

# Strengthening land-use and freshwater governance

## Overview

Water and land governance are crucial for transforming food systems, because they address critical issues relating to agricultural production and ecosystem protection. By effectively managing water resources and land use, governance mechanisms can help to mitigate risks, such as human-induced land degradation, water scarcity and climate change. Governance also plays a crucial role in ensuring equitable access to resources, promoting sustainable practices and safeguarding food safety and security. In many areas, technical solutions will not be enough to overcome the complex challenges faced by food systems, and inclusive, people-centric governance frameworks will be necessary to drive behaviour change and achieve a sustainable transition in the sector.

## Concrete measures to implement

Measures to enable improved land and water governance include:

- Conduct [governance analyses](#):
  - Conduct analyses to uncover the root causes of governance problems and related socio-economic and political dynamics. Pragmatic governance analysis facilitates understanding of existing institutions, how they have evolved and how the relative power and capacity asymmetries of different actors influence the work of those institutions in practice.

- Engage all stakeholders through an inclusive approach:
  - Build multistakeholder collaboration to draw on various knowledge systems, values and experiences. The inclusion of diverse stakeholders in policy decisions about land and water governance contribute to the building of trust, social cohesion and the rule of law.
  - Ensure a people-centered land governance approach that recognizes the importance of securing the rights of smallholders and family farmers to land, water, and other natural resources. Enable equitable access to water resources, with particular attention to ensuring access for marginalised groups, including Indigenous Peoples, local communities, women and youth.
  - Include legal requirements for civic engagement in land and water decision-making during the formation of environmental laws, water and land sectoral laws, and planning laws, and include impact assessment requirements.
  - Develop polycentric governance systems with shared governance responsibilities across decision-making at various levels of governance.
  
- Develop coordinated and coherent policies and approaches:
  - Improve coordination on land and water management to identify and address overlaps and trade-offs, improve performance across multiple levels of government, reduce costs and identify areas where lines of authority can be better delineated. Improved coordination is necessary to equitably distribute benefits from policies and decisions, especially for vulnerable populations.
  - Include public consultation requirements in the environmental impact assessments of proposed projects, and ensure these requirements are implemented and enforced appropriately.
  
- Strengthen and harmonise land and water tenure systems:
  - Develop tools and capacity for the integration of tenure assessments in water governance systems.
  - Secure tenure rights and recognise and protect local land rights that people consider socially legitimate, including customary rights where relevant.

- Take a “bundle of rights” approach to tenure systems to identify areas for harmonisation across key resource sectors (water, land, forests, fisheries, etc.).
- Develop policy actions that encourage collective ownership, support Indigenous Peoples’ land rights and regulate access to and use of resources such as land, water and biodiversity.
- Ensure Indigenous Peoples and local communities land rights in carbon offset markets to avoid “green grabbing,” where large investments by international actors in carbon offset projects can prompt the forceful relocation of local communities.
- Improve employment, livelihoods and gender equity:
  - Empower women by ensuring legislation enables them to seek and acquire formal rights to land and water, as well as participate in future planning and decision-making.
  - Improve women producers’ access to water and economic resources, ensure their participation in water management decisions and establish fair working conditions by requiring systematic disaggregation of gender data at the national level. This requires appropriate coordination between institutions from the agricultural and water sectors, and national statistical services.
  - Implement integrated water resources management and sustainable and circular sanitation solutions.
  - Promote sustainable management of land resources and landscapes, including through local territorial or catchment planning and appropriate governance approaches. See Implementing nature positive food production practices, Sequestering carbon in soil and enhancing soil health in crop systems, Reducing land-use change and conversion of natural ecosystems for food production, Implementing integrated crop-livestock systems and Implementing agroforestry practices.
  - Implement the necessary legal frameworks for integrated land use planning, including land use planning laws, zoning laws and planning provisions within relevant sectoral legislation to mainstream sustainable management across diverse frameworks and governance levels.

- Implement requirements to conduct robust environmental impact assessments. Strategic environmental assessments can help to address existing or future landscape degradation and provide opportunities for public participation.
- Align incentives for integrated landscape management through subsidies and payment for ecosystem services (PES) schemes.
- Adopt land use planning: Conduct systematic assessments and comparison of alternative land-use options, with the aim of selecting and implementing land uses that improve socio-economic conditions while conserving natural resources and ecosystems.
- Optimize land use through agroecological practices that efficiently use water and fertilisers, preserve ecosystem functions and contribute to resilient landscapes. See Implementing nature positive food production practices.
- Restore biodiversity: Develop and implement food production practices that restore biodiversity in active agricultural land. Restore less productive areas to natural habitat for biodiversity conservation (this is particularly relevant for countries where land and water resources are dominated by industrial food production).
- Redirect or remove harmful subsidies. (Particularly relevant for countries where land and water resources are dominated by industrial food production).
- Sustainably manage and protect groundwater resources: Set sustainable extraction limits, enhance aquifer recharge through natural or managed replenishment and reduce overall water use.
- Allocate water in a fair, equitable, flexible and locally appropriate manner.
- Promote water user associations (WUAs): WUAs are organizations which allow water users to govern collective water use, water allocation and water preservation autonomously at the local level.
- Use Indigenous solutions in water management, including:
  - Rainwater harvesting: collection of rainfall runoff from roofs or ground surfaces for subsequent use in agricultural production (e.g., crop irrigation or soil conservation). Different storage options include soil moisture storage (in structures facilitating infiltration), groundwater storage (in structures facilitating infiltration) and surface storage (in artificial structures such as tanks, ponds, dams or reservoirs).

- **Step wells**: Stepwells are a specific type of underground reservoir and water storage system commonly used in ancient India. Stepwells have a flight of stairs designed to reach the water table. Stepwells entrap rainwater and replenish groundwater levels over time. They can help local communities to sustain their supply and sanitation needs.
  - **Persian wheels**: The Persian wheel is a mechanical device for lifting water from water sources, typically open wells. The wheel is usually powered by draught animals and traditionally used in South Asia. The wheel offers a carbon-free way of allocating water efficiently and sustainably.
- **Adopt nature-based solutions (NbS) and agroecological approaches**: Measures include restoration and protection of freshwater ecosystems such as rivers, lakes, wetlands, floodplains and watersheds. For more information, see *Transitioning to nature-positive and climate-resilient freshwater management*, *Implementing improved management practices in grasslands* and *Implementing nature positive food production practices*.
- Implement **integrated water resource management**: This involves increased collaboration and coordination by water users across sectors and borders.
- Adapt (direct and indirect) **water pricing** mechanisms:
  - Phase out subsidies that encourage unsustainable water use, water withdrawals and pollution.
  - Adopt pricing mechanisms that encourage water-efficient practices and sustainable use of freshwater ecosystems.

## Enabling governance measures

- Support national and decentralised institutions, including provincial and local planning bodies and municipalities, in the development of **integrated spatial and participatory planning tools**.
  - Includes the use of remote sensing and diagnostic tools on the ground, and stakeholder analysis to integrate environmental and socioeconomic development goals and address rural–urban interactions.

- Invest in management practices and equity-sensitive research for more efficient use of natural resources in food production.
- Invest in technology, research and infrastructure for locally appropriate seeds and animal breeds.
- Improve access to productive inputs that enable efficient and sustainable resource use (e.g., machinery or seeds).
- Build sustainable, local supply chains through investment and financial incentives, adopting inclusive approaches and developing policies, programs and strategies for labor protection of food workers.
- Attract responsible investment in rural infrastructure, logistics, technologies, services and supply chains for sustainable, equitable food development.
- Attract responsible investment in small enterprise development – for example, through skills development, vocational program, mentorship, job pairing, business education and entrepreneurship – with a focus on connecting populations who face inequalities, particularly Indigenous Peoples, local communities, women and youth to markets.
- Adopt a systems approach to governing natural resources for food production in an equitable and sustainable manner.
  - Involves creating inclusive platforms and partnerships that bring together practitioners and experts from agriculture, the environment, energy, land use, water and food.
- Improve data collection and monitoring of terrestrial and freshwater ecosystems and biodiversity to inform policymaking.
- Ensure system preparedness.
  - Requires improved data availability on water and terrestrial systems, e.g. through citizen science or citizen-state interface in data collection.





## Tools and MRV systems to monitor progress

### **FAO Land Resources Planning Toolbox**

A freely accessible online resource base for stakeholders that are directly or indirectly involved in land-use planning. The Toolbox presents existing tools for land-use planning to users and helps users to select and use tools based on their individual requirements.

Link: <https://www.fao.org/land-water/land/land-governance/land-resources-planning-toolbox/en/>

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### **Digital Innovations Global Programme Responsible Land Policy**

Recent digital innovations for more efficient, effective and transparent land management systems, with examples from Ethiopia, Peru and Laos.

Link: <https://landportal.org/library/resources/digital-innovations-global-programme-responsible-land-policy>

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## **Global Programme Responsible Land Policy, Systematic Approach**

Summary of the systematic approach of the Global Programme Responsible Land Policy with examples implemented by the German *Gesellschaft für Internationale Zusammenarbeit (GIZ)*.

Link: <https://landportal.org/library/resources/systematic-approach-global-programme-responsible-land-policy>

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## **Global Programme, Strengthening Advisory Capacities for Land Governance in Africa (SLGA)**

Link: [https://www.giz.de/de/downloads/giz2021\\_en\\_strengthening-advisory-capacities-for-land-governance-in-africa-slga.pdf](https://www.giz.de/de/downloads/giz2021_en_strengthening-advisory-capacities-for-land-governance-in-africa-slga.pdf)

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## **Climate forecasting and early warning systems**

Systems can be used to make water governance “climate-smart”:

- Inform food producers’ tactical decisions related to water availability for food production
- Map temporal and spatial trends in water abundance or scarcity
- Implement water accounting approaches at the national level
- Adapt agricultural water management to water scarcity

Link: [https://www.globalresiliencepartnership.org/wp-content/uploads/2021/09/resilientfood\\_statement\\_final.pdf#page=10](https://www.globalresiliencepartnership.org/wp-content/uploads/2021/09/resilientfood_statement_final.pdf#page=10)

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## **Forest Trends, The Katoomba Group and UNEP primer**

Primer covers understanding, developing and implementing PES schemes.

Link: [https://wedocs.unep.org/bitstream/handle/20.500.11822/9150/payment\\_ecosystem.pdf?sequence=1&isAllowed=y](https://wedocs.unep.org/bitstream/handle/20.500.11822/9150/payment_ecosystem.pdf?sequence=1&isAllowed=y)

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## **Handbook by the International Institute for Environment and Development**

Handbook covers ecosystems, poverty alleviation and conditional transfers.

Link: <https://www.iied.org/16639iied>

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## **ELI and RRI’s Water Tenure Methodology**

A methodology to assess whether community-based freshwater rights, including rights to surface and groundwater, are legally recognised, and how those rights are protected or addressed within national legal frameworks regulating and impacting freshwater resources.

Link: <https://rightsandresources.org/wp-content/uploads/2020/02/WhoseWater.pdf>

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## OECD's 12 principles for efficient, effective and inclusive water governance

Link: <https://www.oecd.org/governance/oecd-principles-on-water-governance.htm>

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## OECD's water governance indicator framework

A framework to help assess and guide the design of improved water policies and reform.

Link: <https://www.oecd.org/regional/OECD-Water-Governance-Indicator-Framework.pdf>

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## Water – Key towards resilient livelihoods in rural areas

Link: <https://www.giz.de/de/downloads/giz-2023-en-water-key-towards-resilient-livelihoods-in-rural-areas.pdf>

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## Integrated Water Resources Management and Sustainable, Circular Sanitation Solutions

Link: <https://openknowledge.fao.org/server/api/core/bitstreams/feaa4ee5-a5c2-4462-b5c4-43c85b51b0f8/content>

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## Participatory Integrated Climate Services for Agriculture (PICSA)

A participatory agricultural advisory and climate services approach that empowers smallholder farmers to make better decisions to address individual agricultural challenges.

Link: <https://research.reading.ac.uk/PICSA/>

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## Mitigation benefits

- Improved and sustainable governance of land use and freshwater ensures that terrestrial and freshwater ecosystems can perform vital functions, including carbon sequestration.

## Other environmental benefits

- Improved and sustainable governance of land use and freshwater have benefits for:
  - Atmospheric composition and air quality due to reduced or avoided GHG emissions from land use (e.g., application of chemical

pesticides, herbicides or fertilisers, or land clearing using fire)

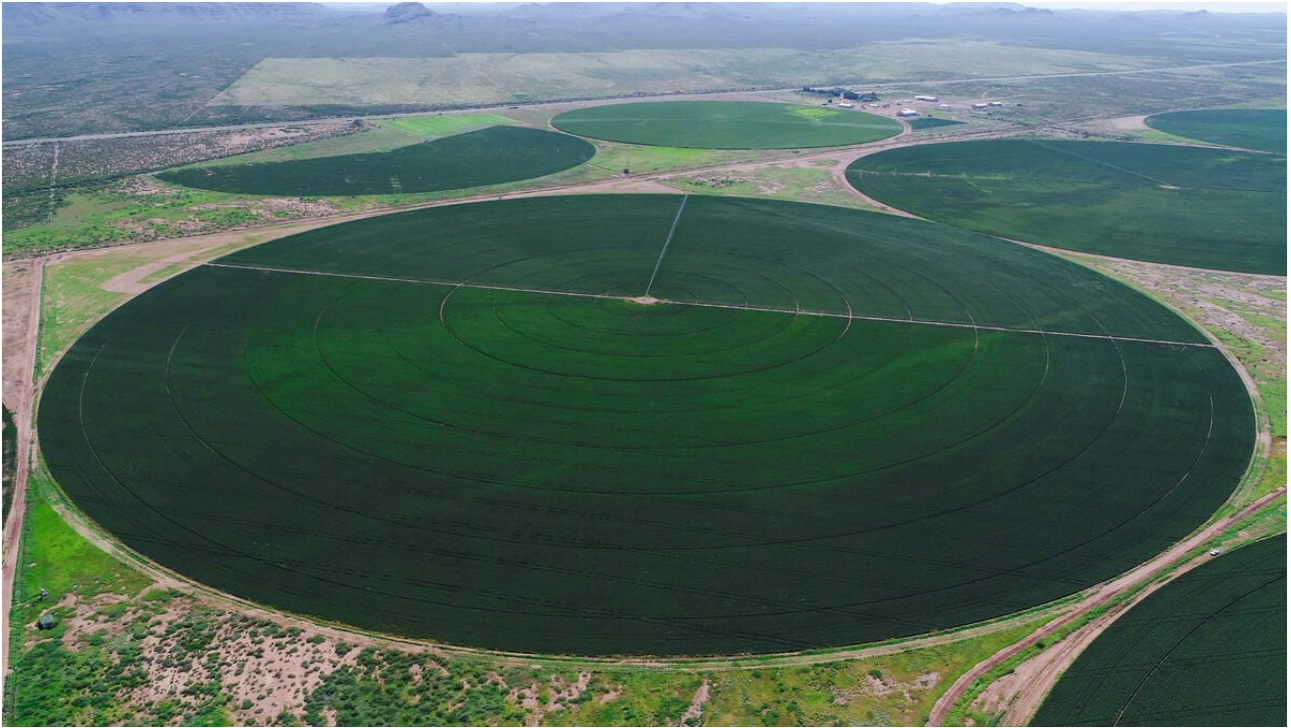
- Hydrological cycle due to improved water quantity and quality (reduced eutrophication or toxicity)

## Adaptation benefits

- Increased resilience of food production to climate-related water stress
- Reduced soil erosion and increased soil fertility
- Improved resilience of livelihoods against climate-related stress
- Increased crop yields
- Increased access to safe and nutritious food for all

## Other sustainable development benefits

- SDG 2 (Zero hunger): improved food security and sustainable agriculture
- SDG 5 (Gender equality): improved inclusion of women
- SDG 6 (Clean water and sanitation): preservation of groundwater resources and water quality
- SDG 10 (Reduced inequalities): improved inclusion of women, youth and marginalised groups
- SDG 15 (Life on land): biodiversity conservation and reduced land degradation



## Main implementation challenges and potential externalities and trade-offs

- Negative effects of infrastructure for surface water storage: Construction of (large) artificial storage structures (e.g., dams or reservoirs) can involve the displacement of communities and disrupt local ecosystems. Such structures can also experience high water losses from evaporation.

## Measures to minimize challenges and address potential externalities and trade-offs

- Nature-based solutions for increased natural water retention
- Use of traditional or small-scale techniques for water harvesting and storage

# Implementation costs

As examples:

- Implementation of the World Bank's [Sustainable Landscape Management Project in Madagascar](#) cost approximately USD 107 million over a seven-year period. The program seeks to establish an integrated, multi-stakeholder approach to governing natural resources.
- As part of the World Bank's [Indonesia Sustainable Landscape Management Program \(SLMP\)](#), approximately USD 22 million was allocated for the Indonesia Forest Investment Program (FIP), approximately USD 6 million was allocated for the Dedicated Grant Mechanism for Indigenous Peoples and Local Communities and approximately USD 14 was allocated for the Social Forestry program.

## Intervention in practice

- [Freshwater Challenge](#): Championed by countries in the Global South, the Freshwater Challenge is the world's largest-ever river and wetland restoration initiative, aiming to restore 300,000km of degraded rivers and 350 million hectares of degraded wetlands by 2030 and protect intact freshwater ecosystems. Countries must set national targets and multilateral and bilateral donors and funders must commit resources – not just from 'environmental' pots but from funds for climate adaptation, disaster-risk reduction, water security and so on – to help them achieve these ambitious targets. This initiative demonstrates how a combination of policy and governance measures (e.g., improved coordination, multi-stakeholder collaboration, data collection/monitoring, polycentric governance and commitment to climate goals) can be used to design policies and programs that address land and water governance issues.

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