POLICY BRIEF 96

CRISP

A climate risk assessment and planning tool to mainstream climate action into agri-food system programmes and policies

KEY MESSAGES

- CRISP (https://crisp.eurac.edu/) is a useful online tool that visualizes complex climate relationships in easily accessible impact chains. This aids in identifying climate risk drivers and vulnerabilities and linking them with potential adaptation options for planning and decision-making in agri-food systems.
- CRISP enables user-friendly access to peer reviewed and expert knowledge on climate risks affecting agri-food systems. The tool supports capacity building on the understanding and development of climate rationales.
- CRISP is a valuable resource for integrating climate action into agri-food projects and shows promise for future enhancements to systematically address climate related challenges across multisectoral development projects.

INTRODUCTION

Agri-food systems face significant challenges in adapting to climate change despite the growing recognition of its importance and the availability of potential solutions. Limited funding and resources, coupled with the complexity of climate science, make it difficult for project planners and managers to effectively integrate climate risk assessments into their work. A collaboration of scientists has developed a tool to address this gap by helping project managers and other key stakeholders in the agri-food sector to identify and tailor climate impact chains and identify appropriate adaptation options. The Climate Risk Planning and Managing Tool for Development Programmes in Agri-Food Systems, or simply 'CRISP', is an interactive web-based tool that provides a **user-friendly platform** to conduct climate risk and vulnerability assessments and integrate climate actions in agricultural and rural development projects. CRISP simplifies complex climate information and facilitates the identification of adaptation strategies to ultimately contribute to more resilient and sustainable agri-food systems.

CRISP is the result of a collaborative effort involving an interdisciplinary team from several organizations, including Eurac Research, the Alliance of Bioversity and CIAT and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

July 2024

HOW HAS CRISP BEEN USED?

In **Bolivia**: The CRISP tool was utilized as part of the GIZ PRORESILIENTE programme to assess climate risks at a regional scale. The national team conducted a rapid assessment using CRISP, focusing on understanding climate hazards, impacts, vulnerabilities, and adaptation options in the project area. The tool helped identify and validate relevant adaptation measures for prioritized value chains but also guided the choice of inclusive productive partnerships to better select the prioritized agricultural value chains. The exercise with CRISP provided a strong climate narrative for the programme, leading to the inclusion of additional adaptation measures, such as specific climate-smart agricultural practices and climate insurance schemes for smallholder farmers. The team plans to conduct more in-depth climate risk assessments and integrate the results from the CRISP application into the National Adaptation Plan (NAP) planning process.

Zambia: The GIZ FANSER and E-PICSA projects applied the CRISP tool to review evidence on climate hazards and explore additional adaptation options for their project activities. The teams tested the tool by comparing impact chains with their field experience, confirming rainfall-related hazards as most relevant. CRISP highlighted drip irrigation as an additional adaptation option that had not been previously considered. Although the projects were already underway, the CRISP results provided confirmation of their approach and inspired further adaptation measures. The tool was seen as a valuable foundation for upcoming projects, systematically integrating climate risk considerations into agricultural projects and guiding project planners on adapting support for smallholder agriculture to climate change.

CRISP GUIDING PRINCIPLES

CRISP's theoretical foundation is rooted in a systematic approach to climate risk assessment, drawing upon established frameworks like the IPCC AR6 Risk Concept (IPCC 2022) and the GIZ Climate Risk Sourcebook (Zebisch et al., 2023).

Those frameworks recognize climate risk as a complex interplay of climatic and non-climatic factors, emphasizing the importance of understanding vulnerabilities within specific socio-ecological systems.

Central to CRISP's framework is the concept of impact chains, which visualize the cause-and-effect relationships between climate hazards, vulnerabilities, and resulting impacts. These chains serve as a basis for identifying adaptation strategies that can mitigate vulnerabilities and build resilience in agri-food systems. CRISP extends this concept by incorporating semantic modelling techniques (Hagedorn et al., 2020), enhancing the representation and accessibility of knowledge within the tool.

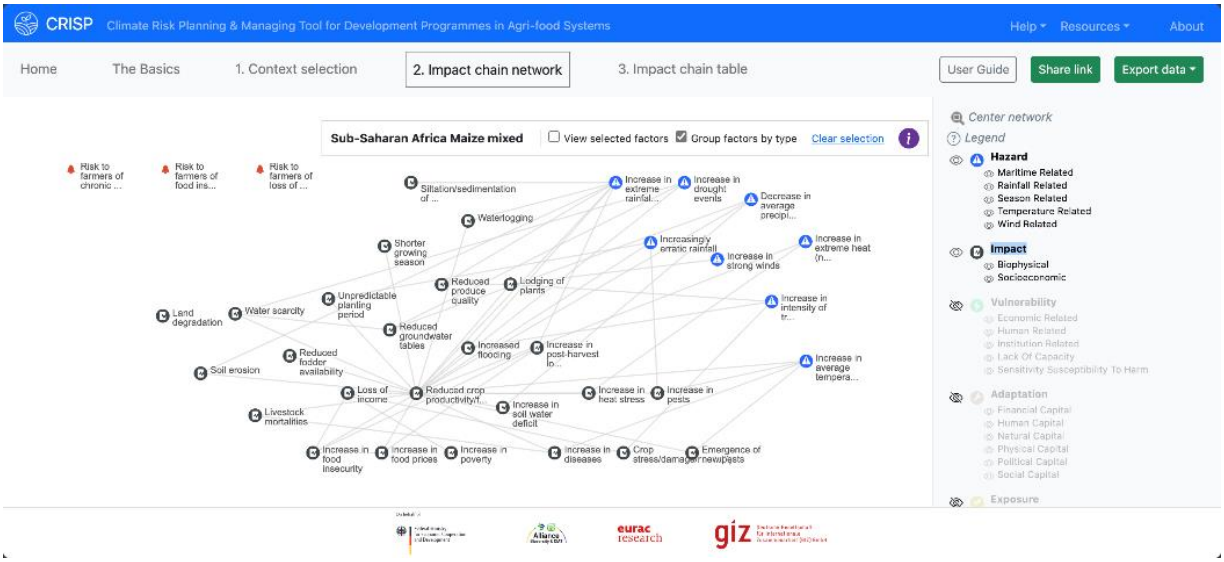
By combining the visual clarity of impact chains with structured knowledge representation, CRISP provides a powerful tool for practitioners. It allows for the integration of diverse data sources, including scientific literature (e.g., Dixon et al., 2001) and local knowledge, enabling a comprehensive and context-specific understanding of climate risks. This, in turn, helps project designers and other CRISP users make informed decisions and develop effective adaptation strategies for incorporation into agri-food and rural development projects.

TOOL DEVELOPMENT

The development of CRISP involved an interdisciplinary team combining expertise in impact chain methodology, agricultural development, knowledge representation, database management, and graphical user interface design. This collaborative effort ensured a comprehensive and user-friendly tool that addresses the complex challenges of climate risk assessment in agri-food systems.

CRISP DATABASE

The impact chain data for 23 farming systems were gathered through extensive literature reviews and expert consultations. They are publicly available and can be downloaded from CRISP's website for technical and non-technical users.



Screenshot of impact chain network under development for the mixed maize farming system in Zambia illustrating relevant climate hazards and impacts.

CONCLUSION

CRISP represents a significant step forward in climate-smart decision support tools for the agri-food systems. Its unique strength lies in simplifying complex climate information and making it accessible to a wide range of practitioners and enabling project planners to "climate-proof" their proposals and interventions.

By facilitating rapid climate risk assessments and promoting the integration of adaptation strategies throughout the project cycle, CRISP contributes to the development of more resilient and sustainable agri-food systems.

References

Dixon J, Gibbon DP, Gulliver A, Hall M. 2001. Farming Systems and Poverty: Improving Farmers' Livelihoods in a Changing World. Rome: Washington, D.C: FAO; World Bank.

Hagedorn T, Bone M, Kruse B, Grosse I, Blackburn M. 2020. "Knowledge Representation with Ontologies and Semantic Web Technologies to Promote Augmented and Artificial Intelligence in Systems Engineering." INSIGHT 23 (1): 15–20.

IPCC. 2022. Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (H-O Pörtner et al., eds). Cambridge University Press, Cambridge, UK and New York, NY.

Zebisch M, Renner K, Pittore M, Fruchter S, Fritsch U, Kienberger S, Schinko T, et al. 2023. "Climate Risk Sourcebook." Bonn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

Citation

CIAT. 2024. CRISP- A climate risk assessment and planning tool to mainstream climate action into agri-food system programmes and policies. CIAT Policy Brief 96. International Center for Tropical Agriculture (CIAT). Cali, Colombia. 3p.

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Federal Ministry for Economic Cooperation and Development
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July 2024