I-CISK
HUMAN CENTRED CLIMATE SERVICES

POLICY BRIEF

Activating global climate data through co-creating local climate services: Early warning systems used by all

Global data resources available from the EU's Copernicus Programme, Global Earth Observations (GEO), and similar (inter)national initiatives are indispensable in early warning systems, providing users and decision-makers essential climate related information to strengthen resilience to natural hazards such as droughts. Investing in integration of local knowledges and local data can ensure these are actionable and can remove barriers to effective use at local level by communities and sectors; saving lives and benefitting livelihoods

Early warning is a proven climate service that can enhance resilience to climatic extremes. Effective use to inform timely and appropriate actions can help save lives and reduce impacts to livelihoods; on key socio-economic sectors; and to the environment. Earth observations, global modelling and predictions available from initiatives such as EU Copernicus[1] and the Group on Earth Observations[2] provide unprecedented capabilities in monitoring of climate extremes, their impacts, and predicting how these evolve. This includes predictions for the coming weeks and seasons, and projections of the future climate. While many of these datasets are available at continental or global scales, access to early warnings through tailored climate services is not. Major multi-lateral actions, such as the UN Early Warning for All initiative, have the ambition to make a step change towards access for all. However, research shows that access to early warning is not sufficient, particularly for climate extremes such as droughts.

1 https://www.copernicus.eu/en
2 https://earthobservations.org

Key Recommendations:

Place the decisions users make and the needs they have as a starting point: Early warning of extremes such as drought are effective only if used to inform decisions. Identifying, with users, the decisions they make, the adaptation options they have available to them, and the needs they have is essential to ensure warning information provided is salient.

Enable local actors to contribute knowledge: Users consult multiple knowledges when making decisions. Local knowledge, including traditional and indigenous knowledges, frames decisions made, and must be integrated in early warning efforts to foster credibility and legitimacy.

Make local data accessible to foster tailoring to user needs: Free and open access to local data allows early warning and climate information to be tailored to multiple user and sectoral needs. This can be a multiplier of investments made in early warning systems.

Incorporate all organisations on the full early warning value chain: Line agencies, NGOs, CSOs, extension services and other boundary organisations are essential in ensuring two-way communication and trust relationships between early warning and climate service providers, and the multiple levels of users. These organisations should be central to efforts in establishing effective early warning.

Effective use may be impeded by several barriers, including poor recognition of the knowledge users themselves hold; the adaptation options available to them; and their social and behavioural preferences. This brief shares findings from research with the aim to inform policy and actions in developing early warning systems that are credible, salient, and legitimate; three key factors that foster uptake.

Place the decisions users make and the needs they have as a starting point

Early warning can benefit users by helping them take informed actions that reduce impacts; increasing resilience. Evidence shows that the decisions users take on when and how to act depend on their own (local) context, and the adaptation options they have available to them. Several aspects are important to how decisions are made. These include climate related factors such as the prediction of drought conditions, which can be informed through early warning systems. Importantly, these also include several other dimensions, such as socio-economic factors (e.g. availability of labour and machinery), protocols and policies, as well as traditional practices and cultural preferences. It should additionally be acknowledged that decisions are made at all levels of the services value chain, and not only at the end-user level. Understanding the decisions users take is essential to providing climate information that is relevant, and ensuring services are demand rather than supply driven. Practical co-creation frameworks and tools are tested and available to co-explore with users the needs they have, and co-identify adaptation options available to them. These frameworks can help establish a grounded understanding of needs and the contexts in which decisions are made, allowing services to be tailored and ensuring the salience of information provided through early warning systems.

Enable local actors to contribute knowledge

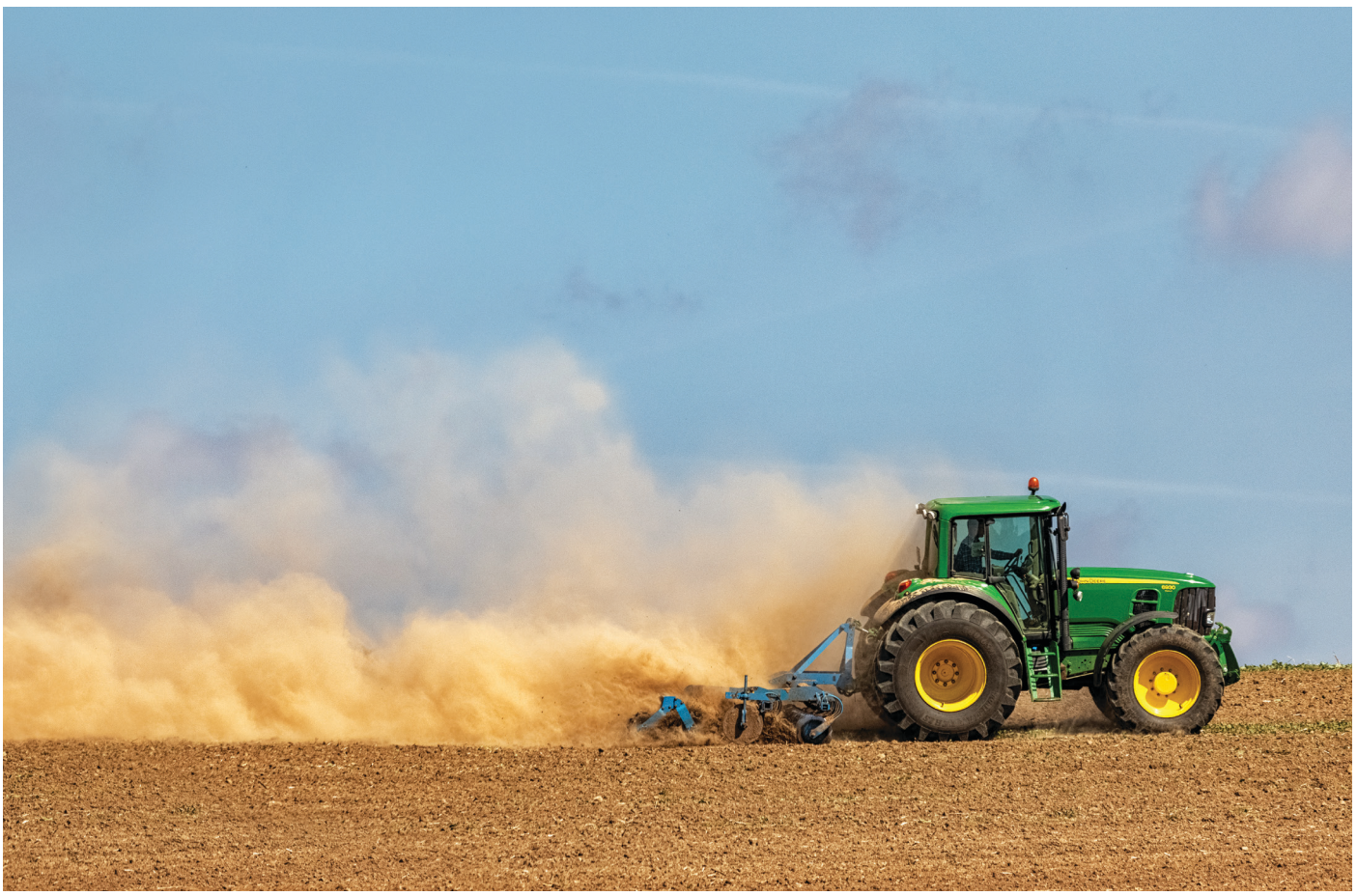
It is fundamental to acknowledge that climate services providing early warning information require more than just climate science. Users rely on multiple knowledges for risk appraisal and implementing coping strategies and adaptation actions. They may inform their decisions through triangulation between these knowledges, including the local knowledge they themselves hold and the scientific knowledge provided through early warning systems. Local knowledge is used here as a broadly encompassing term that includes a range of different knowledges; traditional, indigenous and cultural norms, personal observations, lived and occupational experiences. Local knowledge offers a key entry point to understand risks, vulnerabilities, capacities and the socio-economic dynamics of the local context. It also supports tailoring of early warning systems to the needs, experience, knowledge, attitudes and decision-making spaces of users, thus helping users make better-informed choices. In turn, the use of these tailored services can change the perception users have of extreme events such as droughts, including in the context of climate change. It is crucial to identify the main stakeholders at different levels of governance (community, sub-national, national) and leverage their knowledge of the context when designing early warning systems. Participatory tools are tested and available to elucidate how users combine multiple knowledges, and the environmental and socio-economic cues relevant to triggering decisions. Recognition of local knowledge in the design and use of early warning systems provides a more grounded understanding of the local context, can help build trust, and inform dissemination and communication strategies. This contributes to the legitimacy and salience of early warning systems and climate services.

Make local data accessible to foster tailoring to user needs

Enabling local actors, from communities, individuals and across multiple sectors to contribute and integrate local data in early warning systems is essential in assuring credibility and relevance. Local data and local knowledge can be used to validate scientific information (and vice versa), as well as having an important role in conditioning uncertainties and resolving biases global datasets may have. Particularly where there is a reliance on continental and global modelling systems, integration of local data is essential in tailoring information to meet the information needs of users at spatial and temporal scales relevant to them. Free and open access to local observational data at the local and national scale can further encourage the development of a broad palette of services tailored to meet the diverse needs of a range of users. A key enabler to foster re-use and out-scaling is that data is managed through the FAIR principles (Findable, Accessible, Interoperable, Reusable), adopting open standards and publishing of solutions under open source licences. This can extend the reach and accessibility of early warning systems well beyond that of mandated agencies such as national hydrometeorological services, acting as a multiplier on investments and contributing further to these being available for all.

Incorporate all organisations on the full early warning value chain

Early warning systems are produced, disseminated and acted upon by a network of organisations and users, each with their own mandates, knowledges and expertise. To be effective, it is essential to acknowledge the inherent complexity and diverse range of actors involved in their delivery and operation and to understand the existing (bi-directional) flows of information. Space should be provided for establishing partnerships and building trust between these organisations. For example, Line agencies, Non-Governmental Organisations (NGOs), Civil Society Organisations (CSOs) and other boundary organisations are uniquely placed in reaching the last mile of early warning systems and climate services. These ensure two-way communication between providers such as national hydrometeorological services, and users, contributing to the legitimacy of service delivery. Additionally, it should be recognised that many of these stakeholders may not only be users of information provided, but may also add value to downstream users through tailoring services to the specific (local) contexts and needs. Empowering these organisations and incorporating these from the outset is crucial to ensuring early warning systems are not just available for all, but can be effectively used by all.



Methodology

This policy brief has been developed as a part the I-CISK (Improving Climate Services through Integration of Local and Scientific Knowledges) research project. The objective of I-CISK is to develop a next generation of human centred climate services for the provision of early warning to drought and other climate related hazards, following a social and behaviourally informed approach and co-creating these with users. The research in the project on which the insights in this policy brief have been based is grounded in seven living labs established in the Netherlands, Spain, Italy, Greece, Hungary, Georgia and Lesotho. In each of these Living Labs, the project collaborates with multi-actor stakeholder platforms, overall representing more than 150 organisations and individuals and representing diverse sectors including agriculture, forestry, tourism and others. A framework for co-creation of human centred climate services has been developed in the project, and tested and refined with stakeholders across the Living Labs. Prototype services are piloted and co-evaluated with users in each of these living labs.

Acknowledgements and contact information

The I-CISK project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101037293.

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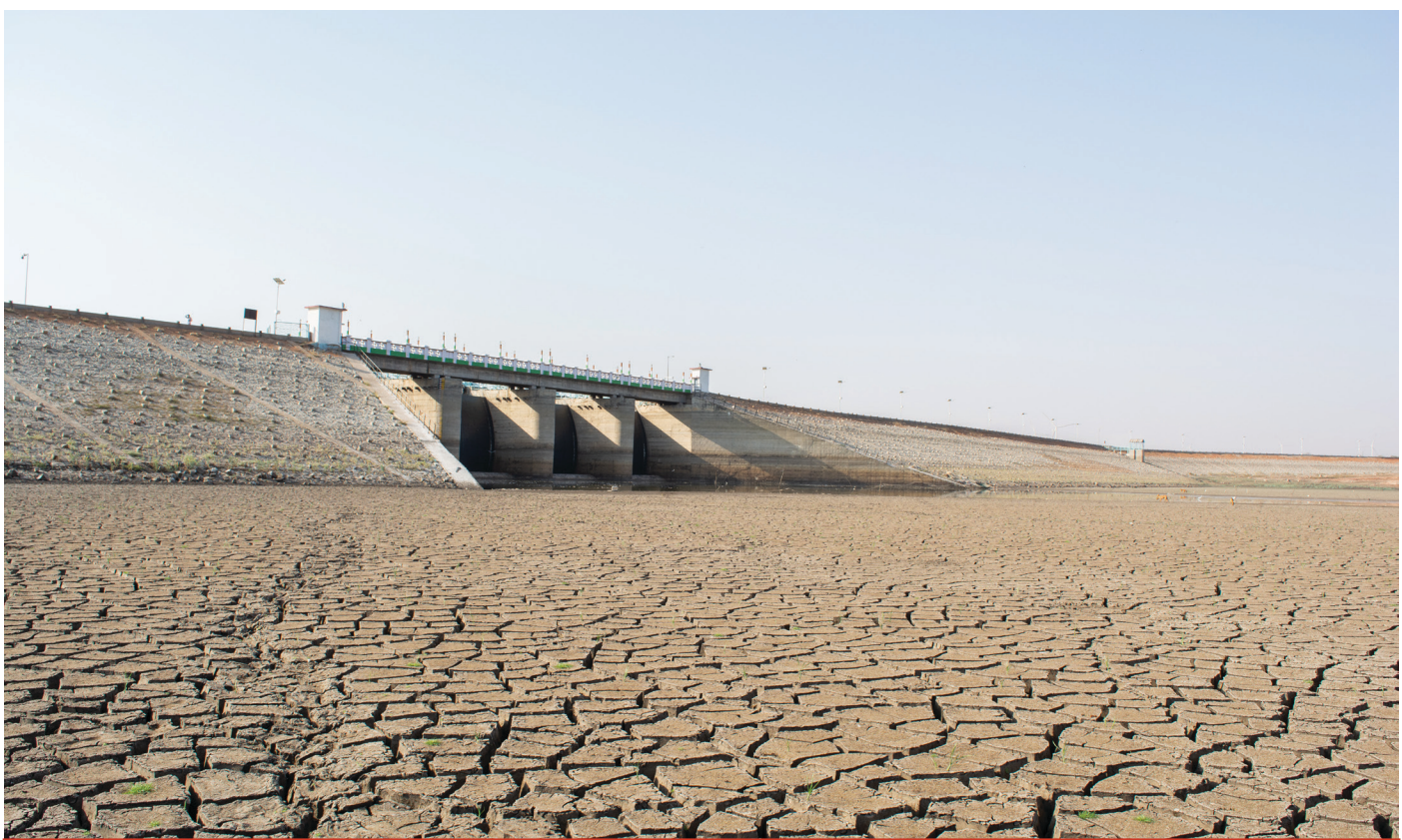
Further information and reading

Further information can be found on the web site of the I-CISK project: https://icisk.eu. Documentation of the prototype framework for co-creating human centred climate services and its application in the seven Living Labs can be found on the project resources page: https://icisk.eu/resources/



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