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Economic and Social Commission for Western Asia (ESCWA)

ESCWA Celebrates the 2016 World Day to Combat Desertification

Land Degradation Neutrality in the Arab Region – Preparing for SDG Implementation

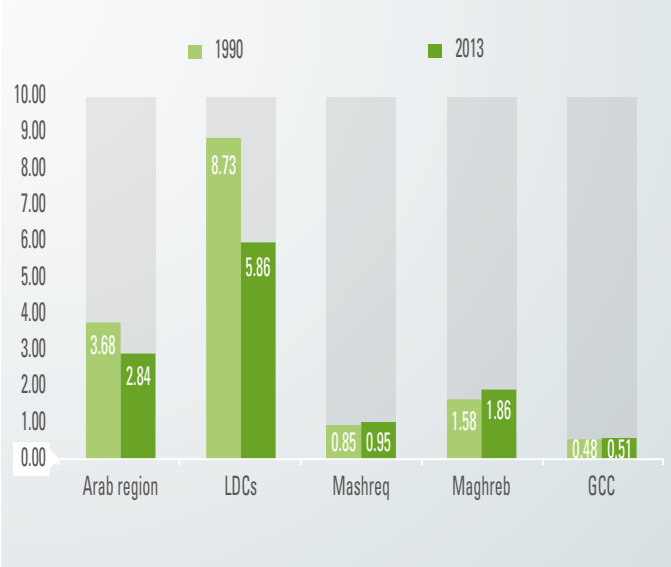
Land Degradation in the Arab Region

The Arab region is highly susceptible to land degradation, which is exacerbated by the growing scarcity of water resources and high levels of aridity. The long coastal stretches are threatened due to the combined effect of falling water tables and rising sea levels. Climate change is increasing the intensity and frequency of extreme weather events, and the region is more likely to be affected by rising temperatures than others.

According to predictions, the Arab region will experience growing variability in precipitation and

Land degradation refers to any reduction or loss in the biological or economic productive capacity of the land resource base. Land degradation and desertification are associated with climate variability and human influences. Examples include extended droughts, increased temperature, soil erosion, and human activities such as unsustainable agricultural practices, overgrazing and deforestation. Land degradation harms ecosystems and communities by reducing their capacity to ensure food and water security, generate livable incomes and cope with the impact of climate change. The most visible impact of land degradation is reduced land productivity and destruction of properties. Effects also include increased vulnerability to droughts and water scarcity, extreme weather events such as flash floods and heat waves, greater desertification and reduced resilience. Desertification refers to land degradation in arid, semi-arid and dry subhumid areas.

Figure 1 Average vegetation coverage in the Arab region and subregions (percentage of land area)



Source: Economic and Social Commission for Western Asia (ESCWA), *Arab Sustainable Development Report: First Edition, 2015* (Beirut, E/ESCWA/SDPD/2015/3).

more extreme weather events, such as droughts, which will have detrimental consequences for agriculture-based communities.[1] The region is extremely dry, with 92 per cent of hyperarid land, and 73 per cent of arable land affected by land degradation.[2]

In the past 25 years, the increased cultivation of marginal lands and poor management of rangelands have contributed to the loss of 2 million hectares of agricultural land in North Africa, mainly through soil erosion. Overexploitation has also caused high to extreme levels of soil erosion in about 35 per cent of the Middle East area. Over 130 million hectares of rangeland have degenerated. High risk areas include the mountains in Lebanon and Yemen, coastal plains susceptible to seawater intrusion such as in Gaza or the Nile Delta, desert encroachment in the Sudan and the Arabian Peninsula, and salinization in the Jordan Valley.[3]

Vegetation cover plays an important role in soil erosion control. Average vegetation cover as a percentage of land area in the Arab region decreased from 3.7 per cent in 1990 to 2.8 per cent in 2013. This 23 per cent reduction was due in large part to a 33 per cent decrease in the Comoros, Djibouti, Mauritania, Somalia, the Sudan and Yemen, while other countries witnessed relatively small increases (less than 5 per cent of the region has witnessed positive changes in vegetation cover).[4]

With the advent of climate change, sea level rise is fast becoming a major concern in the Arab region. Many coastal areas are at great risk, if not already affected by salt-water intrusion leading

Land degradation in the Euphrates and Tigris River Basin

In the Syrian Arab Republic, salinity is especially critical in the Euphrates basin, where more than 40 per cent of total irrigated land is affected. High soil salinity has spread over 125,000 hectares, resulting in a 37 per cent decline in yields of cotton and wheat, the main irrigated crops. Total annual loss in agricultural productivity is estimated at $80 million or 0.45 per cent of GDP.[a]

In the wetlands of Mesopotamia, the marshland shrunk from 9,000 square kilometres in the 1970s to a few hundred square kilometers in the early 2000 due to the building of dams and agricultural irrigation structures across the Tigris and Euphrates Rivers since the 1970s.[b]

Approximately 145 cubic kilometres of freshwater were lost from 2003 to 2009. This was induced by different factors:

- Water abstraction for agriculture for large scale development projects in Turkey, with the installation of 22 dams;[c]
- Droughts that have led to increased groundwater abstraction and estimated to account for up to 60 per cent of the loss;
- One fifth of the water losses is attributed to shrinking of the snowpack and soil drying up.[d]

Some of the dramatic results can be observed through the Landsat 5 satellite images of the Qadisiyah Reservoir.

[a] Muawya Ahmed Hussein, "Costs of environmental degradation: an analysis in the Middle East and North Africa region", *Management of Environmental Quality: An International Journal*, vol. 19, No. 3 (2008).

[b] Ibid.

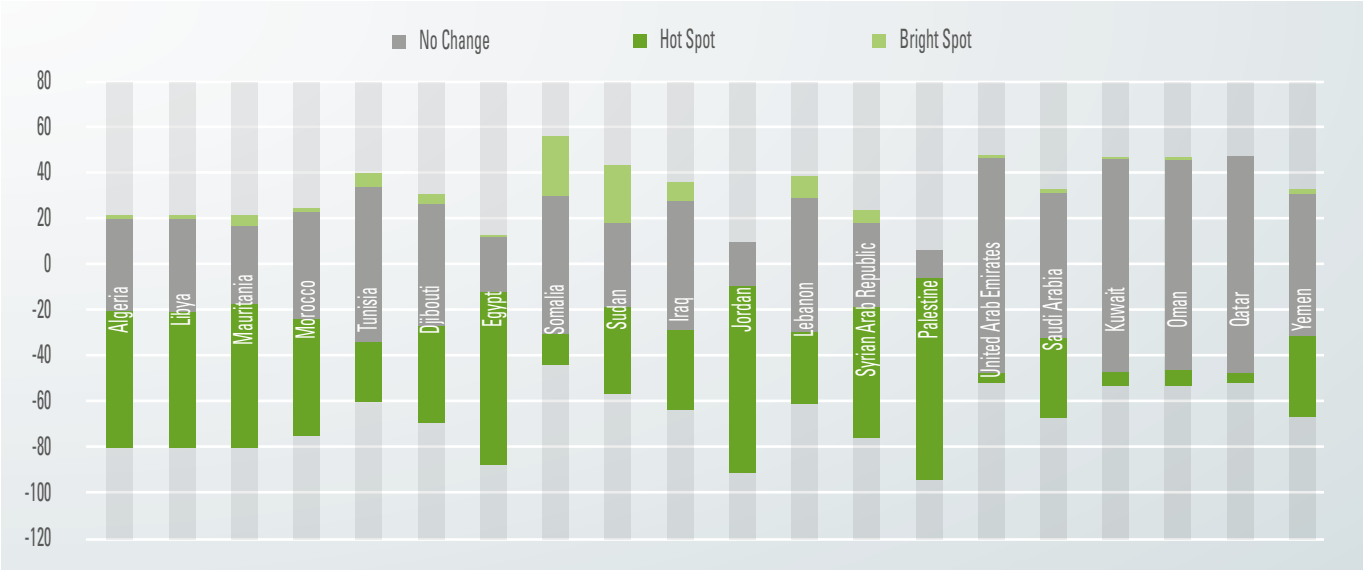
[c] Food and Agriculture Organization of the United Nations (FAO), *Report of the Expert Meeting on the Review of Fisheries and Aquaculture Activities in the Euphrates-Tigris Basin, Erbil, Iraq, 11-12 November 2012*. Available from http://www.fao.org/3/a-i4217e.pdf.

[d] See http://www.nasa.gov/mission_pages/Grace/news/grace20130212.html.

to soil salinization, degradation of coastal lands and aquifers, and loss of biodiversity. Sea storm surges and inundations are expected to lead to the destruction of coastal economic infrastructures.

Faour (2014) delineated land degradation and desertification in the Arab region through remote sensing. The resulting figure shows long-term changes in land degradation and desertification vulnerability,

Figure 2 Hot spots, bright spots and no change vegetation areas, GIMMS data, 1982-2006



Source: G. Faour, G. (2014), "Detection and mapping of long-term land degradation and desertification in the Arab region using MODESERT", *Lebanese Science Journal*, vol. 15, No. 2 (2014).

Average annual costs due to land degradation, 2000 (percentage share in gross domestic product)

Country	Algeria	Egypt	Lebanon	Morocco	Syrian Arab Republic	Tunisia
Land degradation cost	1.2	1.2	0.6	0.4	1.0	0.5

Source: Muawya Ahmed Hussein, "Costs of environmental degradation: an analysis in the Middle East and North Africa region", *Management of Environmental Quality: An International Journal*, vol. 19, No. 3 (2008).

derived from Global Inventory Modeling and Mapping Studies (GIMMS) Normalized Difference Vegetation Index (NDVI) data over the period 1982-2006. Results indicate that more than 40 per cent of the Arab region is sensitive to land degradation and desertification.[5]

Land degradation has a negative impact on the economy, due to factors including the effects of soil salinity, water erosion and rangeland degradation on land productivity. Attempts have been made to quantify the cost of environmental degradation caused by desertification and land degradation. Although precise data are not available for each source of land degradation, orders of magnitude can be estimated. Data should be verified through specific country studies.

The repercussions of desertification in the Arab region are poverty, food insecurity, forced displacement, migration and disruption of social and political institutions. Continuing land degradation has severe environmental, economic and social implications, including instability in the social, economic and political life.

Estimating the cost of land degradation in Morocco

A case study was undertaken to estimate the cost of land degradation in Morocco, based on 2006 data. About 93 per cent of the land was found arid and 7 per cent subhumid and humid. An estimated 19 per cent, excluding the Saharan provinces, was subject to severe and very severe degradation: soils were fragile, contained less than 2 per cent of organic matter and were thus vulnerable to water and wind erosion.

Arable land and permanent crops represented 9.3 million hectares, and irrigated agriculture some 1.4 million hectares, which only constituted 15 per cent of the total cultivated area. However, irrigated agriculture played an important role in agricultural production because of its high productivity and lower vulnerability to drought. Agricultural activities were responsible for all severe and very severe land degradation in the country, although there was no indication of non-recoverable loss in the soil's biological function. The estimated cost of degraded cropland ranged from $78 million to $157 million.

Rangelands of about 65 million hectares were the primary source of animal food, providing 30 per cent of total requirements. The average cost of loss of forage production due to land degradation was estimated at $16.7 million.

Degradation of cropland and rangeland exacted an estimated annual cost of $91-$178 million, or an average of $134 million, which represented 0.4 per cent of the country's gross domestic product (GDP) or some $4 per capita in 2000. The impact of salinity on irrigated soil was however not included in those calculations.

Source: M. Sarraf and A. Jorio, "Land degradation: the case of Morocco", in *The Cost of Environmental Degradation: Case Studies from the Middle East and North Africa*, Leila Croitou and Maria Sarraf, eds. (Washington, D.C., World Bank, 2010).

Land degradation neutrality in the Sustainable Development Goals

The United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (UNCCD) was established in 1994 to halt land degradation. So far, however, actions taken could not keep up with the high rate of land degradation. The twelfth session of the Conference of the Parties to the UNCCD defined land degradation neutrality as "a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems".

In practice, this means securing enough healthy and productive resources by avoiding degradation whenever possible, better managing the land, and restoring the land that has already degraded. At its

Sustainable Development Goal 15 and related targets

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

- 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
- 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally
- 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world
- 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development
- 15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species
- 15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed
- 15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products
- 15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species
- 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts

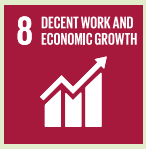
core are better land management practices and better land use planning.

In 2012, the United Nations Conference on Sustainable Development agreed upon the need for achieving land degradation neutrality, and the subsequent negotiation process for the Sustainable Development Goals (SDGs) emphasized its importance. Land degradation neutrality is part of the SDGs: target 15.3 under Goal 15 calls for the protection, restoration and promotion of terrestrial ecosystems.

The means of implementation relevant to land degradation are:

- 15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.
- 15.b Mobilize significant resources to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.
- 15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.

Targets related to the sustainable management of land resources in some SDGs

	2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment. 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.
	6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity. 6.6 By 202 protect and restore water related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
	8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead.
	11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries. 11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage.
	12.2 By 2030, achieve the sustainable management and efficient use of natural resources.
	13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. 13.2 Integrate climate change measures into national policies, strategies and planning.

Target 15.3 has become a strong vehicle to drive UNCCD implementation. It is also linked to other SDGs on climate change mitigation and adaptation, biodiversity conservation, ecosystem restoration, food and water security, disaster risk reduction, and poverty reduction. While all goals and targets are strongly related, the following have a direct link to sustainable management of land resources.

The UNCCD recommends several policies and methods to achieve land degradation neutrality, notably better land management practices and land use planning. This includes avoiding unsustainable practices such as monocultures, overabstracting limited water resources and overgrazing. Solutions to combat desertification and land degradation include ecosystem restoration through practices such as agroforestry, no till agriculture and use of cover crops; extensive and sustainable pastoralism; and integrated landscape planning.[6] States are responsible for setting national targets, guided by this global level of ambition while taking into account national circumstances.

Institutional Setting to implement Land degradation neutrality

All ESCWA member States but the State of Palestine have ratified the UNCCD. Some are revising earlier plans or preparing new national strategies, action plans and financing strategies, involving long-term improvement of the productivity of land coupled with the rehabilitation, conservation and sustainable management of land and water resources, at national and community levels.

Arab States have also established dedicated institutions, such as the Arab Centre for the Study of Arid Zones and Dry Lands (ASCAD) through the League of Arab States, or the International Center for Biosaline Agriculture (ICBA), which work towards the conservation and development of natural resources in arid lands. The Council of Arab Ministers Responsible for the Environment (CAMRE) prioritized the issue of drylands and desertification among other pressing environmental issues since its session in Libya in December 2003, with the adoption of the Arab Environmental Work Programme. Unfortunately, efforts and resources devoted to combating land degradation and desertification so far remain below requirements.

More recently, under the umbrella of the League of Arab States Climate Risk Nexus Initiative, the UNCCD developed an Arab subregional land degradation neutrality initiative, in partnership with the United Nations Environment Programme and the International Union for Conservation of Nature. It addresses food security, water scarcity and social vulnerability. The draft concept of the initiative was developed during an event organized in 2016 in Cairo, in cooperation with the Arab Water Council.[7] Creating a regional network and a platform where data on land degradation and desertification can be published is key to enable science and evidence-based policymaking in the Arab region.

Several global initiatives also address the issue of land degradation: the eleventh Conference of the Parties to the UNCCD established an intergovernmental working group in 2013 to define targets and develop concrete options for implementation and monitoring, and strategies for resource mobilization. The Republic of Korea and the UNCCD also created the Land Degradation Neutrality Project, aimed at piloting land degradation neutrality in 14 countries (including Algeria in the Arab region) and providing technical assistance on mainstreaming it in public and private sector activities.

In terms of implementation and financing, the UNCCD created the Land Degradation Neutrality Fund, an investment platform established as a public-private partnership to support the transition to neutrality. It will focus on direct investments in large-scale land rehabilitation plans and targeted allocations for small and medium-scale projects that produce local benefits.

Knowledge exchange platforms, capacity-building and partnership facilitation tools, and pilot projects have been created, such as the Soil Leadership Academy, Greening Drylands Partnership, Land for Life Award, the Economics of Land Degradation Initiative, the Bonn Challenge, and the 2014 New York Declaration on Forests. The private sector has also carried out activities, such as Initiative 20x20 and Net Positive Impact.

Land degradation neutrality indicators

Many countries still lack the needed methods, data and expertise to set baselines, and monitor and report on progress against land degradation. In March 2016, the United Nations Statistical Commission approved a draft global indicator framework intended for the follow-up and review of progress towards Goal 15.[8] The indicator proposed for SDG target 15.3 is the proportion of land that is degraded over total land area. The three subindicators are land cover and land cover change; land productivity; and carbon stocks above and below ground.

The UNCCD provides support in setting national voluntary targets through the Land Degradation Neutrality (LDN) Target Setting Programme. Operational since early 2016, this programme enables States to define national baselines and measures to achieve land degradation neutrality by 2030.

The national voluntary targets should be measurable, verifiable and time-bound. In order to set a baseline, countries identify priority areas, gather and process national data, and seek default estimates from global data sources. The baseline will describe the initial status of land degradation, identify particularly vulnerable areas, and help derive indicators. Reporting will be based primarily on official national data, which will be complemented by global available data sets and earth observations, such as LADA2 (FAO) and remote sensing deliveries. Such data can fill national data gaps, and be ground-truthed and validated during reporting cycles.[9] National indicators on governance of biophysical systems and related socioeconomic conditions can be added. The data collected will serve to assess the causes of land degradation and identify the right policies and management interventions.

The process of land degradation is complex and has diverse implications, which should be addressed by all concerned actors from different angles, in a coordinated manner. The LDN Target Setting Programme facilitates multistakeholder consultations, and organizes workshops to discuss and validate the set LDN baseline and measures.

Despite lack of data globally and in the Arab region, it is possible and necessary to take action. The monitoring and assessment of the state of land degradation, and the needed indicators and interventions should be developed in parallel.[10] The newly adopted 2030 Agenda, by highlighting the problem of land degradation and desertification, offers a unique opportunity for all involved and affected actors to work towards achieving land degradation neutrality.

Endnotes

1. Economic and Social Commission for Western Asia (ESCWA), *Arab Sustainable Development Report: First Edition, 2015* (Beirut, E/ESCWA/SDPD/2015/3).
2. ESCWA, *Land Degradation Assessment and Prevention: Selected Case Studies from the ESCWA Region* (New York, 2007, E/ESCWA/SDPD/2007/4); Mostafa K. Tolba and Najib W. Saab, eds., *Arab Environment: Future Challenges* (Arab Forum for Environment and Development (AFED), 2008); and ESCWA, *Compendium of Environment Statistics in the ESCWA Region* (New York, 2007, E/ESCWA/SCU/2007/2).
3. ESCWA, *Land Degradation Assessment and Prevention*; and K. Elgendy, "The impact of sea level rise on the Arab world", 5 March 2010, available from http://www.carboun.com/climate-change/the-impact-of-sea-level-rise-on-the-arab-world-2/.
4. ESCWA, *Arab Sustainable Development Report: First Edition, 2015*.
5. G. Faour, "Detection and mapping of long-term land degradation and desertification in the Arab region using MODESERT", *Lebanese Science Journal*, vol. 15, No. 2 (2014).
6. See http://www.unccd.int/en/programmes/RioConventions/RioPlus20/Pages/Land-DegradationNeutralWorld.aspx.
7. See http://www.iucn.org/content/arab-land-degradation-initiative.
8. The Global Mechanism of the UNCCD, *Land Degradation Neutrality: The Target Setting Programme* (2016). Available from http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/4_2016_LDN_TS%20_ENG.pdf.
9. See http://www.unccd.int/en/programmes/RioConventions/RioPlus20/Pages/Land-DegradationNeutralWorld.aspx.
10. Thomas Caspari, Godert van Lynden and Zhanguo Bai, "Land degradation neutrality: an evaluation of methods", ISRIC World Soil Information Report No. (UBA-B) 002163/E (Wageningen, 2015). Available from https://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/texte_62_2015_land_degradation_neutrality_0.pdf.

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