Water – key towards resilient livelihoods in rural areas

Relevance

Water and food security are threatened by multiple crises: the climate and biodiversity crises, the aftermath of the COVID-19 pandemic, economic uncertainties, and armed conflict such as the war in Ukraine. As with all crises, some communities will be more affected than others, with rural areas being among the most vulnerable. 3.4 billion people worldwide live in rural areas and 78 per cent of their jobs are moderately or highly dependent on water, with the agri-food sector accounting for the lion's share of employment and using about 70 per cent of the world's available water (ILO 2019). The availability and quality of water therefore plays a critical role in ensuring equitable, sustainable and productive rural livelihoods. This significance is also reflected in the international community, as highlighted by the prominent role of water and agri-food systems at the UNFCCC COP 27 and the UNCBD COP 15.

While the annual amount of available freshwater resources available per person declined by more than 20 per cent in the past two decades, global water demand is projected to increase by 30 per cent by 2050. At the same time, the risk of water-related hazards such as floods and droughts will increase in all regions (IPCC 2022). 80 percent of smallholder farms are already located in water-scarce regions, have little resilience to shocks and are highly vulnerable to the impacts of climate change (FAO 2021).

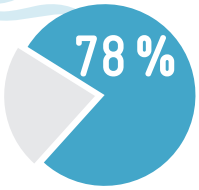
A just transition towards environmentally sustainable rural economies and societies that leave no one behind is a prerequisite for providing nutritious, affordable food for a growing world population while protecting the vital, life-sustaining natural resources, such as water and soil. In this mission, gender equity must be achieved, because women and girls in all their diversity are key agents of change for socially, economically, and ecologically sustainable development.

Even though integrated approaches are proposed as powerful means to achieve the just transition, water resource management and rural development are often treated separately at the policy level. The reasons for this are the complex nature of each of the issues, the sectoral constraints and the lack of coherence and compatibility between the concepts and approaches of water resources management and rural development. However, better management of water is crucial to the future resilience of rural livelihoods.

70 %
of water is used in agriculture

Water demand
is expected to rise by up to
30 % by 2050

3.4 billion people
globally live in rural areas



of all jobs in the rural economy are dependent on water

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Addressing the interlinkages between water and rural development to achieve the SDGs

Given the central role of water in rural development and agri-food systems, an integrated approach of the two core themes is essential to achieve several Sustainable Development Goals (SDGs). Sustainable water resource management and the transformation of agri-food systems go hand in hand for achieving the SDGs on 'clean water and sanitation (SDG 6)' and 'responsible consumption and production (SDG 12)' and have a positive impact on other overarching goals such as 'climate action (SDG 13)', 'zero hunger (SDG 2)', 'reduced inequalities (SDG 10)' and 'gender equality (SDG 5)', 'life below water' (SDG 14) 'life on land (SDG 15)', and 'peace, justice and strong institutions (SDG 16)'.

The climate crisis manifests itself in a water crisis and is increasingly undermining food security and nutrition. This is particularly noticeable in rural areas, where increases in frequency, intensity and severity of droughts, floods and heatwaves, and continued sea level rise put pressure on land use and agri-food systems and will increase risks to food security. The latest IPCC report states that adaptation to water-related risks and impacts make up the majority of all documented climate adaptation responses.

Water is the most basic staple food. Universal and equitable access to clean water and safe sanitation services has a significant impact on nutrition, preventing disease and reducing child mortality. At current rates, by 2030 1.6 billion people will lack safely managed drinking water and 2.8 billion will lack safely managed sanitation (UN 2022). Rural areas are home to most of those who lack access to healthy sources of drinking water and safe sanitation due to their environmental fragility and relatively poor economic conditions.

Access to water and land affects women and men in different ways. Women in rural areas often bear the responsibility for providing their families with food and water. They constitute the majority of the agricultural labour force in many countries but are often allocated less fertile land than men due to gender norms and patriarchal structures and remain largely excluded from land ownership and decision-making processes in agricultural water resource management. Improving women's access to land and water resources as well as their integration into decision-making processes reduces the burden on women and increases their participation in society.

Water is a crucial production factor in agriculture. Agriculture is the largest consumer of water. This also holds enormous potential for savings. While agricultural development contributes to food security, unsustainable agricultural expansion increases ecosystem and human vulnerability and leads to competition for land and/or water resources, accelerated depletion of groundwater and other water sources and increased soil salinization. By switching to more sustainable, resilient and equitable agri-food systems, a world without hunger can succeed.

Water is a guarantor of healthy ecosystems and biodiversity. Climate change and further anthropogenic activities, such as unsustainable management of natural resources, especially agricultural land use changes, are causing substantial damages and increasingly irreversible losses in terrestrial, freshwater and coastal ecosystems. Loss of functional ecosystems and their services has cascading and long-term impacts on people, especially for Indigenous Peoples and local communities who are directly dependent on ecosystems, to meet basic needs (IPCC 2022). Restoration and conservation of ecosystems therefore improve capacities of societies, communities and individuals to adapt to climate change and to assure the basis for agricultural production.

Good governance of land and water contributes to peace, justice, and strong institutions. The impact of water and food scarcity can undermine livelihoods and exacerbate social tensions, leading to instability and conflict at local, subnational, national, and supranational levels. Better management of land and water resources and policies that strengthen resilience therefore have a positive impact on livelihoods, economic prosperity, peace, and security.

Socio-ecological factors of change at the interface of water and land

In many parts of the world, value can no longer be derived from the land due to the scarcity and degradation of water and soil resources as well as functional ecosystems. On the other hand, different forms of conventional and intensive farming practices significantly interfere with the water balance, increase water demand and affect already existing and partly traditional forms of water use.

Policies aiming at a better regulation of the above-mentioned forms of land and water use, in combination with policies promoting a more responsible consumption can significantly contribute to reverse this trend and reduce pressure on land and water resources. At the same time, environmental and climate mitigation and adaptation measures combined with improved coherence between national ambitions and local realities contribute considerably to increase availability of water and land resources.

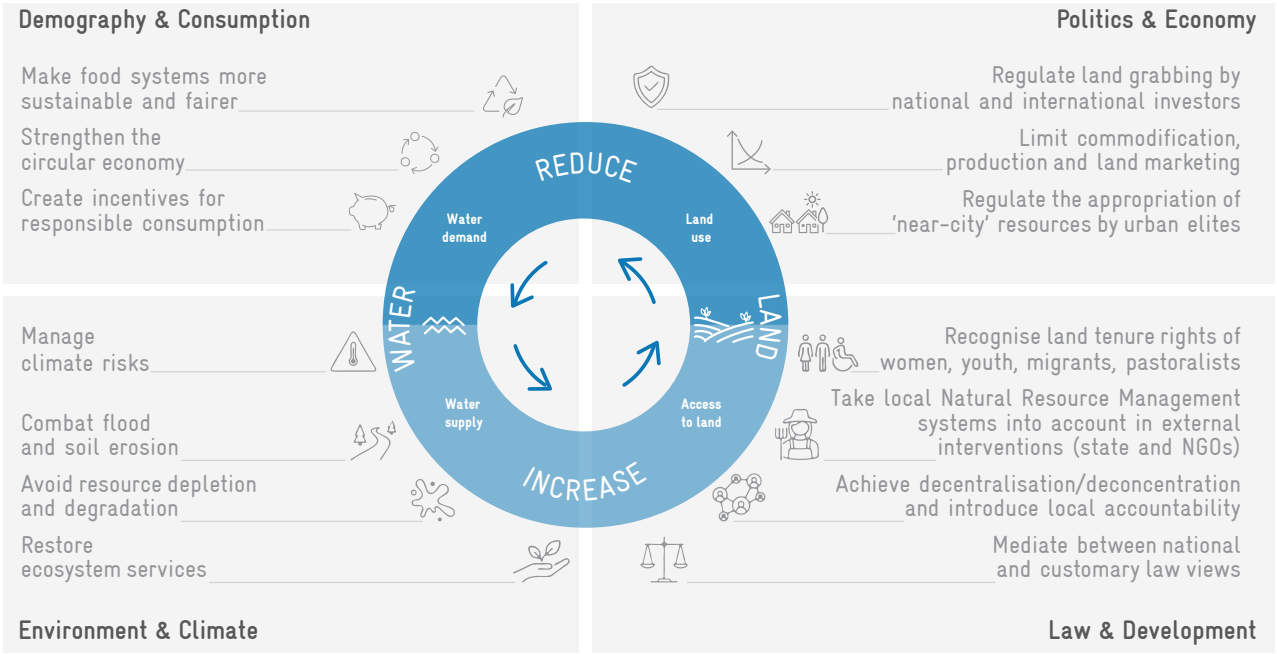
Consequently, improved cohesion between water sector development projects and those of rural development as well as a territorial approach of land use management contribute effectively to less competition for water and land resources, and more social equity with regard to access and distribution issues of land and water.

Guiding principles for addressing water resource management in rural development

The guiding principle of German development cooperation in the water sector is the concept of **Integrated Water Resources Management (IWRM)**. The IWRM concept represents a holistic approach in which water resources, as the existential and economic basis of societies, require integrated, cross-sectoral management. In addition, decentralised institutional governance adapted to hydrological basins and the participation of water users in allocation and access issues are core elements of the concept (GWP 2012).

The second important guiding principle for coordinated action is the **nexus approach**. It was introduced into the international discussion by Bonn 2011 Nexus Conference hosted by the German government. This approach takes into account interactions between closely related sectors. The core idea of the nexus approach is: In view of resource scarcity and insufficient supply, the management of the resources water, energy and land and the securing of (basic) supply must be planned and executed by the sectors involved in cooperation.

Figure 1 Socio-ecological factors of change can positively influence interrelationships between land and water resources



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Fields of action at the interface of water and rural development

1. Manage land and water resources more proactively to foster peace, environmental justice and strong institutions

Strengthen regulatory institutions. Measures include the active support and monitoring of decentralisation processes, mutual consideration and systematic inclusion of water and land use in relevant laws and regulations, extension of control and sanction mechanisms for better enforcement of agreed rules, the examination of the coherence of subsidies and identification of financing mechanisms, and the improvement of access to finance for cross-sectoral projects.

Plan strategically across sectors. Development programmes can assist their partners in the development of integrated sector strategies and planning based on a territorial approach as well as at national level (long-term/macro), basin plans that take into account the development of water availability and demand across sectors and tackle the trade-off between different users and their potential conflicting interests as well as their implications for land use planning (mid-term/meso), or climate risk, flood and drought management plans.

Keep operational management tools in mind. Local water resource management plans taking into account context-specific regulations and measures, the issuance of ordinances and decrees to agree on rules, and the negotiation of contractual acts between authorities and users (concessions, use agreements, management contracts...) contribute to an effective implementation of strategies and plans.

2. Promote coordination among all sectors and stakeholders so that decisions are understood and supported by all

Promote national dialogue. Development programmes can encourage the establishment of interdisciplinary, independent councils for commenting on sector policies and discussing recommendations for action, support inter-ministerial commissions and working bodies at subordinate levels, support coordination processes for laws and regulations, and foster coordination between government, private and financial sector, NGOs, research, and civil society.

Expand exchanges in the public sector at the regional and local level. At the regional level, development programmes can assist in establishing and supporting inter-agency steering and working committees as well as watershed councils involving all stakeholders. At the local level, measures include the support of water and land commissions, the promotion of inter-municipal cooperation, and the establishment of special purpose associations. Further data generation and information exchange should be encouraged at all levels for informed and transparent decision making.

Strengthen the involvement of users and local stakeholders. Development programmes can actively contribute in shaping participation by introducing various participatory exchange formats: Citizen participation, peer-to-peer dialogues, multi-stakeholder processes. Programmes should systematically ensure information, consultation, concertation with all stakeholders, and where possible strive for participation of local actors in decision making. This may include the need of creating user organisations and strengthening their powers of action.

Participants of the National Nexus Dialogue in Guinea play the NEXUS-Game, a social simulation that exposes players to nexus challenges connected to transboundary water management, in Conakry, Guinea.

Members of a community in the Kanem province, Chad, discuss how they can manage their resources together in the face of climate change.

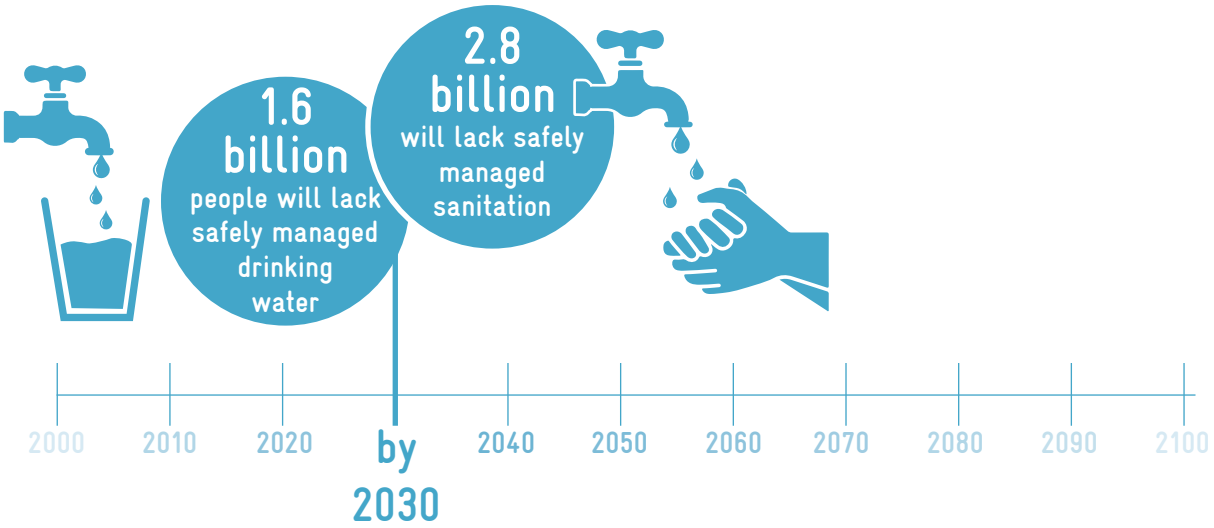
3. Leave no one behind – Ensure fair access to land and water and equitable distribution of water resources

Set the right priorities. Allocation mechanisms of water resources for different purposes need to be flexible and adapt to changes in water availability due to increased demands and climate change. Improved mechanisms concern allocation between different sectors and within each sector: agri-food systems, water-intensive industries, energy, tourism, private and domestic use. Furthermore, it is important to consider ecosystems and their need to sustain services as a full and equal sector. Drinking water supply should always be prioritised to ensure basic needs and livelihoods. Specific regulations, such as licences or permits for water abstraction or the application of quota systems, can contribute to avoid conflicts of interest and distributional problems in times of water scarcity.

Advocate for inclusion & distributive justice. Following the principles of water tenure, development programmes can promote the recognition of traditional land and water use rights and raise awareness on rights of marginalised groups. Analogous to the concept of land tenure, water tenure is increasingly finding its way into governance discourse. Tenure arrangements determine how people gain access to and make use of a resource and how they relate to each other through a set of formal or informal rules and agreements (FAO 2012). Programmes can actively support strengthening the competitiveness of smallholders vis-à-vis large farms to ensure smallholders' access to land and water. Further, rights and perspectives of the young generation should be strengthened for the stabilisation of rural areas.

Include gender approaches. In addition to the gender-sensitive design of all measures, gender-responsive or gender-transformative approaches in the planning and implementation of projects must be promoted. Different roles, responsibilities and opportunities of members of a society have to be taken into account to improve provision, management and conservation of water resources. Women and men should actively be involved in decision-making to gain efficiency, impact and equity in water and land governance, thereby contributing to resilience, economic growth and greater social cohesion.

Tanzanian smallholder farmers invested in a solar-powered water pump and hereby increase their yields.



4. Using water and other production factors sustainably in Agri-Food Systems

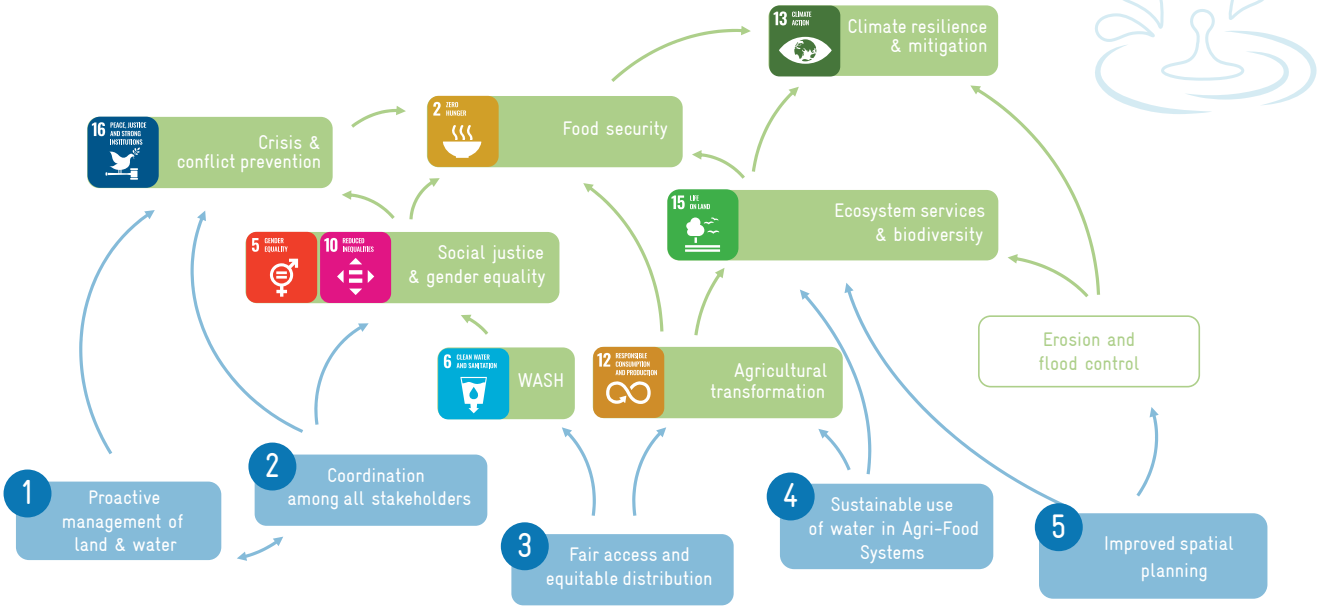
Improve irrigation infrastructure. Development programmes can provide support for the conversion to efficient irrigation methods taking into account potential adverse outcomes, improved water storage, the introduction of irrigation management systems for crop demand-based irrigation, and the digitalisation of farms (crop & input management, further processing, marketing...).

Promote agroecological practices. Agroecology is a transdisciplinary approach to transforming agri-food systems in a sustainable, climate-smart and equitable way. Agroecology encompasses research, social movement and a set of farming practices. Farming practices include cultivar improvements, soil moisture conservation, agroforestry, farm and landscape diversification, organic fertilisation and crop protection, eco-system-based management in fisheries and aquaculture and other approaches that work with natural processes.

Build capacities. Development Programmes can assist in organising awareness campaigns on the sustainable use of soil and water and help to create incentive systems for the transformation to sustainable production. Participation and more active involvement of water users in management should be promoted in order to ensure transfer of responsibility and self-regulation. Programmes can support the development of institutional and organisational capacities for providing education, training and extension services, and provide support to the creation of cooperatives for direct processing and marketing of products.

Bucket drip irrigation for smallholder farmers in Lusango, Zambia.

Figure 2 **Fields of action for mainstreaming water in rural development and their contribution to the achievement of common SDGs**



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5. Strengthen the resilience of rural livelihoods

Improve water retention with nature-based solutions. Measures to reduce flood risk, prevent erosion and improve water storage include reforestation and planting (incl. nourishing forests to supply local population, hedges and fascines), soil conservation (incl. terracing, swales, furrows, gullies, embankments), and restoration of freshwater, terrestrial and coastal ecosystems (e.g. natural river systems, wetlands, upstream forest systems, lagoons…) for the restoration of ecosystem services. Nature-based infrastructure, such as forests, wetlands and mangroves is up to 50 per cent cheaper than traditional 'grey' infrastructure to provide the same infrastructure service (IISD, 2021).

Store and distribute water locally. Measures include retention basins, reservoirs and small dams for flood control and to balance seasonal fluctuations in water availability, collective and individual cisterns for bridging outages in drinking water supplies, invert sills, infiltration wells and underground dams for groundwater recharge and storage, as well as drinking water supply and wastewater disposal infrastructure.

Tap non-conventional resources. Measures include diversion structures for the utilisation of flood waters, underground drainage and deep drilling to extract groundwater to secure drinking water supply (assuming sustainability), brackish water desalination for supplementary drinking water or irrigation supply, rainwater collection from roofs and sealed surfaces or fog collectors, as well as reuse of treated wastewater and by-products to strengthen circular economy.

Reforestation measures in Mauritania.

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