



Climate Change and Rural Development – Selected Resources

What you can find here

Many rural areas worldwide are already suffering from the consequences of climate change today. The impacts of the changing climate further exacerbate other developments: e.g. soil degradation, biodiversity loss, declining agricultural productivity, and reduction of ecosystem services. This also applies to conflicts over land and competing interests over the use of natural resources. If you want to gain a better understanding of the nexus between climate change and rural development, this selection of resources gives you examples of relevant publications and websites.

For more information or specific questions, you can contact sv.le@giz.de.

This resource selection does not claim to be complete and is a living document. Within each chapter documents are sorted chronologically by year of publication.

Background information

Introduction to basic concepts

[AR6 Synthesis Report: Climate Change 2023 — IPCC Summary for Policymakers | IPCC | 2023](#)

This report summarizes the state of knowledge on climate change, its widespread and projected impacts, and risks, as well as mitigation and adaptation options. It integrates the main findings of the Sixth Assessment Report (AR6) of the Intergovernmental Panel on Climate Change (IPCC) based on contributions of three Working Groups and three special reports.

[The State of Food Security and Nutrition in the World \(SOFI\) – Urbanization, agrifood systems transformation and healthy diets across the rural-urban continuum | FAO | 2023](#)

Every year the SOFI publishes an update on the global state of food security and nutrition and evaluates the progress made for achieving Sustainable Development Goal (SDG) 2. According to the SOFI 2023, about 735 million people were exposed to chronic hunger. The report highlights the drivers of food insecurity and current trends. This edition focuses on the dynamics, drivers, and patterns of urbanization.

[The State of Food and Agriculture – Leveraging automation in agriculture for transforming agrifood systems | FAO | 2022](#)

This report highlights the state of agriculture and food, discussing agricultural automation in more depth. It highlights many opportunities that agricultural automation presents as a driver for transformation and for achieving SDG 1 and 2. However, it can also exacerbate social inequalities and negatively affect the environment. The report provides recommendation to facilitate an inclusive and sustainable adoption of agricultural automation.

[Climate Change 2022: Impacts, Adaptation and Vulnerability | IPCC | 2022](#)

The Working Group II contribution to the IPCC Sixth Assessment Report assesses the impacts of climate change, looking at ecosystems, biodiversity, and human communities at global and regional levels. It also evaluates vulnerabilities and the capacities and limits of the natural world and human societies to adapt to climate change.

[2021 \(interim\) Global Update Report: Agriculture, Forestry and Fisheries in the Nationally Determined Contributions | FAO | 2021](#)

This report provides an update on the Nationally Determined Contributions' (NDC) uptake of coverage and quality of mitigation and adaptation measures in the agriculture, forestry, and fisheries sectors. It follows up on the [report](#) that was published in 2016 and analyzes the new or updated NDCs that were submitted in the meantime. It mentions that vulnerabilities of marginalized groups got more recognition, while simultaneously highlighting shortcomings of the NDCs.

[Sustainable Agri-Food Systems: A World without Hunger | BMZ | 2021](#)

The core area strategy of the Federal Ministry for Economic Cooperation and Development has the objective to end hunger worldwide by transforming agri-food systems. The three areas of intervention, namely "Food and Nutrition Security", "Rural Development" and "Agriculture" go hand in hand and complement one another.

[Climate Change and Land: Summary for Policymakers | IPCC | 2019](#)

This IPCC Special Report elaborates on greenhouse gas fluxes in terrestrial ecosystems and the interdependency of land use and climate change. It addresses sustainable land management and the contributions that adaptation and mitigation options can have to combat desertification and land degradation to enhance food security.

[The agricultural sectors in nationally determined contributions \(NDCs\): Priority areas for international support | FAO | 2016](#)

This paper identifies common challenges that are preventing developing countries from achieving their NDC commitments and ambitions in the agricultural sector, as well as the types of support that are required to address them (incl. compliance with the enhanced transparency framework of the Paris Agreement).

Reference Documents of the UNFCCC

[Sharm el-Sheikh Joint work on implementation of climate action on agriculture and food security | UNFCCC | 2022](#)

This document presents the decisions taken at the Sharm el-Sheikh Climate Change Conference (COP27) regarding climate action for agriculture and food security. It recognizes that solutions in this sector are context-specific and promotes a holistic approach and synergies between Parties. The decision includes the implementation of the outcomes of the Koronivia joint work on agriculture (KJWA).

[Koronivia joint work on agriculture | UNFCCC | 2017](#)

The Koronivia joint work is a landmark decision under the United Nations Framework Convention on Climate Change (UNFCCC) that recognizes the unique potential of agriculture in tackling climate change. The outcomes of the KJWA were acknowledged and incorporated in the [Sharm el-Sheikh joint work on implementation of climate action on agriculture and food security](#) in 2022.

[Adaptation - Under the Frameworks of the CBD, the UNCCD and the UNFCCC | Joint Liaison Group of the Rio Conventions | 2008](#)

A Joint Liaison Group between the secretariats of the CBD, UNCCD and UNFCCC was established in 2001 with the aim of enhancing coordination between the three Conventions to enhance synergies in adaptation. This information note is the first step to strengthen collaboration linking climate change adaptation with combating desertification and conserving biodiversity.

[Issues related to agriculture and food security | UNFCCC](#)

This website provides an overview and outlook of different processes that take place at UNFCCC level on the topic of agriculture and food security.

Tools, platforms & databases

[Climate Change Adaptation and Mitigation in Agri-Food Systems | GIZ | 2023](#)

The Compendium is a comprehensive resource listing different tools, e.g. for Climate Risk Assessment and Greenhouse Gas Assessment. It helps users to find the most relevant tool to assess climate risks for rural development and agri-food systems.

[Climate-resilient Agri-Food Systems – Product Landscape | GIZ | 2023](#)

The interactive product landscape complements the [compendium](#) and gives a visual overview of, and easy access to the tools and other additional relevant documents concerning climate-resilient agri-food systems.

[Adaptation Community | BMZ, BMUV](#)

Adaptation Community is a website providing different resources, including publications, trainings, and online sessions, regarding climate change adaptation. The topics are ranging from Ecosystem-based Adaptation to Climate Services and many more.

[Agriculture Adaptation Atlas | CGIAR](#)

The Agriculture Adaptation Atlas maps climate risks and solutions, while zooming in on climate hazards, detecting the exposure magnitude, and identifying local abilities for farmer resilience.

[Climate & Disaster Risk Screening Tools | World Bank](#)

The tool provides a systematic way to flag potential risks for projects in the agricultural sector. The website provides an in-depth assessment, including a detailed evaluation of current and future climate and disaster risks, as well as a rapid assessment. *Registration is needed to access the website.*

[Climate Change Data | Climate Watch](#)

The Climate Watch interactive chart explores GHG emissions from agriculture by country and economic sector and shows how top emitters have changed in recent years.

[Climate Change Knowledge Hub | FAO](#)

The hub gathers knowledge and resources on climate change in the agriculture and land use sectors. Its interactive features allow users to connect with peers, experts, and providers of capacity building. It also provides data, learning materials and activities, guidelines, policy advice and tools.

[Naturebase | Nature4Climate](#)

Naturebase brings together science-based data on nature-based pathways to mitigate climate change across every region of the planet, combining them with the latest information on policy frameworks, finance schemes, feasibility considerations, and case studies.

[Nature-Based Solutions Database | Equator Initiative](#)

The Equator Initiative is an interactive database of solutions which informs about how local communities and indigenous peoples around the world are making the achievement of the UN SDGs possible through nature-based actions, focusing i.a. on climate justice in rural communities.

[Nature-based Solutions Evidence Tool | Nature-based Solutions Initiative](#)

The Nature-based Solutions Evidence Platform is an interactive map linking nature-based solutions with different ecosystem types, to assess their ecological and social outcomes.

[Solutions for a healthy planet | PANORAMA](#)

The PANORAMA platform identifies and promotes examples of tested and replicable solutions for biodiversity conservation and broader sustainability issues. It provides access to more than a thousand examples worldwide.

Thematic highlights

Transformation of agri-food systems

[Current Conditions & Policy Frameworks of Agri-Food Systems Transformation | TMG | 2023](#)

This document is the first of a series, which includes four papers that are summarized in [this report](#). It discusses the transformation of agri-food systems in the wake of different crises, including Climate, Covid, Conflict and Costs (4C) and their interaction. A general overview of the international policy landscape is provided, and a focus is put on synergies of the three Rio Conventions.

[Transforming Food Systems Under Climate Change through Innovation | Campbell, Bruce et al. | 2023](#)

This book elaborates why a food system transformation is needed, how it can be achieved and how research can be a catalyst for change. It focuses on necessary changes in food systems in the context of climate change and other urgent socio-economic challenges.

[2022 Global food policy report: Climate change and food systems | IFPRI | 2022](#)

This report illustrates the nexus between climate change and food systems. It touches upon different aspects that contribute to a sustainable food systems transformation, incl. repurposing agricultural support, climate finance, landscape governance, change in diets and food value chains. Finally, it illustrates regional developments concerning food systems for every world region.

[The future of food and agriculture – Drivers and triggers for transformation | FAO | 2022](#)

This report aims at inspiring strategic thinking and actions to transform agri-food systems towards a sustainable, resilient, and inclusive future. It describes 18 drivers of agri-food systems, alternative scenarios, as well as challenges, triggers, and strategic policy options for sustainable agri-food systems.

[United Nations: Food Systems Summit 2021 \(Process, challenges, and the way forward\) | EPRS | 2021](#)

The document, published by the European Parliament, provides a summary, and describes the background, vision, processes, and agenda of the UN Food Systems Summit. Under this [link](#) you can access the documents resulting from the summit, including [five action tracks](#) that represent the topics discussed during the summit, which later turned into action coalitions.

[A Long Food Movement: Transforming Food Systems by 2045 | iPES FOOD | 2021](#)

This report outlines two different scenarios for the future of food systems by 2045: the 'business-as-usual' food system and the 'long food movement', which embraces civil society as driving force for the transformation of food systems.

[Food Systems at Risk – Transformative Adaptation for Long-Term Food Security | WRI | 2021](#)

Reduced productivity and food security are consequences of climate change that will intensify over the coming decades. To protect rural livelihoods, the report explores the benefits of long-term, systemic, and transformative approaches to adaptation.

[Actions to Transform Food Systems Under Climate Change | CGIAR | 2020](#)

This article discusses the urgent need for transformative action in the food system to mitigate and adapt to climate change. It identifies four high-priority actions that must be taken to achieve this transformation.

[Rethinking Land in the Anthropocene: from Separation to Integration | WBGU | 2020](#)

This report carves out five governance strategies illustrating ways to overcome competition between rival claims to the use of land. It makes clear that we need a fundamental change in the way we treat land in order to limit climate change, reverse biodiversity loss, and create sustainable food systems.

[Systemic-Challenges-Systemic-Responses | TMG | 2020](#)

The working paper explores the contribution of agroecology to innovative, systemic, and transformative climate change adaptation responses. It gives concrete examples of such approach describing the results from agroecological initiatives in the Philippines and India.

[CCAFS WP No.271 - Local to global policy as a catalyst for change | CGIAR | 2019](#)

This working paper discusses how policy can bring transformative change for food systems to become sustainable, resilient, climate smart, and inclusive, while delivering affordable, culturally appropriate, and healthy diets for all.

Climate change adaptation

[Developing climate services for livestock production in smallholder farming systems | GIZ | 2023](#)

The learning brief outlines the requirements for climate services for livestock management in smallholder systems in order to adapt to climate conditions. It provides recommendations and demonstrates the multiple benefits that livestock plays for smallholder farmers.

[The potential for scaling climate services to the whole of Zambia through the Participatory Integrated Climate Services for Agriculture approach | GIZ | 2023](#)

The learning brief discusses how Participatory Integrated Climate Services for Agriculture (PICSA) can be scaled. The approach has demonstrated wide adoption with positive impacts on livelihoods and nutrition. Furthermore, the brief elaborates the possibilities of E-PICSA as digital version of the tool.

[The potential of using radio as a communication channel for climate services | GIZ | 2023](#)

The learning brief illustrates the power of radio for delivering climate information to farmers as adaptation measure. As key learning, the report mentions the focus on capacity

development, rather than describing specific practices and highlights some recommendations.

[State and Trends in Adaptation Report 2022 | Global Center on Adaptation | 2022](#)

This report presents the state in adaptation for Africa. In-depth analyses and numerous case studies are used to identify innovative adaptation and resilience ideas, new solutions, the most effective regulatory and legal instruments, and recommendations for action.

[Climate Risk Management | GIZ | 2021](#)

This publication describes a Climate Risk Management framework developed by GIZ. It is a risk-based, iterative approach to manage climate-related risks, taking into consideration social, economic, non-economic, institutional, biophysical, and environmental aspects.

[Integrating slow onset processes into climate risk management | GIZ | 2021](#)

This working paper lays out definitions, key challenges, and opportunities for understanding risk and generating resilience to slow-onset processes and related extreme weather events.

[Climate Change and Labor in sub-Saharan Africa | SNRD Africa | 2020](#)

This publication informs about the impacts that climate change has on labor productivity, employment, and labor mobility worldwide – with a focus on Sub-Saharan Africa. The paper calls for better informed policy responses and development planning regarding climate adaptation and mitigation measures.

[Productive Diversification in African Agriculture and its Effects on Resilience and Nutrition | World Bank Group | 2019](#)

The document analyzes how production decisions on farm level towards diversification or specialization affect the resilience of agricultural systems and rural livelihoods. It describes three main pathways through which diversification or specialization impact livelihoods, agroecosystem resilience and nutrition, namely natural resource and ecosystem pathways, income pathways and food environment pathways.

[Agricultural risk management practices and lessons learned for development | PARM | 2017](#)

This publication aims at formalizing the lessons learned at identifying and improving strategies to cope with agricultural risks. It is based on the outcomes of a workshop and the analysis of ten case studies.

[AGRICA publications and policy briefs | PIK](#)

Conducted on behalf of the BMZ, this website entails climate risk analyses for adaptation planning in African countries. It includes climate risk profiles for several countries, including Cameroon, Senegal, and Zambia, as well as climate risk analyses for adaptation planning for the agricultural sector in Niger, Ethiopia, Ghana, and Burkina Faso.

Nature-based Solutions/ Ecosystem-based Adaptation

[Agroecology: Making Ecosystem-based Adaptation Work in Agricultural Landscapes | GIZ | 2023](#)

This report outlines the opportunities of Ecosystem-based Adaptation (EbA) sensitive agroecology for the transformation of food systems in a systemic and climate resilient way. With a Five-Step-Approach it presents a comprehensive method to merge both approaches for country-level implementation. Furthermore, the report describes three case studies applying the approach.

[Five Key Messages on How to Implement Agroecology as a Systemic Adaptation Response | GIZ | 2022](#)

This policy brief outlines five key messages for decision-makers on how to strengthen agroecology as an EbA approach in the agricultural sector.

[Agroecology and climate change rapid evidence review: Performance of agroecological approaches in low- and middle- income countries | CGIAR | 2021](#)

The aim of this review is to evaluate (i) the effects of agroecological methods on mitigating and adapting to climate change in low- and middle-income countries, and (ii) the strategies and circumstances that promotes the widespread adoption of agroecology.

[Public International Funding of Nature-based Solutions for Adaptation: A Landscape Assessment | WRI | 2021](#)

This paper provides an assessment of the landscape of public international funding for Nature-based Solutions (NbS) and seeks to help donor and developing countries to better understand the current state of funding for NbS.

[The contributions of agroecological approaches to realizing climate-resilient agriculture | Sinclair, F. et al. | 2019](#)

The publication demonstrates how agroecology can enhance adaptation in the face of climate change. It discusses benefits for smallholder livelihoods and addresses challenges for the implementation, as well as opportunities to scale up the adoption of agroecological approaches. Further, it provides examples for the successful adoption of agroecological approaches in different regions and policies on a global scale.

Pastoralism

[Climate Resilience – What can we learn from Pastoral Systems in Africa's Drylands | GIZ | 2022](#)

This publication gives an insight into the pastoral systems in Africa's Drylands in the face of climate change. It highlights the benefits of pastoralism on agroecosystem and rural communities, along with ways to strengthen pastoralist resilience.

[Pastoralism and Resilience of Food Production in the Face of Climate Change | GIZ | 2022](#)

This technical paper's purpose is to highlight the lessons that pastoral systems have taught us about coping with climate change, particularly the difficulty of achieving global resilience to climate variability without relying on unsustainable energy sources.

Published by:
Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn, Germany

Sector Project Rural Development, Bonn and Eschborn
E sv.le@giz.de
I <https://www.giz.de/en/worldwide/104357.html>

Author/Design:
Sector Project Rural Development, Bonn and Eschborn

Photo credits:
©GIZ/Climax Film Production

Bonn, August 2023