



**THE GLOBAL  
MECHANISM**  
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**Food and Agriculture  
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United Nations**

**BRIEFING  
NOTE**

# LAND DEGRADATION NEUTRALITY FOR **WATER SECURITY AND COMBATTING DROUGHT**



## Land Degradation Neutrality for Water Security and Combatting Drought

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# WATER SCARCITY: A GLOBAL CRISIS

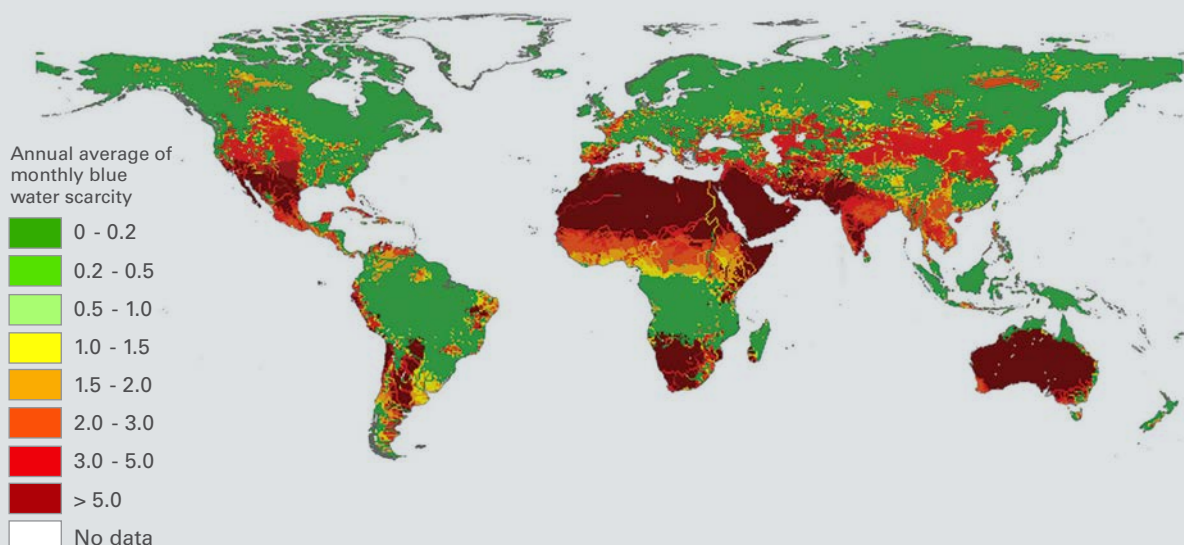
Water scarcity, generally understood as “the lack of access to adequate quantities of water for human and environmental uses,”<sup>1</sup> is already widespread and remains on the rise. Water scarcity is found in nearly every region in the world (see Map 1), with higher levels of scarcity experienced in areas with low natural water availability (such as arid and semi-arid regions), high levels of irrigated agriculture or high population density relative to water availability.<sup>2</sup> Around 36% of the world’s population is currently living in water-scarce regions,<sup>3</sup> and a 2018 global study on water for drinking, cooking and sanitation from the United Nations concluded that water shortages could affect 5 billion people by 2050.<sup>4</sup>

Rising temperatures and increasing variability in precipitation patterns have expanded water scarcity at the global level, increasing the scope, frequency and severity of climate-induced temporary situations of extreme water insecurity, or droughts.<sup>5</sup> This leads to major negative implications, both globally and nationally and across multiple economic sectors. Worldwide, the agricultural sector, which accounts for two-thirds of global water withdrawals,<sup>6</sup> is the most

sensitive to water scarcity and droughts, and with lower water availability for agricultural production, this could have direct adverse socio-economic impacts, such as increased food insecurity, poverty and migration. Water quality and the availability of clean drinking water are also affected. Water scarcity and recurring droughts also lead to negative environmental impacts, such as reduced biodiversity and ecosystem services and higher greenhouse gas emissions from wetlands and other water systems.<sup>7</sup>

Land degradation and water scarcity are closely linked. Healthy land has a natural capacity to store and filter water, but this capacity is lost when land is degraded. Similarly, land-use changes, such as the conversion of wetlands and forests to other land uses, disrupt the water cycle and hydrological functions. Conversely, water scarcity and droughts can accelerate the processes of land degradation,<sup>8</sup> for instance due to poor irrigation management and drainage and altered hydrology, leading to poorer quality soils. To combat drought and achieve long-term water security, it is therefore necessary to manage and preserve both land and water resources.

Map 1 Water scarcity at the global scale<sup>9</sup>





# WATER SECURITY IN THE SUSTAINABLE DEVELOPMENT GOALS

In 2015, the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development, a global commitment detailing 17 Sustainable Development Goals (SDGs) and 169 targets to achieve by 2030. The agenda recognizes the importance of access to water and water security in achieving sustainable development through the designation of a specific goal (SDG 6: Ensure availability and sustainable management of water and sanitation for all).

SDG 6 and its targets are formulated to encompass all aspects of water security, defined as *“the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability”*.<sup>10</sup>

Due to the strong biophysical connections between land and water, extensive coordination in the land-water policy nexus is required to achieve SDG 6. Studies show that actions for the sustainable management and use of land would directly benefit

water security and management; IPBES surveyed the relevance of addressing land degradation for achieving the SDGs and found that SDG 6 on clean water and sanitation has the second highest relevance, after SDG 15 (Life on Land).<sup>11</sup>

Land Degradation Neutrality (LDN) is an integral part of SDG 15 and is incorporated in target 15.3, which aims to “combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world” by 2030. Considered an accelerator for the achievement of multiple SDGs, LDN encourages the adoption of a broad range of measures to avoid or reduce land degradation through appropriate planning, regulation and sustainable land management practices, combined with localized action to reverse past degradation, through land restoration and rehabilitation, to achieve a state of no net loss of healthy and productive land.

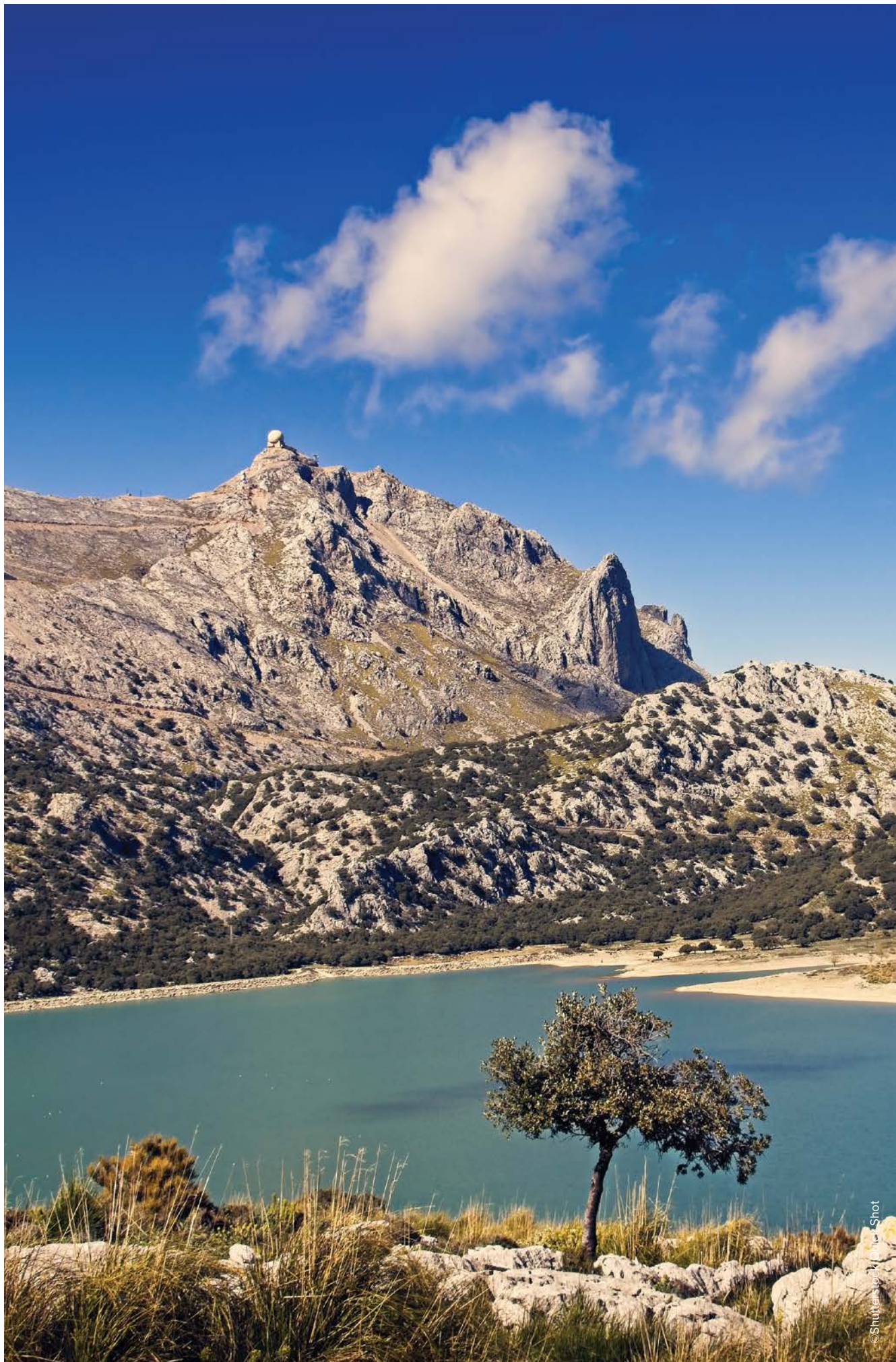
LDN provides a supporting framework to manage both land and water resources sustainably at the landscape level, address the challenge of water insecurity and drought and provide opportunities for policy and operational synergies within the land-water nexus.

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Water security is defined as the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.

UN-Water, 2013

”



# LDN TARGETS AND NATIONAL DROUGHT PLANS: OPPORTUNITIES TO ACHIEVE WATER SECURITY

Recognising the importance of healthy and productive land for sustainable development and the achievement of the SDGs, countries have started to integrate LDN into their national development plans. With the support of the Global Mechanism and the secretariat of the UNCCD, over 120 countries have committed to achieving LDN and are being supported by the LDN Target Setting Programme<sup>12</sup> to formulate national LDN targets and accompanying measures.

These LDN targets and measures take into account a broad range of actions to combat land degradation and restore the ecosystem functions and services provided by land, including water cycling. They therefore provide evidence of how LDN can directly contribute to water security and support the achievement of SDG 6 and other national agendas on water management and drought mitigation.

In addition to the LDN Target Setting Programme, a Drought Initiative was launched at the request of the UNCCD conference of the Parties to support countries with drought management and mitigation.<sup>13</sup> UNCCD country Parties who joined the Initiative developed National Drought Plans, the key elements of which are: (i) early warning and prediction, (ii) vulnerability mapping, (iii) preparedness and mitigation, (iv) response, and (v) communications.<sup>14</sup>

This study is based on a review of 77 LDN target setting country reports from countries participating in the LDN Target Setting Programme and 17 National Drought Plans (NDPs) from countries who participated in both initiatives.<sup>15</sup> These LDN country reports and NDPs detail how countries can use LDN to achieve multiple benefits, enhance synergies and streamline policies within the land-water nexus. The study assesses the water-related LDN approaches countries aim to use to achieve LDN, which for the purposes of this study have been grouped under five categories and 15 sub-categories:

## **I. Integrated land and water management through:**

1. a landscape approach at watershed level;
2. soil and water conservation practices;
3. mitigation of coastal erosion and coastal management;

## **II. Improved management of water resources through:**

4. enhanced water harvesting;
5. expansion of irrigated areas;
6. monitoring of water resources;

## **III. Increased water-use efficiency through:**

7. use of water-saving irrigation techniques;
8. other water-saving measures for agricultural and drinking water;
9. wastewater reuse;

## **IV. An enabling environment including:**

10. legislation and national policies;
11. institutional set-up;
12. financing strategies;

## **V. Measures related to wetlands and aquatic ecosystems:**

13. wetland conservation or restoration;
14. protection against run-off or pollution;
15. sustainable use of wetlands and wetland productivity.

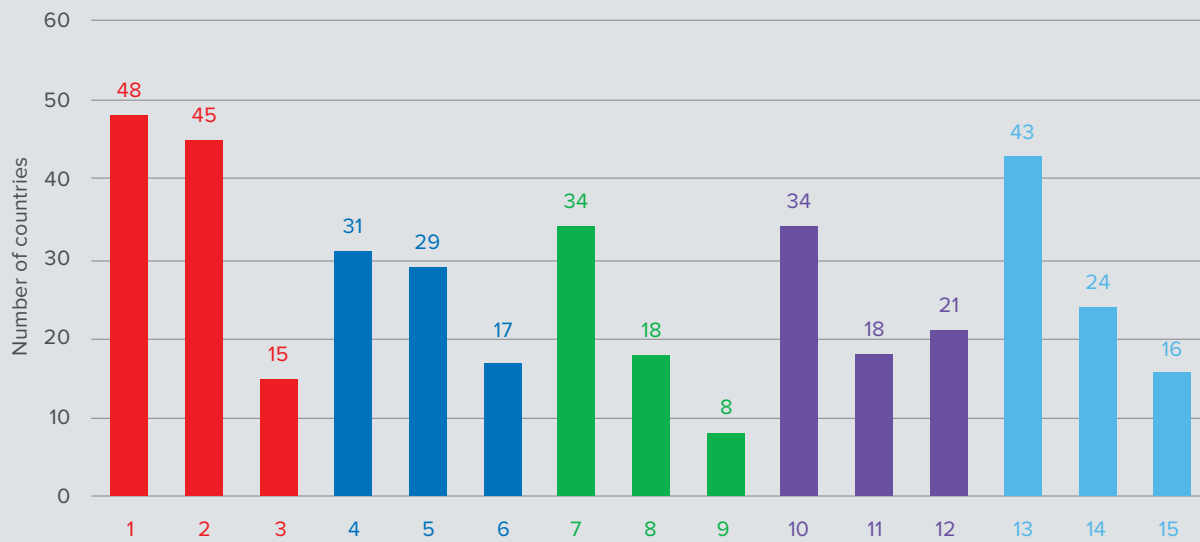
Although not all 77 countries analysed in this study included all five categories identified above, a majority of them did acknowledge the interdependence between LDN, water security and drought mitigation, and all countries cited at least one of the 15 sub-categories of water-related LDN approaches listed above (see Figure 1). The most cited approaches included developing or using a landscape approach at watershed level, soil and water conservation practices and wetland conservation or restoration. National characteristics such as water availability, forest cover, wetland extent and climate all played a determining factor in the types of water-related LDN approaches that each country cited, which explains the broad range of approaches found amongst the countries, from direct action at field level to changes at the national policy level.

LDN measures, in particular soil and water conservation, have a long-term effect on water security and constitute an essential part of drought and climate change mitigation and, therefore, of the third pillar of drought management (drought mitigation measures). Fourteen of the 17 NDPs reviewed in this study outlined soil and water conservation measures in their chapter on drought mitigation.

As all countries are today potentially exposed to drought, global initiatives such as the Drought Initiative should be scaled up to encourage and support countries to develop an NDP, including detailed drought mitigation actions. Similarly, while countries prone to desertification are at the forefront of LDN target setting, land degradation and water scarcity are global issues sparing no region.

**Figure 1**

**The water-related LDN approaches as indicated in the 77 LDN target setting country reports and 17 NDPs**



- I. Integrated land and water management**
  - 1. a landscape approach at watershed level
  - 2. soil and water conservation practices
  - 3. mitigation of coastal erosion and coastal management
- II. Improved management of water resources**
  - 4. enhanced water harvesting
  - 5. expansion of irrigated areas
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- III. Increased water-use efficiency**
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- V. Measures related to wetlands and aquatic ecosystems**
  - 13. wetland conservation or restoration
  - 14. protection against run-off or pollution
  - 15. sustainable use of wetlands and wetland productivity

**Drought mitigation measures in Rwanda**

Rwanda’s National Drought Plan provides a detailed outline of the measures it aims to use to combat drought: *“Examples of drought mitigation measures that are expected to contribute to (addressing vulnerability and building resilience) include promoting water-conserving irrigation systems, irrigation water management practices, use of cover crops, use of soil water conservation practices such as terraces and other soil fertility management practices, hay and fodder production and storage for use during drought, strategic food reserves and research into drought resistant crop and animal varieties. They also include increasing water storage capacity and networks for both rural and urban areas in drought prone areas as well as supporting water conservation initiatives to ensure wise use of water during the drought.”*



## I. An Integrated Approach Linking Land and Water Management

Water is central to the water – energy – food – biodiversity nexus. Therefore, achieving LDN demands a landscape approach, with due attention paid to natural resource management. For water, the natural landscape perimeter is the watershed, and forty-eight out of the 77 countries analysed aim to use watershed management, for large basins as well as for micro-watersheds. As water use decisions generally take place at the watershed level, this approach would improve the allocation of water for different uses, from drinking water, water for ecosystems, and water for agriculture, industry, energy, and other economic activities, thereby potentially reducing losses through poor water management and planning.

Forty-five countries explicitly address the linkage between land and water through at least one soil and water conservation measure, such as watershed reforestation (a majority of the 45 countries), gully control (Sudan and China) or terracing to combat water erosion in slopes (Eritrea and Rwanda), diversion of flood water to reduce soil salinization (Cape Verde), reduction of waterlogging (Bangladesh), and drainage (Algeria, Mauritius and Ukraine). This linkage could be effectively mainstreamed into national planning in other sectors; for example, Viet Nam plans land uses for agriculture, forestry, fishery and industries on the basis of water-resource availability.

Most tropical coastal countries (such as Bangladesh, Mauritius, Guyana, Seychelles and Thailand) aim to promote mangrove conservation and restoration to manage land and water resources. Provoked by seawater and exacerbated by natural disasters, coastal erosion demands management measures

using ecosystem-based adaptation, first and foremost in coastal wetlands and mangroves. An example of such an approach would be Ridge to Reef (R2R), which aims to preserve aquatic and coastal ecosystems and the well-being of neighbouring populations by coordinating the use and management of land and water from source to sea – from watershed to coastal areas.<sup>16</sup> Apart from shoreline management, the co-benefits of approaches such as R2R include resilience against storms and surges and mitigation of saline water intrusion.

## II. Improving Management of Water Resources

Lack of water is a pressing challenge (see Map 1 on global water scarcity levels). As an immediate response, 31 countries are considering initiatives to increase water harvesting, such as building dams, digging infiltration ditches, harvesting rainwater, or recharging aquifers. To address food security challenges, increase national agricultural output and reduce the impacts of drought, 29 countries (38%) explicitly plan to expand irrigated areas, in some cases substantially (i.e. above 1 million ha). This percentage may be an underestimate, since a majority of countries aims to improve agricultural productivity without formally stating that they are relying on irrigation expansion for this purpose.

Irrigation expansion, and further water harvesting in general, is often localized and based on modern, water-efficient techniques. Any expansion should be planned with due consideration of overall water availability based on the monitoring of available water resources, and around half the number of countries that envision increasing water harvesting and irrigation plan to introduce a monitoring mechanism, as indicated for example by China, Turkey and Algeria.

### The Ridge to Reef approach in Mauritius Island

Mauritius, a tropical country located in the Indian Ocean, plans to use the Ridge to Reef (R2R) approach to manage its coastlines. The six LDN targets for Mauritius Island contribute to its R2R strategy:

1. Halt further agricultural land conversion by 2030;
2. Expand agriculture land through rehabilitation of 10,142 hectares of abandoned sugar cane land into agroforestry, crop production using bio-farming and smart agricultural practices by 2030;
3. Maintain and expand forest cover to 52,290 ha including restoration of mountain and river reserves, and expansion of 4,530 hectares of private forests into protected areas by 2030;
4. Minimize impervious layers from Ridge to Reef, limit maximum building plot coverage to 40% in rural inland areas and 20% in coastal areas, encourage vertical building extension, contain sprawl of urban artificial areas within 44,283 ha by 2030;
5. Restore 403 ha of wetlands and mangroves by ecosystem-based adaptations;
6. Restore 187 ha of coastal sand area from coastal erosion and sea level rise by ecosystem-based adaptation.

## Soil and water management and monitoring in China

China is developing an extensive project for soil and water conservation in 22 provinces. Water storage capacity is planned to increase by 300 million m<sup>3</sup> through the construction of reservoirs and ponds, irrigation and drainage infrastructure and rainwater harvesting systems. The sustainability of this increased harvesting is ensured by a range of measures, such as limitations on the use of water resources in sandy areas and the establishment of soil and water conservation forests. A comprehensive monitoring system will include 1 central location, 7 river basin centres, 31 provincial centres, 175 monitoring sub-stations and 736 monitoring points. The water resources management system will be based on an allocation ratio between production, living and ecological water use.

### III. Increasing Water-Use Efficiency

Water-use efficiency and sustainable withdrawals are the focus of SDG Target 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

On water-use efficiency and sustainable withdrawals Globally, around 70% of water withdrawals are for agricultural use. Many countries plan to increase agricultural water use to meet the food needs of an increasing population. Given this demand, improving efficiency, reducing water loss and ultimately increasing agricultural water productivity are vital. Amongst the 77 LDN target setting countries analysed, 34 (44%) highlighted the need to improve water-use efficiency in the agriculture sector, using for instance modern irrigation techniques.

Irrigation has the highest potential for water savings. But every drop counts, and within the context of their LDN goals, countries aim to promote, and even provide, training and incentives for a large range of measures aimed at sustainable water management. Examples include the management of waterholes for cattle and the provision of water for

farms in Armenia, Georgia, Kyrgyzstan and Malawi; leakage detection in drinking water networks in Algeria, Bolivia and Egypt; and the use of water-saving appliances in households and industry in the Philippines.

Amongst the countries that acknowledged or prioritised the link between LDN and the SDGs (around half of the 77 countries analysed), a majority linked LDN to food security (SDG 2) and climate action (SDG 13) despite the strong connection between LDN and SDG Target 6.4 and SDG Target 6.6 on water-related ecosystems. Nevertheless, some countries, such as Mauritius, Seychelles, Rwanda and South Africa, highlighted in their reports the contributions of LDN and its related SDG Target 15.3 to the achievement of multiple SDGs, including water security.<sup>17</sup>

Several countries, including Jordan, Malawi, Moldova and Saint Lucia, mention in their reports that training farmers and local communities on efficient irrigation and best agricultural practices would be provided to contribute to soil and water conservation. Viet Nam's National Drought Plan includes the development of training programmes for farmers on water-saving farming and use of efficient irrigation technologies in drylands, and for women on water conservation and water-saving use to mitigate drought.

## Improving water-use efficiency in Jordan

About 41% of Jordan's total land area is degraded, and the country suffers from recurrent droughts. Water security is a major issue for the country; as such, the country placed a strong emphasis on water-use efficiency during its LDN target setting process. One of Jordan's LDN targets aims to use and promote efficient irrigation technology in 75,000 ha of cropland. Water-related LDN measures include the rational location of water sources in rangelands, the reduction of losses in irrigation systems and in drinking water networks and incentives for the use of water-saving appliances. Wastewater reuse is considered a long-term option to contribute to water supply, with the engagement of the private sector.

In developing countries, four out of five cities use wastewater to cultivate perishable crops,<sup>18</sup> but formalized wastewater reuse still faces low social acceptance as well as implementation challenges. It demands political support and regulations

on appropriate uses, but only eight countries<sup>19</sup> mention in their LDN target setting report and/or NDP exploring this option, which should be further considered given the rising challenge of water scarcity.

### Wastewater reuse in Egypt

Wastewater reuse remains a consistent policy in Egypt and has been used in the country as far back as the 1800s, with effluents from the Yellow Mountain sewage treatment plant used to irrigate citrus trees. To allow safe reuse of treated wastewater, the government has specified in a Code the purposes for which water can be used according to the degree of treatment (primary, secondary or tertiary). Main uses include specific agricultural irrigation purposes, irrigation of green areas and golf courses and water for industrial purposes.

## IV. An Enabling Environment for Water-Related LDN Measures

The successful implementation of water-related LDN measures relies on three aspects of an enabling environment: adequate legislation, supportive institutions and access to sufficient financing. Most countries plan to integrate LDN into the design and implementation of national policies, sector strategies or development plans. Though not explicitly stated, most of these plans appear to encompass a water policy.

A few countries more explicitly state their intention to include a water-related law or policy. For example, Senegal refers to its existing water laws, names the institution in charge of hydrology in the LDN institutional set-up and allocates part of the LDN budget to wetlands. Mauritius indicates the preparation for its wetlands bill. Seychelles revised its Environment Protection Act, and ten countries refer to Integrated Water Resources Management policies, an approach which covers the full range of water issues from demand to harvesting, water quality, participation and governance.

Decentralized decision-making and the set-up or strengthening of water basin organizations are the most frequently mentioned institutional arrangements. Some countries have already established dedicated land and water institutions, such as the Philippines' Bureau of Soil and Water Management or China's Monitoring Center of Soil and Water Conservation. Côte d'Ivoire is committed to setting up a National Platform for the Sustainable Management of Land and Water.

Having institutional arrangements in place could increase national data, analysis and monitoring of land and water-related actions and policies. This in turn would support more effective reporting of national and global goals such as LDN and the SDGs. To ensure full coherence and synergy between the monitoring and reporting methods of LDN/SDG Target 15.3 and of other SDGs, it is important to include national statistics offices or institutes in the LDN process, as mentioned by Gambia, Sudan and South Africa.

### Bolivia's Economic and Social Development Plan

Reversing land degradation contributes to both global and national development objectives. Bolivia based its Economic and Social Development Plan on 13 pillars and mentions that four have direct relationship with drought management: 1) universality of basic services, 2) scientific and technological sovereignty, 3) food sovereignty and 4) environmental sovereignty with integral development.



## Inclusive approaches: Focus on communities, gender and indigenous peoples

Countries plan to use a range of inclusive approaches to promote the engagement of communities and indigenous peoples and gender inclusiveness, acknowledging, as Cambodia does in its LDN target setting report, that “enhanced ecosystem services are particularly important for women, elders and children in local communities and indigenous ethnic minority groups.” Inclusive approaches include participatory or community-based management of land and water in Ghana; of polders in Bangladesh; of watersheds in Eritrea, Guinea and Philippines; or of the coastal zone in Sri Lanka.

Nigeria intends to apply both modern and indigenous soil protection and restoration techniques and build the capacity of communities. Other countries such as Malawi and Rwanda (which stated in its LDN target setting report that “implementation of LDN is best achieved through community-driven development processes”) will engage with gender experts and local women’s associations and minority groups to ensure that education and capacity-building campaigns are tailored to the specific needs and social behaviour of both women and men.

Countries often seek financing of LDN-related projects through environmental and climate finance, such as the Global Environment Facility (GEF), the Adaptation Fund, the Green Climate Fund, or Reducing Emissions from Deforestation and Forest Degradation (REDD+) initiatives. Major international finance institutions also support such projects, for example the World Bank funding of the Nigeria Erosion and Watershed Management Project.<sup>20</sup>

National funds that could finance water-related activities include environment funds or more focused funds such as Togo’s Integrated Water Resources Management Fund and Kazakhstan’s Water Fund. A variety of sources, including from the private sector, can contribute to such funds and,

therefore, ensure financial sustainability of long-term policies. Eight countries<sup>21</sup> refer to the ‘polluter pays’ principle,<sup>22</sup> and 11<sup>23</sup> mention payment for ecosystem services (PES) as sustainable sources of funding for LDN projects. Several of these PES schemes are related to water security and defined at watershed level, such as Viet Nam’s aim to reach 70% high-quality forest cover in upper watersheds and 40% in lower watersheds. Namibia explores innovative funding mechanisms, such as an increase or decrease in taxes in relation to land degradation activities and private sector funding. Direct water-relevant subsidies include those to improve hydraulic systems (in the Dominican Republic) or to promote water-saving appliances (in Jordan and in the Philippines).

## Review of potential sources of funding by Bhutan

Bhutan has acknowledged that the main sources of funding remain traditional internal and external sources, but it also reviewed how innovative funding, applicable to the country, could complement the more traditional sources. More innovation options range from airfare taxes, tackling tax evasion, taxes on the carbon content of fuels, a global lottery, a global premium bond and an Assigned Amount Unit Auction (emissions allowances). While not an exhaustive list, the most relevant financing opportunities for water-related projects cited by Bhutan include:

- An Environmental Trust Fund established in 1993.
- An Environmental Revolving Fund envisaged on the basis of collecting nominal fees from tourists or contributions from businesses and individuals.
- A Watershed Management Fund. Hydropower is the backbone of the country, which aims to develop 10,000 MW of hydropower potential by 2020. As upper watershed management and sustainable hydropower generation are strongly linked, 1% of the royalties from hydropower generation would be directed to the Watershed Management Fund.
- Payment for environmental services (PES). Two PES schemes related to watershed management have already been set up; one main activity for future PES could be sustainable land and water management, be it water for human consumption, for hydropower or for irrigation.
- The Carbon Market, Clean Development Mechanism, REDD+, and Voluntary Carbon Markets: these carbon-based mechanisms are generally applied to forests but could be applied to some wetlands.

## V. Measures Related to Wetlands and Aquatic Ecosystems

Wetlands constitute a specific category of land, to which the LDN objective of no net loss of healthy and productive land applies. Despite the services they provide, wetlands continue to disappear at an alarming rate. IPBES writes that “[wetlands] are particularly degraded, with 87 per cent lost globally in the last 300 years, and 54 per cent since 1900... Despite comprising a small fraction of the global land area, wetlands provide a disproportionately large amount of critical ecosystem services, particularly those associated with the filtration and supply of fresh water and coastal protection... Treating wetlands as natural infrastructure can help meet a wide range of policy objectives, such as water and food security, as well as climate change mitigation and adaptation.”<sup>24</sup>

Most of the 77 countries experienced a decline in wetland areas, while increases were observed in a few countries and a handful of countries indicated

stability in wetland area, most likely because of lack of new data. Forty-three countries analysed in this study identified wetland conservation and restoration measures, such as reducing the rate of conversion, establishing a preservation policy, or restoring part of the degraded wetlands, while 15 of these countries had a direct target on no net loss of wetlands. In addition, 24 countries have taken steps to protect rivers and lakes from run-off, pollution and river bank degradation through the conservation or restoration of forest galleries and other riparian forests (Belarus, Benin, Ghana, Jordan, Moldova, Togo), river bank protection and stabilization (Burkina Faso, Malawi, Saint Lucia, Eswatini, Seychelles, Tanzania), prevention of river bank cultivation (Zimbabwe), establishment of buffer strips and regulation of discharge in water bodies (Egypt).

It will be important in the next round of reporting for SDG Target 15.3 to better assess changes in wetland areas, with the support of modern technologies such as Earth Observation.

## Wetland management in Nepal

One of the Nepal's four LDN targets focuses on wetlands; by 2030, the country wants to restore 10% of wetland ecosystems. The resilience of these wetlands and the contribution of biodiversity to carbon stocks will be enhanced by the conservation and restoration of degraded ecosystems, which will contribute to climate change mitigation and adaptation and to combatting desertification and land degradation. This target is in-line with the country's National Wetland Policy. LDN measures will address the declining productivity in wetlands through sustainable wetland management.



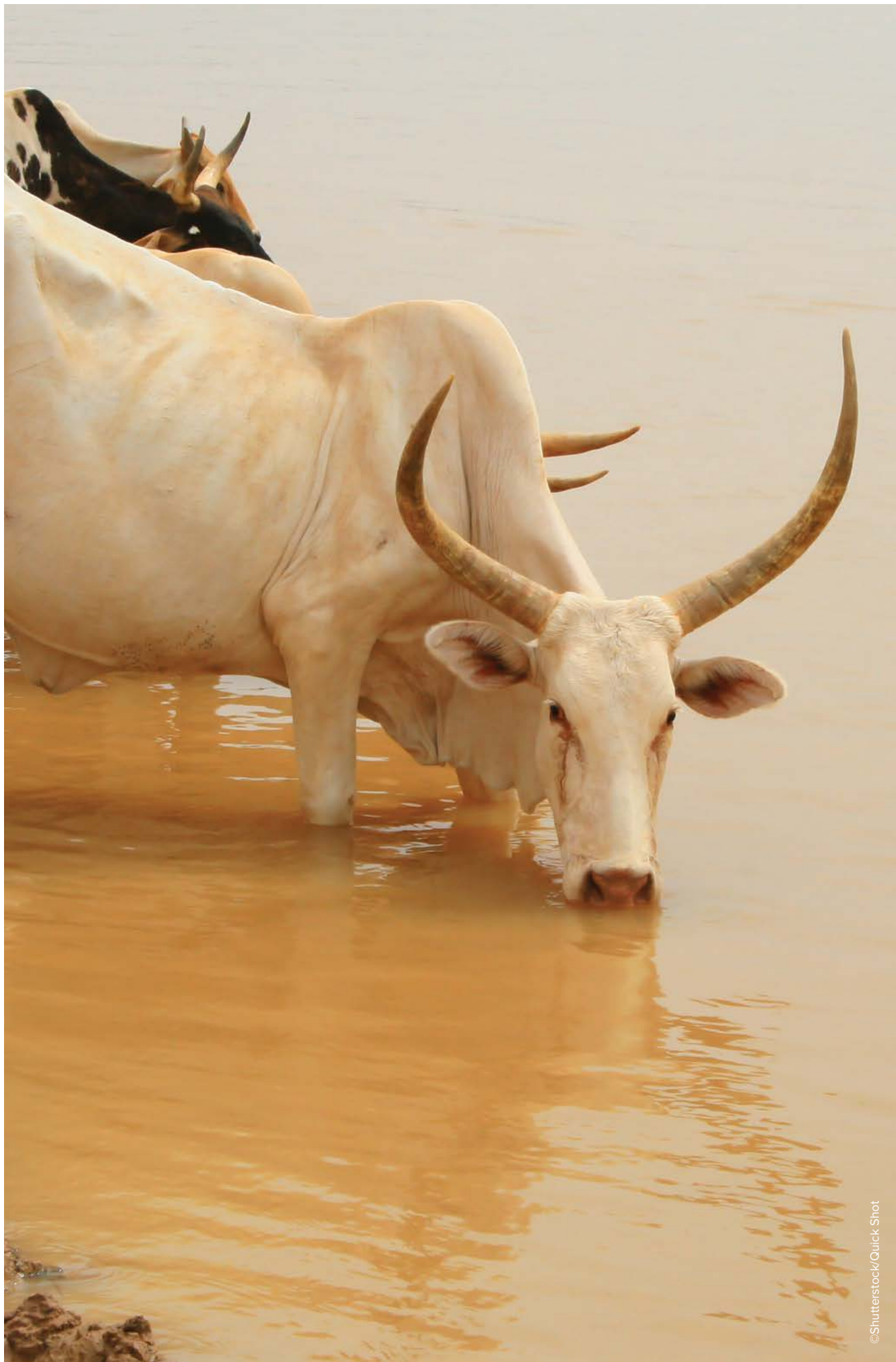
# CONTRIBUTION OF LDN TO INTERNATIONAL AND NATIONAL OBJECTIVES

At the global level, LDN is a synergistic objective that would add major contributions to a number of other international environmental and development objectives, such as most of the SDGs, the achievement of the three Rio Conventions,<sup>25</sup> the commitments of parties to the Ramsar Convention and the targets of the Sendai Framework for Disaster Risk Reduction. Water is present in all aspects of climate change, from its impacts on water (water scarcity, drought, floods) through mitigation (wetlands as carbon sinks) to adaptation and resilience (improved water harvesting and storage, efficient use, and aquatic ecosystem-based adaptation). Forty-eight of the 77 analysed countries (62%) connected their contribution to the UNFCCC (through their Nationally Determined Contributions, or NDCs) to LDN and to water security. For instance, Viet Nam mentions in its National Target Plan to Respond to Climate Change, the objective to integrate LDN “in water resource management planning in big river basins; protection, management, exploitation, optimization

and conservation of water resources”.

Most countries are fully aware of the interdependency of the three Rio Conventions. South Africa, Sri Lanka, Ukraine and Zimbabwe indicate the importance of housing the three national focal points in one government department or ministry as a practical way of ensuring synergies. The Philippines states in its LDN target setting report that “[within] the context of the National Climate Change Action Plan, which provides the crosscutting guidance for sectoral policies toward improved mitigation and adaptation actions, the sectors on Food Security, Water and Ecosystem Conservation can benefit from the introduction of LDN approaches”. Other international frameworks and conventions were recognised as providing potential synergies with LDN, although by fewer countries; only 11 countries highlighted the link between LDN and the Ramsar Convention, and four between LDN and the Sendai Framework for Disaster Risk Reduction.







# RECOMMENDATIONS

Countries have acknowledged the inter-dependency of land and water management and the multiple benefits of reversing land degradation for sustainable development, water security and resilience to natural hazards such as drought. Achieving LDN contributes towards the achievement of several SDGs, particularly SDG 6 on water. To ensure that countries reach their LDN objectives, improve synergies between LDN, water security and drought mitigation and achieve the SDGs through LDN approaches, the following recommendations are provided for countries, with the support of their national and international partners:

- **Continue to mainstream the land-water linkage into relevant national policies and strategies**, ensuring in particular that land-use decisions are informed by data on water resources and setting up dedicated land and water institutions where appropriate.
- **Establish and build national capacities in the monitoring of water resources, including wetlands**, using Earth Observation tools when possible, to allow for informed national water management and allocation policies; developing where relevant a national plan for the sustainable management of water resources in the context of the national LDN strategy, with regular updates to incorporate changes in precipitation and temperature patterns and their impacts on water bodies.
- **Implement land and water conservation approaches and taking water management decisions at the appropriate level**, in particular at watershed level, through participatory river basin organizations, inclusive of community and gender perspectives and of indigenous and traditional knowledge.
- **Improve water-use efficiency by using all available methods for all uses**, with special focus on agriculture as the main consumer, to reduce the pressure on water resources; developing wastewater reuse where appropriate; training farmers, women and local communities on water-saving techniques.
- **Ensure the interaction between the national focal points for the three Rio Conventions** to address climate change, desertification and biodiversity challenges in a harmonized manner, and including with national statistics offices/ institutes for coherence between reporting on LDN and the SDGs.
- **Further incorporate LDN policies and integrated land and water strategies during the next review of the UNFCCC Nationally Determined Contributions.**
- **Explore climate funding as an essential source of funding, complemented with national funding sources**, including environmental trust or revolving funds, private funding and innovative financing such as payment for ecosystem services.

# ENDNOTES

- <sup>1</sup> <http://www.globalwaterforum.org/2012/05/07/understanding-water-scarcity-definitions-and-measurements/>
- <sup>2</sup> Mekonnen, M. M. and Hoekstra, A. Y. 2016. “Four billion people facing severe water scarcity”. *Science Advances*, 2(2), e1500323.
- <sup>3</sup> Making Every Drop Count: An Agenda for Water Action. High-Level Panel on Water Outcome Document. 14 March 2018. Available at: [https://sustainabledevelopment.un.org/content/documents/17825HLPW\\_Outcome.pdf](https://sustainabledevelopment.un.org/content/documents/17825HLPW_Outcome.pdf)
- <sup>4</sup> United Nations World Water Assessment Programme/ UN-Water. 2018. The United Nations World Water Development Report 2018: Nature-Based Solutions for Water. Paris, France.
- <sup>5</sup> A drought is defined in this study as “a period of abnormally dry weather long enough to cause a serious hydrological imbalance.” As drought is a complex phenomenon levels of intensity, duration, spatial extent and impacts vary according to the local context. IPCC. 2012. Summary for policymakers. In: Field, C.B. et al, (eds). *Managing the risks of extreme events and disasters to advance climate change adaptation. A special report of working groups I and II of the Intergovernmental Panel on Climate Change (IPCC)*. Cambridge University Press, Cambridge, UK/New York, pp 3–21.
- <sup>6</sup> UNCCD. 2017. *The Global Land Outlook*. First Edition. Bonn, Germany.
- <sup>7</sup> FAO, 2012. *Coping with Water Scarcity. An action framework for agriculture and food security*. FAO Water Reports 38; UNCCD. 2017. Op. cit.
- <sup>8</sup> EU Science Hub. 2019. *Desertification and drought*. Accessed November 11, 2019. <https://ec.europa.eu/jrc/en/research-topic/desertification-and-drought>
- <sup>9</sup> Mekonnen and Hoekstra, 2016. Op. cit.
- <sup>10</sup> UN-Water. 2013. *Water Security & the Global Water Agenda*. A UN-Water Analytical Brief.
- <sup>11</sup> IPBES. 2018. Summary for policymakers of the assessment report on land degradation and restoration of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. R. Scholes et al. (eds.). IPBES secretariat, Bonn, Germany. 44 pages.
- <sup>12</sup> The Land Degradation Neutrality Target Setting Programme is implemented by the Global Mechanism and the secretariat of the UNCCD, with the support of 18 international partners. <https://www.unccd.int/actions/ldn-target-setting-programme>
- <sup>13</sup> Decision 22/COP.13. Available at [https://www.unccd.int/sites/default/files/sessions/documents/2017-11/cop21add1\\_eng.pdf](https://www.unccd.int/sites/default/files/sessions/documents/2017-11/cop21add1_eng.pdf)
- <sup>14</sup> UNCCD. n.d. Guidelines and Background Documents for Development of National Drought Plan. <https://www.unccd.int/sites/default/files/relevant-links/2018-06/model%20drought%20plan.pdf>. The key elements of the National Drought Plan are based on the three pillars as identified by the Drought Resilience, Adaptation and Management Policy (DRAMP) Framework: 1) monitoring and early warning, 2) vulnerability assessments, and 3) drought mitigation measures. See Crossman, n.d. 2018. DRAMP Framework. [https://knowledge.unccd.int/sites/default/files/2019-04/DRAMP\\_Policy\\_Framework.pdf](https://knowledge.unccd.int/sites/default/files/2019-04/DRAMP_Policy_Framework.pdf)
- <sup>15</sup> Bolivia, Cambodia, Dominican Republic, Egypt, Gabon, Ghana, Jordan, Madagascar, Malawi, Nigeria, Philippines, Republic of Moldova, Rwanda, Sudan, Togo, Viet Nam and Zimbabwe.
- <sup>16</sup> For example, IUCN’s Ridge to Reef Initiative, available at <https://www.iucn.org/theme/water/our-work/current-projects/ridge-reef>
- <sup>17</sup> For instance, Mauritius’s report links LDN to multiple SDGs: “*climate change mitigation and adaptation, biodiversity conservation, ecosystem restoration, food and water security, disaster risk reduction, and poverty reduction*”.
- <sup>18</sup> Raschid-Sally, L. and P. Jayakody. 2008. Drivers and characteristics of wastewater agriculture in developing countries: results from a global assessment. Colombo, Sri Lanka: International Water Management Institute (IWMI) 29p. (IWMI Research Report 127).
- <sup>19</sup> Algeria, Bolivia, Dominican Republic, Egypt, Jordan, Nigeria, Philippines, Republic of Moldova.
- <sup>20</sup> <https://projects.worldbank.org/en/projects-operations/project-detail/P124905?lang=en>
- <sup>21</sup> Benin, Bhutan, Federation of Bosnia and Herzegovina, Gabon, Guinea, Madagascar, Nigeria, Zimbabwe.
- <sup>22</sup> The ‘polluter pays’ principle states that whoever is responsible for pollution should bear the costs associated with it. See also Principle 16 of the 1992 Rio Declaration on Environment and Development: [http://www.unesco.org/education/information/nfsunesco/pdf/RIO\\_E.PDF](http://www.unesco.org/education/information/nfsunesco/pdf/RIO_E.PDF)
- <sup>23</sup> Bhutan, Cambodia, Chile, Colombia, Costa Rica, Dominican Republic, Ghana, Namibia, Nicaragua, Philippines, Viet Nam.
- <sup>24</sup> IPBES. 2018. Op. cit.
- <sup>25</sup> The UNCCD, the Nationally Determined Contributions (NDCs) of the UN Framework Convention on Climate Change (UNFCCC) and the Aichi Biodiversity Targets of the Convention on Biological Diversity (CBD).



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