated understanding under the climate crisis. These 4 main areas are:

### 1 Water Security in Scotland

- Scotland is traditionally seen as a water-abundant country, and so oblivious to water insecurity.
- The analysis of ~500 policy documents (2001-2021) evidence an emerging public narrative of challenges in all dimensions of water security. According to this narrative, access to water in Scotland, almost idyllic, is threatened by climate change.
- This narrative shows signs of discursive depoliticization of water insecurity, highlighting the invisibility of political choices and a lack of in action plans that evidence an existing tension between resilience and change.

Table 1 – Characterisation of the access to water in the emerging narratives of water security in Scotland

Water security dimensions	Scotland’s water identity	Climate change threats	Concerns for Private Water Supplies (PWS)
Quantity	Water-rich country	Water scarcity	PWS running out in dry periods (e.g. 2018)
Quality	High-quality waters	Pollution threats	Shortcomings in quality
Reliability	Utility provider serving the community	Need for further investments	Dependency on power grid and on external support in crisis
Affordability	Low charges	Escalating bills to finance increasing costs	High costs of maintenance or finding alternatives

### 3 Challenges for rural supplies

- PWS are vulnerable to a range of quality and reliability risks which are exacerbated as the climate crisis impacts the quantity, distribution and frequency of precipitation.
- Around 3.5% of Scottish population (i.e. 190,000 people) are not connected to mains and rely on private water supplies (PWS)<sup>2</sup>. Connection to mains is not always possible, and when it is, charges levied by Scottish Water and contractors can be prohibitive.

### 2 ...and from Scotland to elsewhere:

- Along with work in RESAS JHI-D2-1 on the resilience of Private Water Supplies<sup>[\*]</sup>, we are developing the notion “water insecurity in unexpected places” for exploring water-related challenges.
- Characteristics of places where water insecurity is “unexpected”:
  - Water abundant and/or in wet temperate climates
  - Mature systems of water governance
  - Water mostly supplied through centralised provision
  - No mainstream narrative of water supply challenges

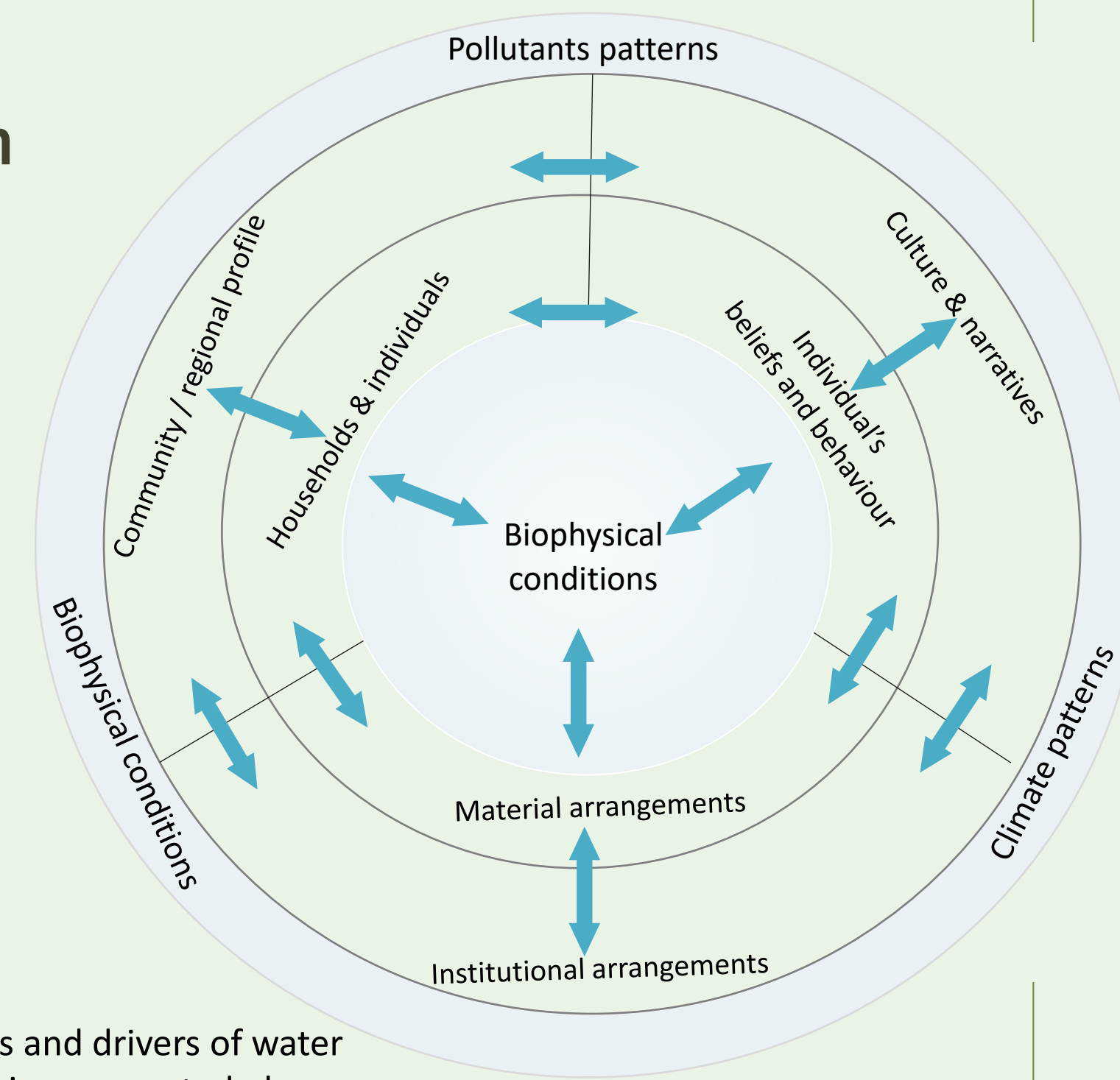
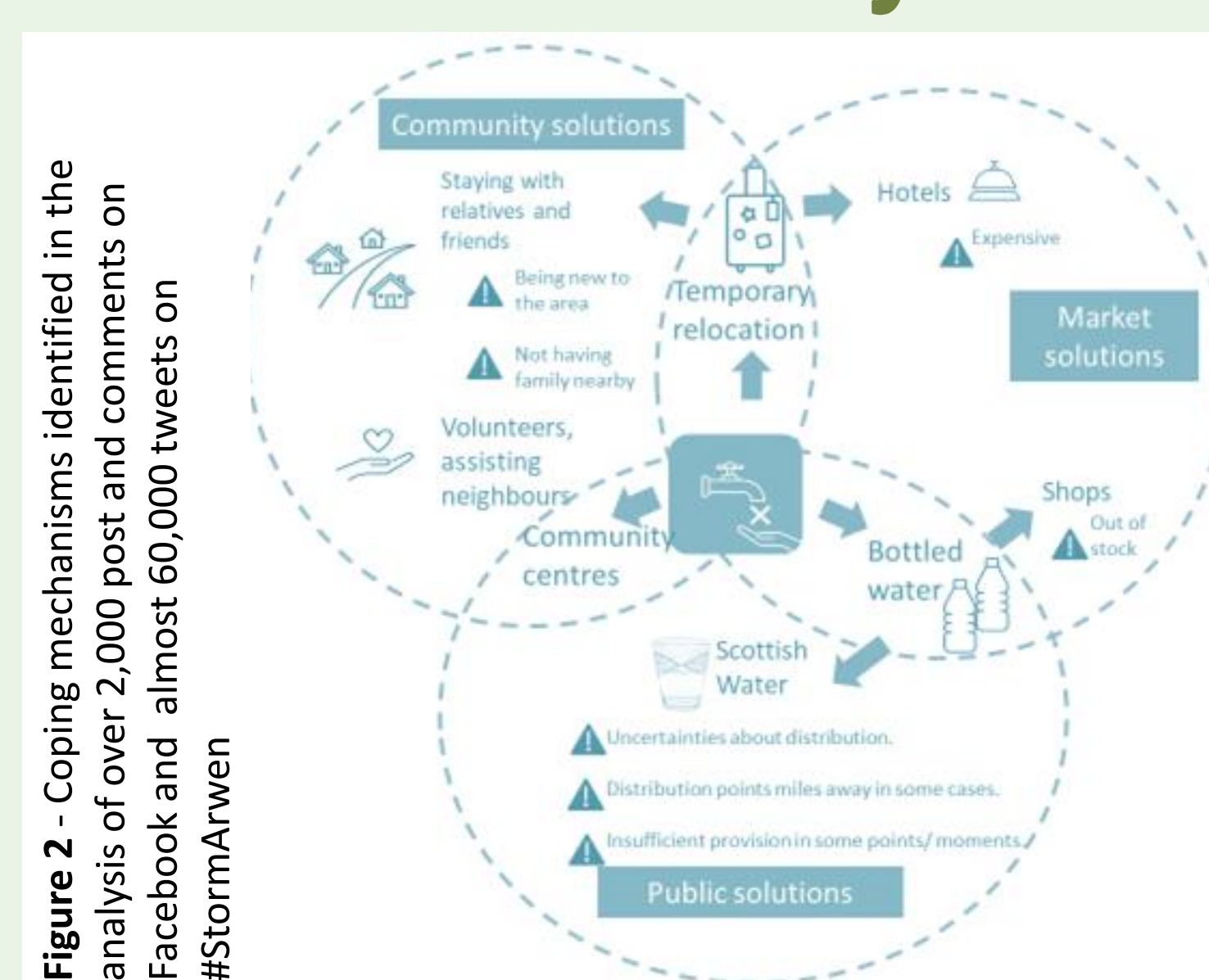


Figure 1 – Dimensions and drivers of water insecurity in unexpected places

### Community action and innovation



The community spirit and solutions offered by communities were critical in the water supply crisis that followed Storm Arwen in 2021 and affected thousands of households in North East Scotland<sup>3</sup>.

- Social innovation in rural water supplies appears in *commoning* processes that redefine citizenship in terms of rights and responsibilities.
- Empowering community action in the provision of water services requires enhanced engagement that combines targeted interventions with long-term co-constructed approaches<sup>4</sup> that include clear route maps and engage “communities of outrage”<sup>5 [\*\*]</sup>.

### Collaborators:



[\*] The Fellowship develops research on resilience of PWS in close collaboration with the project JHI-D2-1, “Emerging water futures”, which is funded by the Scottish Government Strategic Research Programme 2022-2027. Current and former collaborators in this project include the Hutton researchers Dr Rowan Ellis, Dr Keith Marshall, Alba Juarez-Bourke and Katy Joyce

[\*\*] Research on enhancing engagement for community innovation in water services was developed in collaboration with the following projects:

- CREW 2020/09: Key barriers to engaging with private sewage system users and tools and approaches to successful engagement with users. Project funded by the Scotland’s Centre of Expertise for Waters and led by Dr Rowan Ellis.
- HNC Wastewater: Increasing wastewater stewardship. Project funded by the Hydro Nation Chair R & I Programme Catalyst Fund and led by Dr Diana Valero. Collaborators include researchers in the Glasgow Caledonian University and the University of St Andrews

#### References:

- 1 – Valero, D., Cook, J., Lee, A., Browne, A., Ellis, R., Pancholi, V. and Hoolohan, C. (2023). Addressing water poverty under climate crisis: Implications for social policy. *Social Policy and Society*. doi: 10.1017/S1474746423000258
- 2 - Drinking Water Quality Regulator for Scotland (DWQR). (2023). *Private water supplies. Drinking water quality in Scotland 2022*. <https://dwqr.scot/media/1pijhubk/pws-annual-report-2022.pdf>
- 3 - Valero, D., Ellis, R. and Gray, R. (2022) ‘The digital footprint of #StormArwen and the disruption of water supplies’, *The James Hutton Blogs*, <https://www.hutton.ac.uk/blogs/digital-footprint-stormarwen-and-disruption-water-supplies>
- 4 - Ellis, R. and Valero, D. (2022). *Overcoming barriers to engaging with private sewerage users in support of sustainable rural water services*. CREW Project 2020/09.
- 5 - Valero, D., Pahl, O., Helwig, K., Holstead, K., Henderson, F. and Gray, R. (2023). *Framework of multidimensional engagement for enhancing wastewater stewardship*. Wastewater Deliverable. doi: 10.5281/zenodo.8377029

Scan me for details

