IUCN CEM
Ecosystem Restoration Thematic Group

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The Landscape Partnership Asia (LPA) Webinar Series
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Drylands Restoration as Nature-based Solutions (NbS): Restoring Ecosystems to Reduce Drought Risk

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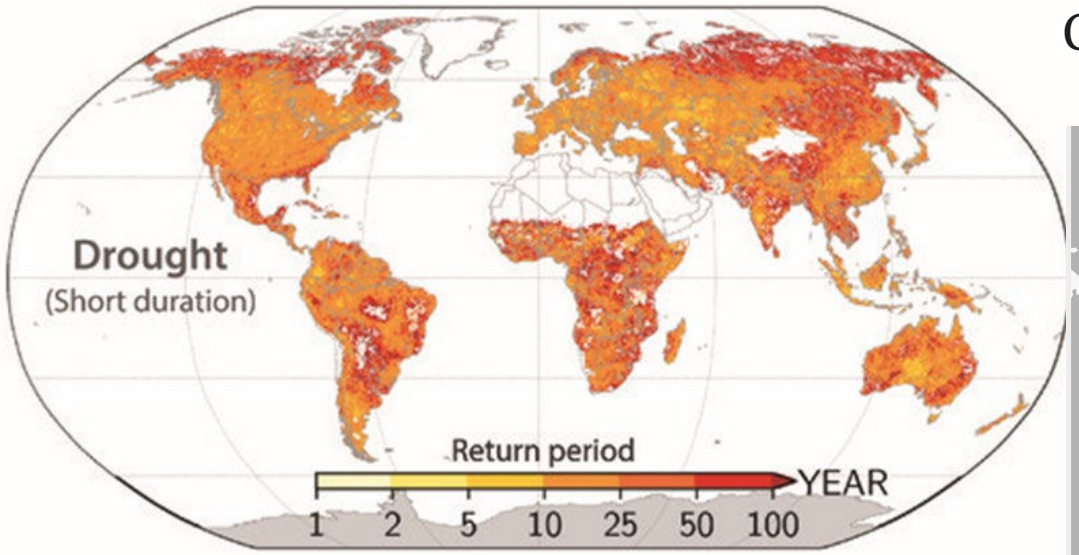
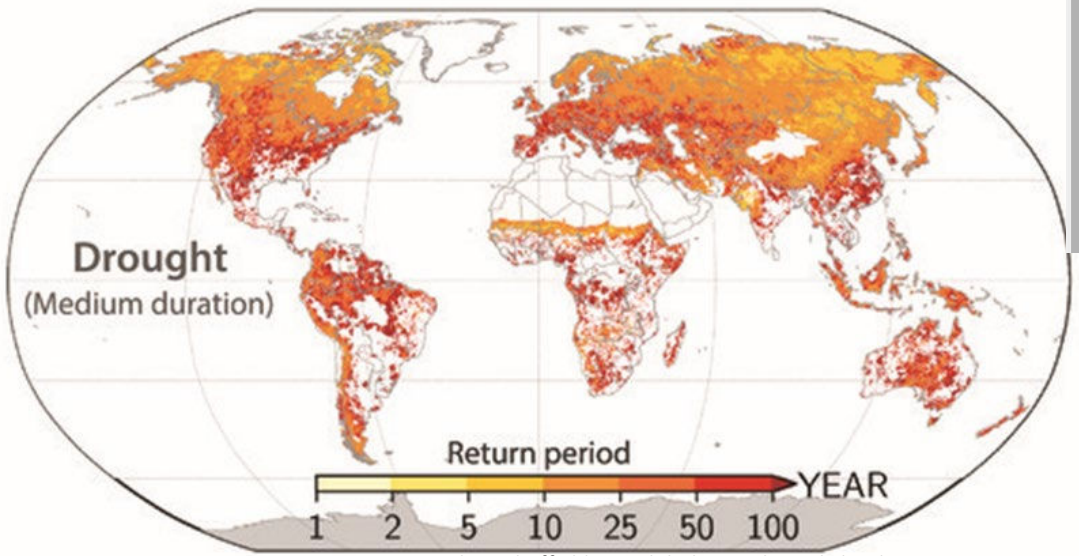
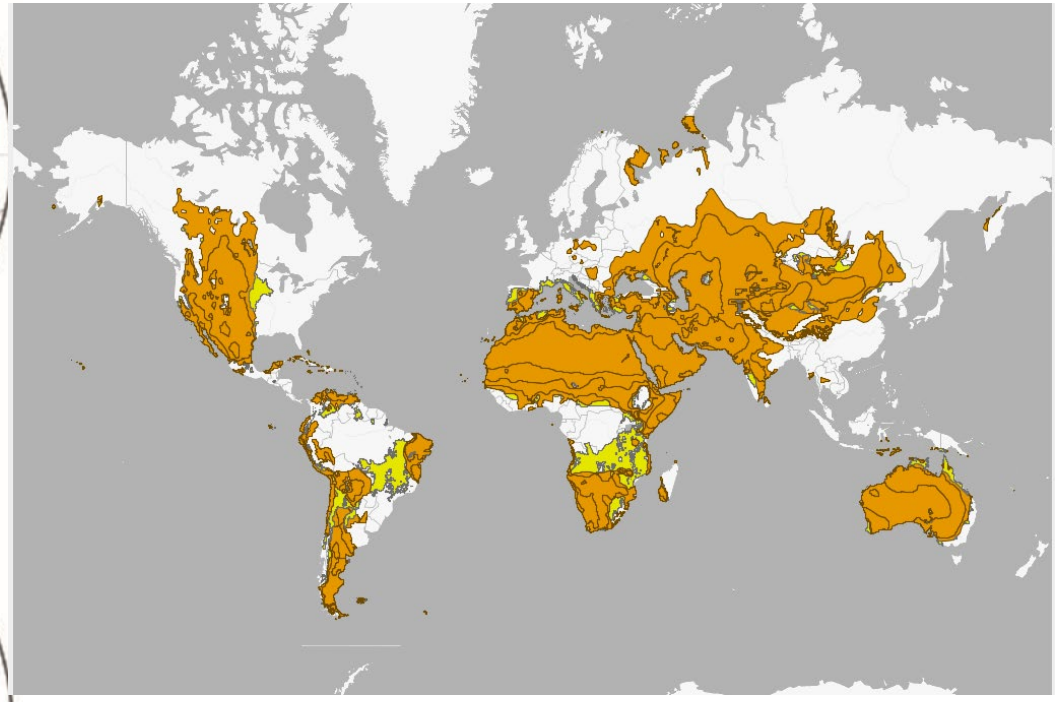




From: He X, Pan M, Wei Z, Wood EF, Sheffield J. A Global Drought and Flood Catalogue from 1950 to 2016. Bull. Amer. Meteor. Soc.. 2020;101(5):E508-E535. doi:10.1175/BAMS-D-18-0269.1

Of all the Earth's land surface, drylands cover about:

43 %

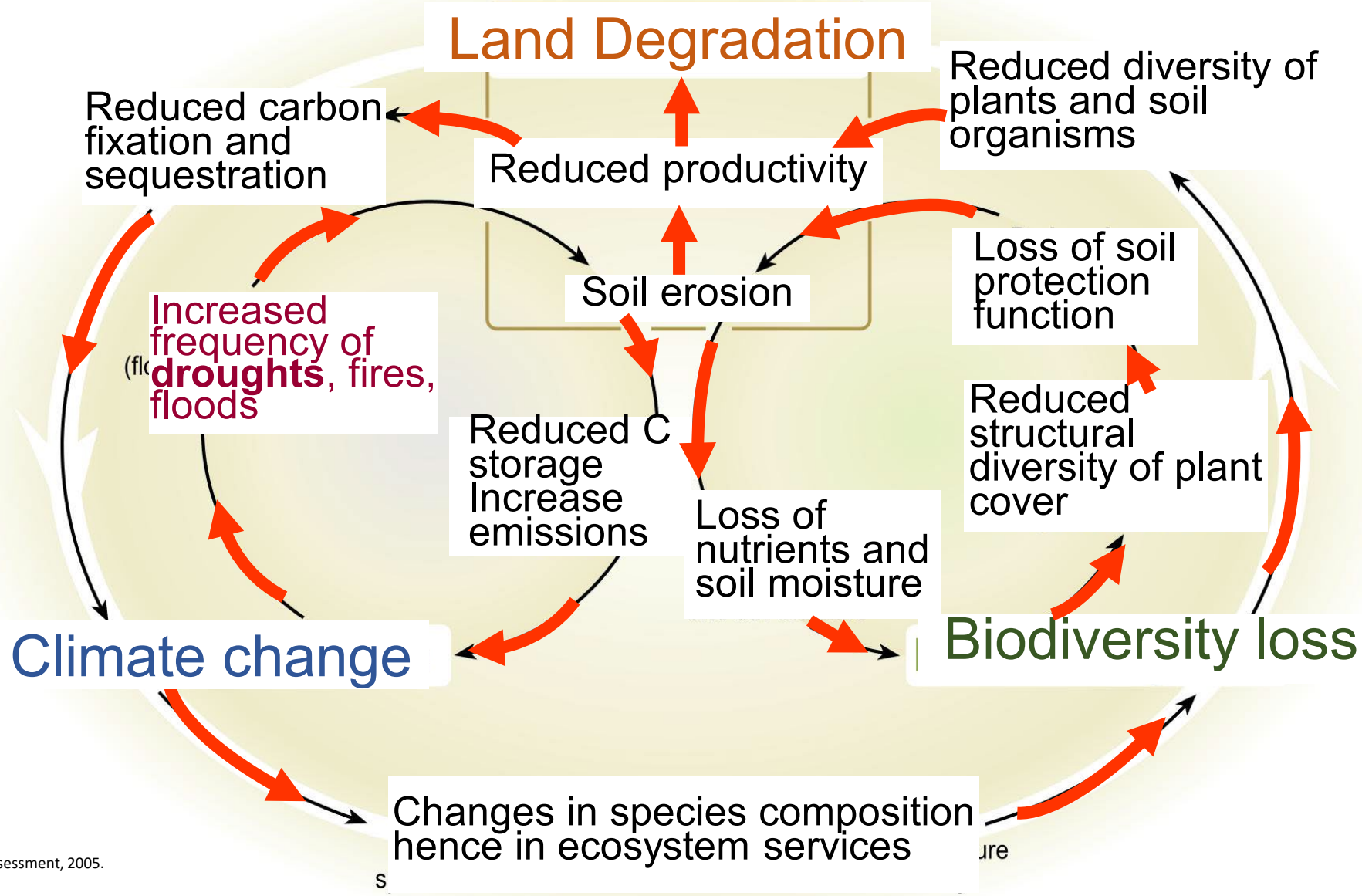


Legend

World Dryland Areas

Drylands/Dry and sub humid lands (defined to include P/PET < 0.65, plus some areas presumed included (with dryland or some dryland features such as dry forest or woodlands but that are P/PET >= 0.65)

Presumed included: Drylands features but P/PET >= 0.65)



Source: Millennium Ecosystem Assessment, 2005.

Land degradation, climate change and biodiversity loss are mutually reinforcing nested (negative) **feedback loops**

This forthcoming IUCN publication

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RESTORING ECOSYSTEMS TO REDUCE DROUGHT RISK: Nature-based Solutions for drought

C. Magero, J. Somda, V. Ruiz, J. Dalton, T. Tang, J. Irshaid, M. Lewis, T. Kahil, G. Metternicht, T. Njeru, and B. Nino

IUCN (2020)

"actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits"
(WCC-2016-Res-069, IUCN Members Assembly, 2016)

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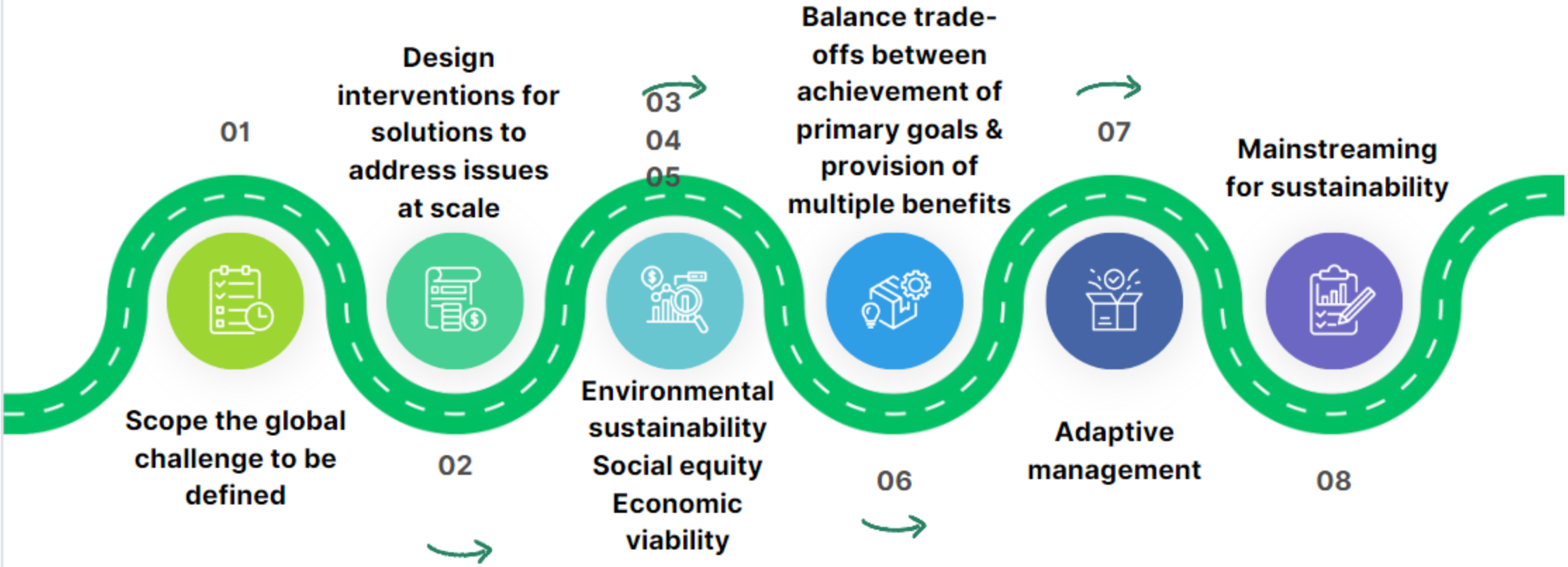
NbS as an umbrella concept

Ecosystem-based Disaster Risk Reduction (EcoDRR),
Ecosystem-based Adaptation (EbA)
Integrated Water Resources Management (IWRM),
Sustainable land management
…..
All relevant to develop interventions to address drought

The IUCN Global Standard for Nature-based Solutions



International Union for Conservation of Nature (IUCN) (2020). IUCN Global Standard for Nature-based Solutions: a user-friendly framework for the verification, design and scaling up of NbS (1st ed.). IUCN. https://doi.org/10.2305/IUCN.CH.2020.08.en

CRITERION 1:
NbS effectively address societal challenges

1.1
The most pressing societal challenge(s) for rights-holders and beneficiaries are prioritised.

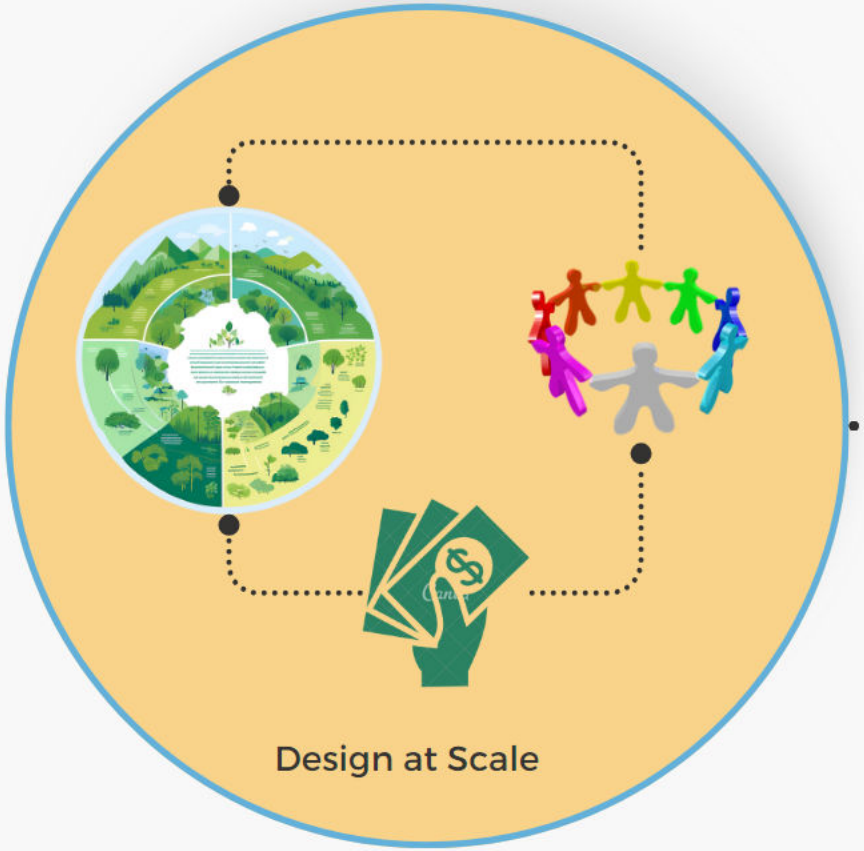
1.2
The societal challenge(s) addressed are clearly understood and documented.

1.3
Human well-being outcomes arising from the NbS are identified, benchmarked and periodically assessed.

NbS for drought:

- The root cause(s) of drought should be identified and prioritised. Drought is experienced differently in different contexts. Drought already cuts across several societal challenges, including disaster risk reduction, water and food security, ecosystem degradation and biodiversity loss.
- NbS for drought should be strategic, address one or more societal challenges and ensure that the actions taken also contribute positively to biodiversity, nature and people.

CRITERION 2: Design of NbS is informed by scale



2.1
The design of NbS recognises & responds to interactions between economy, society & ecosystems

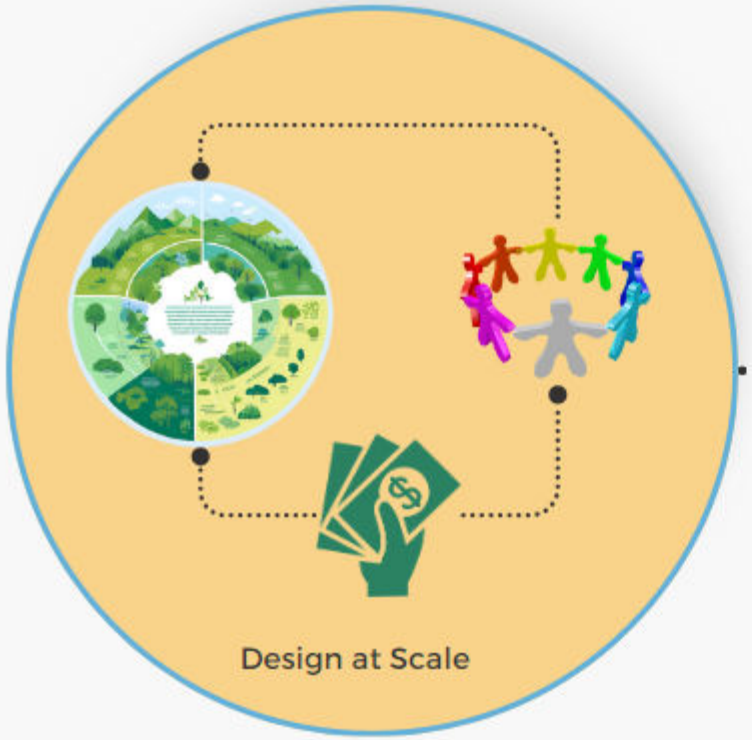
2.2
NbS design is integrated with other complementary interventions & seeks synergies across sectors

2.3
NbS design incorporates risk identification and risk management beyond the interventions site.

NbS for drought:

- Ensure a **comprehensive landscape** assessment that considers the various functions and purposes of ecosystems and their interconnectedness.
- Recognise the **multifaceted contributions** of land and water to food and water security, the development of resilience to climate change, and biodiversity conservation.
- Understanding the **institutional and governance framework** in place in the context of drought is needed to **consider indirect factors influencing the impact of drought**. This understanding is essential for crafting effective responses.

CRITERION 4:
NbS are economically viable



4.1 direct and indirect benefits and costs associated with the NbS

4.2 cost-effectiveness study is provided to support the choice of NbS

4.3 effectiveness of an NbS design is justified against available alternative solutions; & considering externalities

NbS for drought:

- The economics of drought directly correlates to the economics of water, land and ecosystem health. Economic assessment frameworks should account for the **value that ecosystems play in building resilience** to drought.
- Drought, like other disasters, can generate substantive damages and losses. The costs of **taking action to prevent and/or reverse land degradation** are usually lower than the benefits that can be obtained by investing in and applying sustainable land management practices.
- Drought unfolds within a multifaceted **socio-economic landscape**, with multiple impacts (infrastructure, etc)
- Decision-makers should factor in the **broader costs and benefits that extend beyond the sectors directly impacted by drought**, in order to develop an **effective strategy for drought planning**

Proactive versus reactive drought responses

*"When it comes to drought action, countries are reluctant to take a **proactive** approach to drought management, largely because of the lack of a clear understanding of the benefits of action versus the cost of inaction"* *(Venton et al., 2019)*

Venton, P., Cabot Venton, C., Limones, N., Ward, C., Pischke, F., Engle, N., Wijnen, M., & Talbi, A. (2019). Framework for the Assessment of Benefits of Action/Cost of Inaction (BACI) for Drought Preparedness. World Bank. http://dx.doi.org/10.1596/32330

TABLE 1

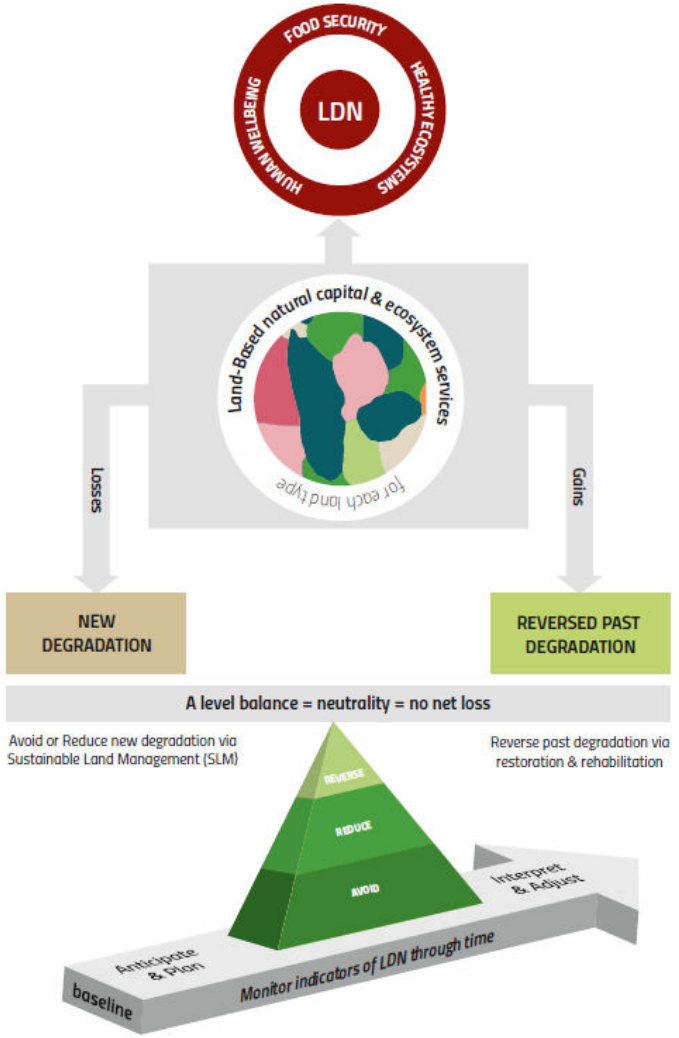
Drought-smart land management measures: impacts, costs and benefits, synergies, trade-offs and constraints

Land Use	D-SLM Category	LDN Category	Upfront Costs	Net Economic Returns	Food Security and Poverty Reduction	Trade-Offs and Constraints
Croplands	Controlling soil erosion	Reduce	Reverse	Neutral and negative in the short term*, positive in the long-term	○	Labor availability could be a constraint
	Minimizing soil disturbance	Reduce	Reverse	Often, but not always, positive already in the short-term	+	Competition between uses of plant residues for mulching or for livestock feeding
	Integrated soil fertility management	Reduce	Reverse	Usually already positive in the short-term	++	Competition between uses of livestock manure as soil amendment and energy source.
	Improved water management	Reduce	Reverse to Avoid	Usually already positive in the short-term, especially in arid environments or where water is priced.	+	Lack of water markets and pricing can limit incentives for their adoption
	Improved vegetation management	Reduce	Reverse to Avoid	Usually already positive in the short-term	+	May require technical capacities for their adoption by farmers
Grazing lands	Grazing pressure management	Reduce	Reverse	Usually already positive in the short-term	+	In some areas competes with expanding crop production
	Water management	Reduce	Reverse to Avoid	Limited evidence	○	Limited evidence
	Vegetation management	Reduce	Reverse to Avoid	Usually already positive in the short-term	+	Limited evidence
Forests/ Woodlands	Sustainable forest management, afforestation, reforestation, and of reducing deforestation	Reduce	Reverse	Neutral and negative in the short term, positive in the long-term	+	Limited evidence
Mixed land uses	Adopting agro-forestry and agro-pastoralism	Reduce	Reverse to Avoid	Neutral and negative in the short term, positive in the long-term	+	Takes relatively long time for implementation
	Water management	Reduce	Reverse to Avoid	Usually already positive in the short-term	○	Lack of water markets and pricing can limit incentives for their adoption
	Integrated watershed management	Reduce	Reverse	Positive in the long-term	○	Takes relatively long time for implementation
	Urban green infrastructure	Reduce	Reverse to Avoid	Positive	○	Requires considerable technical capacities for planning and implementation

Avoid
Reduce
Reverse

○ Limited evidence

Source: the authors' compilation based on literature.
*Note: Drought-smart land management (D-SLM). *Short-term – one or two growing seasons.*



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https://catalogue.unccd.int/1211_03EP_UNCCD_SPI_2019_Report_2.pdf

Options for future action

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1. Land management and ecosystem-based options

1. Develop strong metrics linking drought to land and ecosystem health
2. Strengthen institutional capacities and awareness of the links between land degradation and drought
3. Adopt an integrated landscape-level approach, mainstreaming NbS with existing planning tools

2. Finance options

1. Plan and allocate resources internally and externally for land and ecosystem restoration
2. Strategically engage private sector finance in drought management
3. Prioritise local stakeholders' access to drought funds

3. Policy Options:

- Adopt NbS in sustainable land and water governance to ensure drought resilience
- Develop institutional capacity for land restoration as part of drought planning
- Foster policy coherence across sectors and promote NbS
- Ensure inclusivity, respecting the rights of women, youth and indigenous groups
- Develop a global drought response framework with clear NbS metrics and guidance

In a nutshell….

By bridging gaps in metrics, awareness, financing, and policy coherence, policymakers can drive effective and sustainable drought resilience strategies.

The proposed recommendations aim to guide policy decisions and foster the integration of NbS into drought management efforts at global, national, and local levels

Thank you.

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