

Unlocking Nature's Potential for Drought Resilience Planning

Policy Brief

Introduction:

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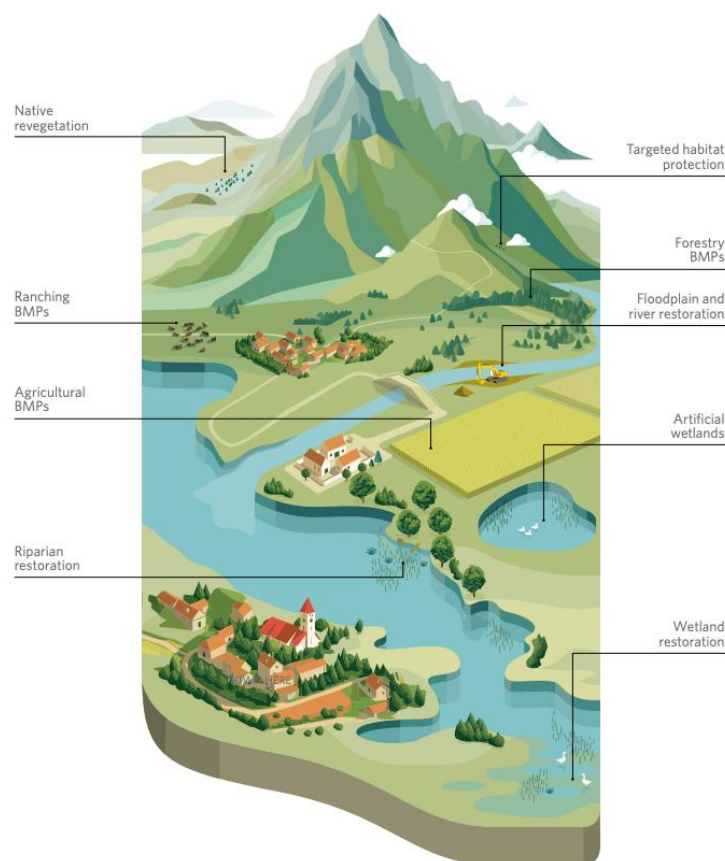
Drought is a complex natural hazard, the causes and impacts of which extend far beyond agriculture and water resources.

As droughts become more frequent and severe, their effects on human health, energy systems, biodiversity, livelihoods, and economic development have become increasingly apparent.

To address this, effective drought management requires action across multiple sectors.

While traditional approaches often focus on responding to drought impacts through measures such as food assistance, crop insurance, financial relief, and emergency water supply, countries are also increasingly investing in proactive approaches that reduce drought risk before impacts occur. Common examples include drought monitoring and early warning systems, vulnerability assessments, public awareness initiatives, and investment in water infrastructure.

NATURE-BASED SOLUTIONS FOR ADAPTATION ACROSS LANDSCAPES



Nature-based Solutions (NbS) are an important component of this broader shift toward proactive risk reduction ([Technical Brief: Nature-based Solutions for Drought Resilience](#), 2023). By protecting, restoring, and sustainably managing ecosystems, NbS can reduce drought risk while delivering additional benefits for biodiversity, livelihoods, and climate resilience ([Accelerating Adaptation report](#)).

This brief builds on previous analyses conducted under UNCCD's Drought Initiative by UNCCD, FAO and others, along with more than two decades of experience from The Nature Conservancy on scaling NbS for resilient water systems. Here we examine how National Drought Plans (NDPs) incorporate nature-based approaches to drought resilience, with the goal of providing practical insights to strengthen drought planning and implementation through the effective integration of nature-based solutions.

NbS in UNCCD's Drought Initiative:

Recognizing the need to move beyond crisis response and toward risk reduction, the United Nations Convention to Combat Desertification (UNCCD) launched The Drought Initiative in 2018.

The Initiative established a framework for proactive drought management centered on three pillars:

1. Drought monitoring and early warning systems
2. Vulnerability assessments for sectors, populations and regions
3. Drought mitigation and response

While NbS were not identified as a standalone category within the Initiative, they align closely with the broader emphasis on proactive drought risk management. By protecting, restoring, and sustainably managing ecosystems, NbS provide countries with a suite of tools that can complement traditional drought resilience measures and strengthen long-term adaptive capacity.



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In practice, NbS fit most directly within the Initiative's third pillar by helping reduce the impacts of drought before crises emerge. Healthy ecosystems can lessen exposure to drought hazards, reduce the vulnerability of people and productive sectors, and strengthen ecosystem and community resilience to future drought events. As a result, NbS should be viewed not as a separate drought management pathway, but as an approach that can reinforce multiple components of a comprehensive drought resilience strategy.

~70 countries responded to UNCCD's initial call for drought plans, with roughly 40 plans currently available for review in the Africa (AFR), Asia Pacific (AP), Central/Eastern Europe (CEE), Latin America (LA), and Caribbean (CAR) regions. Together, these plans provide an opportunity to better understand how countries are translating proactive drought management principles into practice and the extent to which nature-based approaches are being integrated into national drought planning.

Nature's Representation in Drought Planning

To better understand how countries are using nature-based approaches for drought resilience, TNC reviewed the ~40 publicly available NDPs developed under UNCCD's Drought Initiative. Plans were examined for references to specific nature-based drought management *Practices*, which were then organized into broader *Strategies* and *Sectors*.

Nature-based approaches were identified in 39 of the 40 plans reviewed, with plans containing an average of eight unique nature-based Practices.

This assessment builds on previous analyses conducted by UNCCD and FAO which examined NDPs through the lenses of [implementation readiness](#) and [policy alignment](#). TNC's contribution is to take a closer look at how nature is represented within drought planning and what these plans reveal about the role of ecosystems in building long-term resilience.

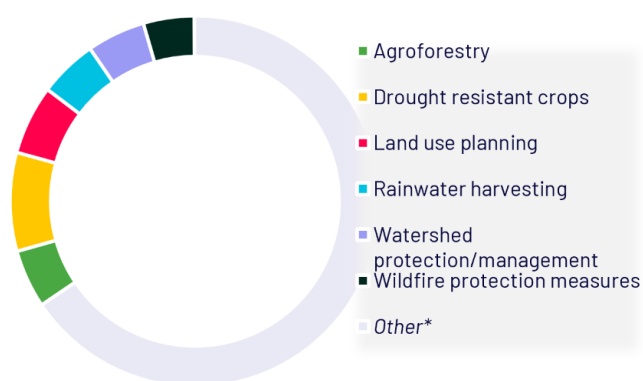
Understanding how nature is currently represented in drought planning can help countries identify opportunities to strengthen future drought investments, improve policy integration, and accelerate implementation of risk-reduction measures for people and ecosystems.



Key Insight 1: A Small Number of Nature-Based Approaches Dominates National Drought Plans

Although countries employ a wide range of nature-based drought resilience measures, NDPs consistently emphasize a relatively small group of practices focused on land, water, and soil management. This pattern was observed across regions, suggesting broad agreement on the role of nature in reducing drought risk.

Common Practices



Across the 40 plans reviewed, approximately 100 unique nature-based practices were identified. However, the six most frequently cited practices accounted for roughly one-third of all observations. While many of these focused on site-level interventions such as drought-resistant crops, low-tillage agriculture, and rainwater harvesting, others emphasized landscape-scale actions such as watershed protection and groundwater assessment.

Figure 1. Six most common nature-based drought management practices as a percentage of all practices identified.

*"Other" includes less commonly cited practices like groundwater vulnerability assessments, strengthened protected areas regimes, invasives management, etc. For a full list of nature-based practices identified across all plans, see Appendix.

Common Strategies

strategies, an even stronger pattern emerged. Three strategies, Land Management, Water Resource Improvement, and Soil Management, accounted for approximately 75% of all observed practices. This concentration was remarkably consistent across regions, where these same strategies represented roughly three-quarters of observed practices in Africa, Central and Eastern Europe, and Latin America.



For a more detailed list of nature-based practices identified across all plans, see Appendix.

Sector	Practices Identified
Agriculture	126
Water	83
Natural Resource Management	74
Forestry	31
Total	314

Table 1. Number of Practices identified per Sector.

Strategy	Practices Identified
Land Management	85
Water Resource Improvement	84
Soil Management	68
Crop Management	35
Fire Management	15
Livestock Management	10
Ecosystem Services	7
Traditional Knowledge	5
Marine Ecosystems Management	3
Biodiversity Conservation	2
Total	314

Table 2. Number of Practices identified per Strategy.

Common Sectors

The same trend was evident at the sector level, where Agriculture and Water together accounted for approximately two-thirds of all practices identified across the plans. This aligns with previous UNCCD [findings](#) that Agricultural Losses and Water Scarcity are the most frequently discussed drought impacts in National Drought Plans.

Taken together, these findings suggest that countries have begun to converge around a common set of nature-based drought resilience approaches. While this may reflect growing consensus regarding effective interventions, it also highlights an opportunity to broaden consideration of nature-based strategies in sectors that currently receive less attention within drought planning and to increase awareness of less commonly used but particularly effective or innovative nature-based solutions.



Key Insight 2a: Operationalization of NbS Lags Behind Ambition

NDPs frequently incorporate nature-based approaches in their drought planning, but they often provide limited information on how those approaches will be implemented. **Of the 314 nature-based practices identified, only 38 (~12%) contained details such as responsible institutions, budgets, timelines, or indicators for measuring success.**

Importantly, this gap was not unique to NbS. Across many plans, proactive drought measures of all types lacked detailed implementation frameworks, suggesting a broader transition challenge as countries move from planning toward execution.



Key Insight 2b: Policy Integration Drives Action

A recurring pattern across plans was that nature-based measures were most clearly operationalized when drought objectives were embedded within broader development, sector policies, and regulatory frameworks. In these cases, plans were more likely to identify implementation mechanisms, responsible institutions, financing pathways, and monitoring indicators.

Policy integration helps translate drought planning into action. Embedding drought resilience objectives across relevant sectors reinforces the cross-cutting nature of drought impacts, supports institutional coordination, and can create pathways for securing implementation funding.

This finding aligns closely with recent FAO assessments, which emphasize policy alignment as a critical prerequisite for implementing proactive drought management measures.

Several plans provide examples of how policy integration can support implementation of nature-based drought resilience measures:

NDP Spotlight: Argentina

In providing the institutional context for its NDP, Argentina highlights the NDP's connection to its National Action Plan on Forests and Climate Change (Plan de Acción Nacional de Bosques y Cambio Climático). The PANByCC emphasizes sustainable forest management as critical to meeting national emission reduction targets and outlines specific metrics for several strategic measures, including 1) Avoided deforestation through improved land use planning (100,000 ha, including 50,000 ha of native forests in high-risk areas), 2) Sustainable management of native forests (100,000 ha with forest management plans, plus 140,000 ha of forest management plans with integrated livestock), and 3) Wildfire prevention (5,500 ha in critical regions with wildfire prevention plans).



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NDP Spotlight: Policy Interventions

Several NDPs included mention of current or planned policy interventions to support implementation of nature-based drought resilience approaches. Of these interventions, land use planning dominated the policy discussion. Specific interventions proposed ranged from limiting land conversion to crop zoning. Other proposed policy interventions included:

National Riparian Buffer Zone Policy (Ghana) – Establishes mandated riparian buffer zones for rivers, lakes, and reservoirs to support erosion control and improved water quality. NDP calls for this Policy to be incorporated in all land use planning regulations.

National Water Security Plan 2015–2050 (Panama) – Provides a comprehensive plan aimed at improving coordination across all sectors involved in water usage. Includes budget for several nature-informed interventions that support drought resilience, including river basin restoration and environmental flow assessments.

Incentives for Environmental Services (Cote d'Ivoire, Guatemala, Honduras, Togo, Tunisia) – Several plans proposed payment schemes for environmental services as a drought mitigation tool. In some cases, these incentives were included in existing national strategies (e.g. Tunisia's National Climate Change Adaptation Strategy). In others, the implementation mechanism was unclear.



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Key Insight 3: Drought Resilience Requires Collaboration Across Borders

Many NDPs recognize that effective drought resilience cannot be achieved through national action alone. Nature-based approaches, in particular, often depend on coordinated management of shared rivers, watersheds, rangelands, and ecosystems that extend across borders.

Because both drought impacts and ecosystem processes transcend political boundaries, regional cooperation can play an important role

in sustaining the natural systems that help communities adapt to drought.

Existing regional initiatives provide a valuable platform for integrating drought resilience objectives. Embedding drought considerations within these frameworks may help countries coordinate investments, share expertise, and scale landscape-level resilience efforts.

NDP Spotlight: Zambia

Several Plans outline existing regional initiatives that directly relate to proactive, nature-based drought management. One such example is Zambia's participation in the **Southern African Development Community (SADC) Biodiversity Strategy**. This initiative provides a framework for member states to develop and implement projects aimed at sustaining the region's biodiversity across a range of sectors. The Strategy frames the urgency of regional collaboration around both the socio-economic benefits of biodiversity (including its potential to shield against the effects of natural disasters like drought) and the rate of observed degradation due to over-exploitation and increasingly frequent drought



Key Insight 4: Traditional Knowledge Offers Untapped Opportunities for Drought Resilience

Although references were relatively limited across the plans reviewed, several National Drought Plans highlighted the value of indigenous and traditional knowledge in strengthening drought resilience. Key examples/opportunities included:

Forecasting and Risk Monitoring – Traditional environmental indicators used to anticipate drought conditions and inform Early Warning Systems.

Land and Water Stewardship – Community-based agricultural, soil conservation, and water management practices developed through long-term experience in drought-prone landscapes.

Fundamentally, some Plans acknowledged that effective drought management that prioritizes community and environmental resiliency must mainstream the perspectives and knowledge systems of indigenous peoples.

NDP Spotlight: Tunisia

Tunisia's NDP includes several concrete examples of traditional hydro-agricultural techniques used to reduce erosion and soil degradation, promote groundwater recharge, and support arable land in an arid environment. For example, rural communities have traditionally relied on the **Jessours** system, which involves constructing a system of strategically placed small earthen dams along a slope to retain sediment and create areas for cultivation.



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Key Opportunities for Advancing Nature-Based Drought Resilience:

➔ **Priority 1: Expand NbS in Drought Planning Beyond Agriculture and Water Sectors.**

Opportunities exist to expand the use of NbS across additional drought-sensitive sectors, including transportation, tourism, biodiversity conservation, and economic development. Expanding the application of NbS can help countries address the full range of drought impacts while maximizing environmental, social, and economic co-benefits.

NDP Spotlight: Tanzania and Ethiopia

Tanzania's NDP highlights drought's impact on Transportation and Tourism sectors:

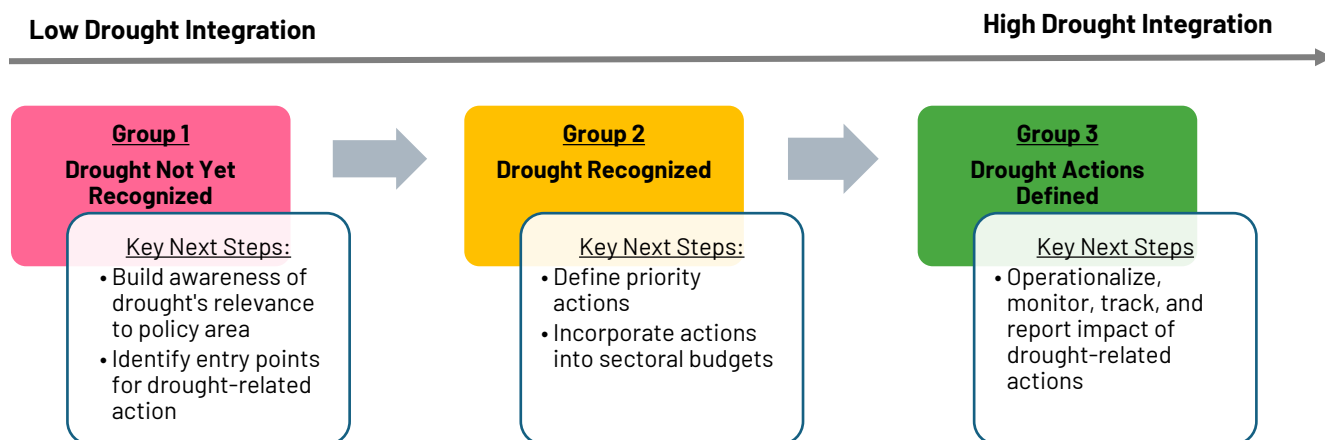
- **Transportation:** The Plan proposes riparian restoration/sediment dredging as a means of combatting lower water levels that would restrict inland navigation.
- **Tourism:** The Plan proposes catchment conservation activities as a means of ensuring wildlife have continued access to water/pasture resources, thus avoiding migration and loss of key tourism assets.

Ethiopia's NDP highlights biodiversity impacts in its framing of drought resiliency strategies, as biodiversity plays a critical role in ensuring ecosystems facing drought can continue to provide essential services. The Plan incorporates biodiversity benefits in its discussion of several drought resiliency strategies, including land use policy, climate smart agriculture, and sustainable water resources management.

➔ **Priority 2: Embed Drought Across the Policy Landscape.**

Countries can strengthen implementation of drought resilience measures by embedding drought objectives within relevant national, sectoral, and development policies. Throughout the plans reviewed, stronger examples of operationalization were often associated with existing policies that provided implementation pathways, institutional responsibilities, monitoring frameworks, and funding mechanisms.

FAO's policy integration framework offers a practical roadmap for identifying next steps based on a policy's current level of drought integration:



Source: Pek, E., et al. (2026), "Aligning National Drought Plans with Global and National Policy Frameworks: Methods, Case Studies, and Global Lessons."

➔ **Priority 3: Mobilize Financing for Nature-Based Drought Resilience.**

Greater investment in proactive drought risk reduction remains essential for scaling nature-based drought resilience measures. Many plans noted that drought funding continues to be concentrated on emergency response rather than long-term risk reduction and previous analyses highlighted this trend.

Among the suite of potential drought resilience solutions, nature-based approaches offer a particularly compelling investment case because a single intervention can generate benefits across multiple sectors. For example, watershed restoration can simultaneously support drought resilience alongside improved water security, ecosystem health, climate mitigation, agricultural production, and local livelihoods ([Beyond the Source: the environmental, economic and community benefits of source water protection](#)).

Additional Resources:



- [Scaling Nature-Based Solutions for Water-Resilient Food Systems](#)
- [Nature-based Solutions for Drought Resilience: A Policy Brief for UNCCD COP16](#)
- [Accelerating Adaptation: Exploring the promise and limitations of nature-based solutions in the race to adapt to increasing floods and droughts.](#)
- [Nature-based Solutions for Drought Resilience: A Technical Brief](#)

Appendix:

Nature-Based Drought Management Practices (3+ occurrences)

Land Management									
Land use planning	Restoration/protection of degraded ecosystems	Forest landscape protection	Rangeland/pasture management	Forest restoration	Rangeland/pasture restoration and protection	Improved forest management	Logging restrictions		
						Limit deforestation	Strengthen protected areas regime		
Water Resource Improvement				Soil Management					
Rainwater harvesting	Watershed protection/management	Wetland protection/restoration		Improve groundwater recharge zones		Agroforestry	Fertilizer/organic matter usage	Mulching	Crop rotation
		Basin-level management	National groundwater inventory assessment	Waterway clearing	Improved tillage practices		Cover crops	Crop diversification	Invasives management
Crop Management				Fire Management		Livestock Management			
Drought resistant crops				Optimized planting strategies		Wildfire protection measures		Rotational grazing	
								Ecosystem Services	
						Incentives for environmental services			

Nature-Based Drought Management Practices (≤2 occurrences)

Strategy	Practice	Strategy	Practice
Biodiversity Conservation	Biodiversity conservation programs Transboundary biodiversity conservation measures	Marine Ecosystems Management	Mangrove protection/restoration Participatory fisheries ecosystems management
Crop Management	Alternate cropping system Crop diversification Permaculture techniques Pest/disease monitoring	Soil Management	Conservation agriculture practices Contour farming Improved soil management practices Intercropping
Ecosystem Services	Ecosystem-based Adaptation Improvement of pastoral ecosystems Promote research in resilient agriculture ecosystems Develop integrated fire management plan	Traditional Knowledge	Ecological clearing Indigenous practices for natural resource management, agriculture, forestry Riparian restoration Runoff retention Terraced farming
Fire Management	Conserve/increase vegetative cover Cross-border ecosystem management Dune stabilization with drought-adapted vegetation Establish buffer zones in degraded regions Forest protection Improved management of transboundary rangelands Incentives for restoration/protection of sacred forests Incorporate drought risk reduction into REDD+ strategy Increase forest cover Increase forest coverage and protected biomass Integrated land management Integrated landscape management Integrated management of protected areas and watersheds Land tenure planning Participatory forest management Preservation of forest cover Reduced land conversion Rehabilitation of drought-resistant tree species Sustainable land management Sustainable use of biomass Tree planting Tree planting along roads and riverbanks	Water Resource Improvement	Catchment management Design comprehensive water resources management program Erosion prevention measures Groundwater vulnerability assessment Improved aquifer management Improved hydrological monitoring Improved water harvesting practices that protect aquifer recharge/recovery Improved water retention measures Integration of wetlands into water management plans Joint management of transboundary water resources National inventory of wetlands National water resources assessment Native species planting Natural water retention measures Promotion of community watershed councils Protection/restoration of natural water systems Reforestation of river banks Restoration/protection of degraded ecosystems Riparian restoration River basin management policy Streambank stabilization Strengthen surface/groundwater protections
Land Management			
Livestock Management	Controlled grazing Diversified livestock Drought resistant feed Introduction of fodder in livestock diet Livestock matching		