

Responding to extreme weather events

Climate change is expected to increase the frequency of extreme weather events such as heatwaves, flooding and hurricanes. An effective response requires joined-up activities across sectors managing food, water and energy security.

Policy implications

- Policymakers must acquire a better understanding of contextual factors, strategic thinking, collaboration and communication challenges and opportunities for decision-making across sectors that span the energy-food-water-environment nexus.
- National and local policy responses to extreme weather events ('nexus shocks') should apply a 'whole systems' approach, taking into consideration how decisions are influenced by and affect various stakeholders and sectors.
- An integrated strategy could take the form of a national task force promoting joint approaches, secondment schemes and stakeholder engagement.
- There needs to be greater policy emphasis on strategic, proactive measures to mitigate extreme events, rather than reactive policies after the event.
- Policymakers should engage in information-sharing with other countries and regions experiencing extreme events, learning from their experiences and implementing lessons learnt.
- Authorities need to raise citizens' awareness of our dependency on infrastructure assets, and enable civilians to play a more active role

in emergency response – for instance through national awareness campaigns and local community response groups.

About the research

Climate change is expected to increase the frequency, severity and extent of extreme weather events, such as coastal and inland flooding, heatwaves, coldwaves and hurricanes. Research evidence suggests that the financial costs and social impacts of such events are set to rise. An effective policy response will need to consider how an extreme event directly or indirectly impacts on several sectors, including food, water and energy systems.

Although food, water, energy and environment are managed as separate systems, they form a closely interlinked 'nexus' with a range of trade-offs, synergies and potential conflicts between the sectors. For instance, regulations limiting irrigation during a drought will have a knock-on effect for food production.

Nexus-based policy measures consider the direct and indirect impacts throughout the nexus, and the stakeholders they affect, rather than piecemeal initiatives which fail to take all affected sectors into account.

A policy note from the Nexus Shocks Network explores how policymakers can respond to climate- and weather-related shock events. The briefing recommends more emphasis on proactive measures, an overarching system-based approach and a sharing of best practice with other countries.

Key findings

- Nexus shocks span multiple sectors and affect different stakeholders – each characterised by different cultures, behaviours, priorities and processes.
- Decisions are often sector-limited in focus, failing to fully incorporate cross-stakeholder needs and processes. They can be taken with little consideration of impacts to other sectors or processes that other sectors have put in place.
- Decisions at national level may fail to consider implications for local or even international level.
- Decision-makers at the local and national levels have a tendency to focus on short-term and sector-limited problems and benefits, with less emphasis on long-term implications for the system as a whole.
- Nexus shocks can have a direct impact (eg damage to crops, increased vulnerability to infrastructure and buildings) or indirect impact (eg changes in resource prices, effects on people's wellbeing, health implications from flooded drains). Indirect impacts are not necessarily instant but could become apparent days, weeks or even months after an initial shock. This makes it challenging to apply responsibility and leadership to respond.
- Decisions may not fully consider business supply chains which cut across and transcend national boundaries and governance.
- 'Bottom-up' participation from local communities is needed to design sustainable and resilient responses to nexus shocks.

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BRIEF DESCRIPTION

Informing national and global responses to shocks to the energy-food-water-environment nexus is a policy note from the Living with Environmental Change Partnership, a network of 20 UK public sector organisations including the ESRC that funded, carried out and utilised environmental research. The policy note was written by Dr Candice Howarth, drawing on research from the Nexus Shocks Network and funded by the ESRC Nexus Network.

Web: www.relu.ac.uk/landbridge/LWEC%20PP34.pdf

FURTHER INFORMATION

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The Nexus Network is funded by the ESRC and co-ordinated by a team from the University of Sussex, University of East Anglia and Cambridge Institute for Sustainability Leadership. It brings together researchers, policymakers, business leaders and civil society to develop collaborative projects and improve decision-making on food, energy, water and the environment.
Web: www.thenexusnetwork.org

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