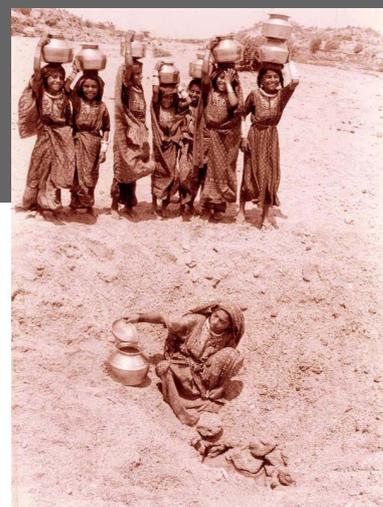


Water scarcity and desertification

Desertification, land degradation and drought have negative impact on the availability, quantity and quality of water resources that result in water scarcity.



The challenges and threats of water scarcity to dryland populations are set to increase in magnitude and scope. As the world's population has swollen to well over 6 billion people, some countries have already reached the limits of their water resources. With the existing climate change scenario, almost half the world's population will be living in areas of high water stress by 2030, including between 75 million and 250 million people in Africa. In addition, water scarcity in some arid and semi-arid places will displace between 24 million and 700 million people (WWDR 2009).

As desertification takes its toll, water crises are expected to continue raising ethnic and political tensions in drylands, contributing to conflicts where water resources straddle or delineate country borders. In some countries, land degradation has led to massive internal migrations, forcing whole villages to flee their farms for already-overcrowded cities. 50 million people are at risk of displacement in the next 10 years if desertification is not checked (UNU 2007). Implementing sustainable land and water management policies would help to overcome the challenge of these increasingly extreme situations.

Water scarcity leaves a lasting impact on soil

Desertification is land degradation in drylands, resulting from various factors including climatic variations and human activities. Water scarcity is the long-term imbalance between available water resources and demands. Increasing occurrences of water scarcity, whether natural or human-induced, serve to trigger and exacerbate the effects of desertification through direct long-term impacts on land and soil quality, soil structure, organic matter content and ultimately on soil moisture levels. The direct physical effects of land degradation include the drying up of freshwater resources, an increased frequency of drought and sand and dust storms, and a greater occurrence of flooding due to inadequate drainage or poor irrigation practices. Should this trend continue, it would bring about a sharp decline in soil nutrients, accelerating the loss of vegetation cover. This leads in turn to further land and water degradation, such as pollution of surface and groundwater, siltation, salinization, and alkalization of soils.

Poor and unsustainable land management techniques also worsen the situation. Over cultivation, overgrazing and deforestation put great strain on water resources by reducing fertile topsoil and vegetation cover, and lead to greater dependence on irrigated cropping. Observed effects include reduced flow in rivers that feed large lakes such as the Aral Sea and Lake Chad, leading to the alarmingly fast retreat of the shorelines of these natural reservoirs in Central Asia and Northern Africa.

Facing the agricultural challenge

To meet food security targets in drylands requires the implementation of sustainable agricultural policies by which local populations, particularly poor and rural ones, would benefit most. As current irrigated cropping systems require the greatest share of water in most countries and demand is expected to rise 14 percent in the next 30 years, adaptation to this increase is vital, requiring variability and flexibility.

Changes to land use and cropping patterns are one option for adaptation. Less water-demanding and drought-resistant crops could also be an alternative. No-tillage, which is the practice of leaving residue of the previous season's crops on farmland, can increase water infiltration while reducing evaporation as well as wind and water erosion. The use of other soil fertilization techniques, like biochar, is also promising, and simultaneously increases moisture capture, which is associated with carbon sequestration.

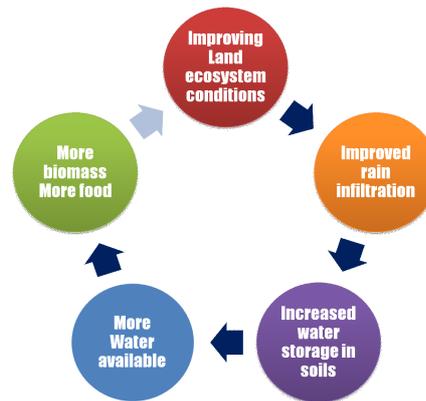


Switching from annual to permanent or semi permanent crops could be a further option. The advantages of such farming include reduced energy requirements associated with limited topsoil disturbance and soil erosion prevention. Multi-annual crops would also bring the benefits of easy access to water and soil nutrients in deep soil layers.

Land use changes should be considered where current agricultural patterns are no longer sustainable in terms of water consumption. Conversions of marginal agricultural lands into suitable alternatives, such as forests or grassland, would do much to prevent land degradation and to regenerate long-term farming potential

- Protecting wetlands from negative impacts of agricultural and settlement encroachment;
- Restoring soil productivity and reducing soil erosion through sustainable land cover management; and
- Adopting sustainable cropping techniques, such as organic farming and agroforestry.

The virtuous circle of SLWRM



The Virtuous Circle for improvement starts from Land condition improvement

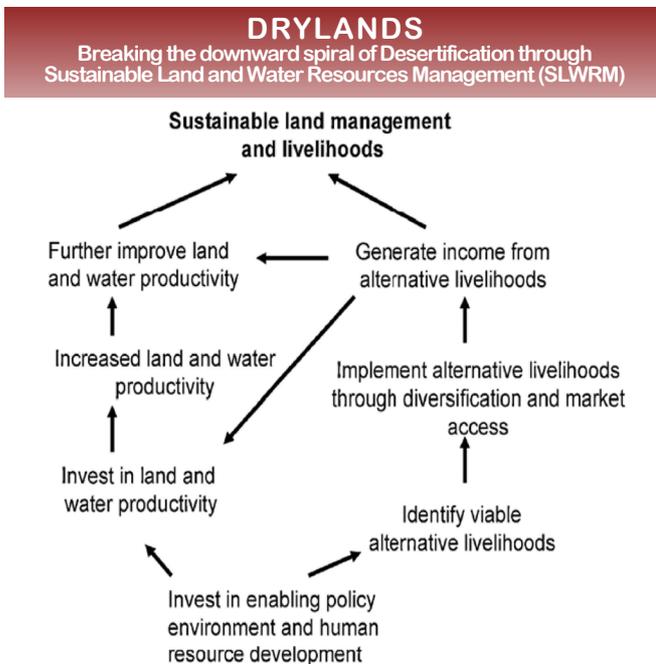
The UNCCD promotes a wide range of such measures with the aim of enhancing sustainable environmental and natural resources management. This is based on the understanding that the conservation protection and rehabilitation of land together with freshwater resources is an essential component of any policy that targets the protection of natural resources and the environment. Another component is the enhancement of communities' resilience to drought and other risks associated with water scarcity and land degradation.

This is brought about through mitigation activities, knowledge sharing and early warning systems. Such measures are complemented by actions taken under the implementation of the 10-year strategic plan and framework of the UNCCD (2008-2018) including:

- Providing advice, information and capacity building to support co-ordination initiatives on water scarcity and drought and associated initiatives relating to the right to food, migration, drought and adaptation to climate change;
- Synthesizing a framework of policies and research, including indicators, management models, research models and participation models to facilitate interactions between governments with different legal frameworks on water use; and
- Drawing on access to multilateral resources to promote, support and monitor NAPs against increasing water scarcity.

The above priority actions may be facilitated by focused partnerships and the involvement with mechanisms and organizations such as UN-Water, FAO, ISDR, OHCHR, UN-Habitat, WHO, UNU, UNHCR, IWCN, UNDP and UNEP as well as the implementation of the objectives of the sister Rio Conventions, UNFCCC and CBD.

Pathways for attaining SLWRM in drylands through consideration of agricultural and alternative livelihoods (adapted from Adeel and Safriel)



Beyond agriculture

An integrated land and water resource management policy would ultimately bring global environmental and socio-economic benefits. Rural and urban populations both benefit from sustainable land management practices. These also serve in maintaining globally significant agricultural biodiversity and resilient agro-ecosystems, including rangelands and forest resources; in preserving habitats and genetic resources; and reversing land degradation and desertification trends with improved water quality and availability. Sustainable land management practices include:

- Fostering balanced freshwater resource management for domestic use, including aquaculture, fishing, and irrigation;
- Restoring water table recharge;