LANDSCAPE PARTNERSHIP ASIA

RESTORING DRYLANDS AND DROUGHT-PRONE AREAS

Vision, Strategy and Roadmap

Summary

Description: Landscape Partnership Asia (LPA) is an evolving, multi-stakeholder platform that seeks to implement performance-based investments in restoring Asian drylands and drought-prone areas. Investments will mitigate the climate crisis, build agricultural and environmental resilience, and improve livelihoods through various people-centred solutions such as institutional capacity building, farmer-managed and assisted natural regeneration, and small-to-medium enterprise and value chain development.

The Partnership will involve a variety of partners, ranging from public through private to civil society. The Partnership seeks the commitment of funding, implementing, technical and political partners to mobilize resources and capacity to turn large swathes of drylands and drought-prone areas into productive and resilient landscapes. The Partnership will build on scalable restoration successes and complement national efforts to expand and accelerate the achievement of targets.

Thirteen countries have already signified their commitment to engage in the Partnership (Annex 1).

Vision: Contribute to national and international targets in the restoration of dry forests, agricultural drylands, and drought-prone areas in Central, East, South and Southeast Asia, with an initial 10 million hectares brought under integrated dryland and drought management by 2032.

Scope: Selected drylands in Central, East, South and Southeast Asia classified by the United Nations Convention to Combat Desertification (UNCCD) and nationally-defined drylands and drought-prone areas.

Drylands refer to arid and semi-arid areas facing water scarcity and drought-prone conditions. The UNCCD classifies drylands by precipitation to potential evapotranspiration (P/PET) ratio between 0.05 and 0.65. The United Nations Environment Programme (UNEP) similarly defines drylands as tropical and temperate areas with an aridity index of less than 0.65. In these areas, drought is a complex and slowly encroaching natural hazard with pervasive impacts (UNCCD 2015).

Synergies: The Partnership aims to meet the goals of the UNCCD, the United Nations Framework on Climate Change (UNFCCC), the United Nations Convention on Biological Diversity (CBD), as well as national strategies of integrated dryland management. This initiative will link to other restoration initiatives — such as the Bonn Challenge, the UN Decade of Ecosystem Restoration, and the Food and Agriculture Organization of the United Nations' Asia-Pacific Forest Landscape Restoration programme — to create synergies.

Timeframe: 10 years (2022–2032)

Founding partners: Asian Forest Cooperation Organization (AFoCO), Center for International Forestry Research (CIFOR) and World Agroforestry (ICRAF), Global EverGreening Alliance (Alliance)

Founding Partners

About AFoCO
Formalized in 2018, the Asian Forest Cooperation Organization (AFoCO) is an intergovernmental organization committed to strengthening regional forest cooperation by transforming proven technologies and policies into concrete climate actions in the context of sustainable forest management. Through concerted efforts with their member countries, AFoCO will strive to undertake and promote action-oriented cooperation programs in Asia on sustainable forest management; enhancing forest carbon stocks and supporting related initiatives; addressing deforestation and forest degradation; strengthening capacity building and research and development in the forest sector and; establishing partnerships that build upon forest-related international efforts and initiatives.

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About CIFOR–ICRAF
The Center for International Forestry Research (CIFOR) and World Agroforestry (ICRAF) are scientific institutions that envision a more equitable world where trees in all landscapes, from drylands to the humid tropics, enhance the environmental and social well-being of all. CIFOR-ICRAF are CGIAR Research Centers.

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About the Alliance

Since early 2012, the Alliance (earlier known as the EverGreen Agriculture Partnership) has brought together leading research, technical and development organisations to harness their collective knowledge and technical capacity to build a shared vision around landscape restoration and livelihood improvement. The Alliance provides a collaborative platform to support and facilitate massive-scale environmental restoration and sustainable agricultural intensification projects, increasing biodiversity and both mitigating and adapting to the impacts of climate change on a global scale. The Alliance works with, and through, a multitude of member organisations, institutions and governments at the national and sub-national levels across Sub-Saharan Africa, Latin America and Southeast and South Asia, supporting collaboration, learning, sharing and harmonization across sectors and borders.

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CONTENT

1. Why restore drylands?

Drylands are critical terrestrial ecosystems. About 2.5 billion people live in drylands, with 90% in developing countries. Drylands are known for their extensive global reach and are estimated to be between 41 to 45% of the world's land area. Of this total, Asia has the highest areal coverage of drylands, which make up over 50% of the continent's land surface. In the absence of accessible social development programs and infrastructural facilities, people's need to survive in harsh dryland conditions across Asia has led to the rapid depletion of natural resources and land degradation.

Dryland degradation affects at least 38 Asian states. These states are sensitive to major environmental perturbations, such as droughts, dust storms, heatwaves, extreme rainfall and wildfires. For example, in Southeast Asia, all countries have experienced prolonged periods of drought spanning more than six months from 2015 to 2016 and again from 2018 to 2020, primarily caused by El Niño. The vulnerability of dryland populations also appears in other regions, including Central Asia, where knowledge gaps are obstacles in developing long-term solutions against warming and drought.

Land Degradation Neutrality reports submitted to the UNCCD suggest that the total area of degraded land is over 294 million hectares in six Asian countries, with much of this being drylands and drought-prone areas (Figure 1). However, less than 12% of the total degradation figure is captured in the national restoration targets, indicating the need for global support to restore Asian drylands.

Compared to the rest of the world, Asian dryland populations lag far behind in human development indices. Restoring drylands in such areas must prioritize human livelihoods and aspirations while contributing to nationally determined contributions (NDCs) and other social and environmental targets.

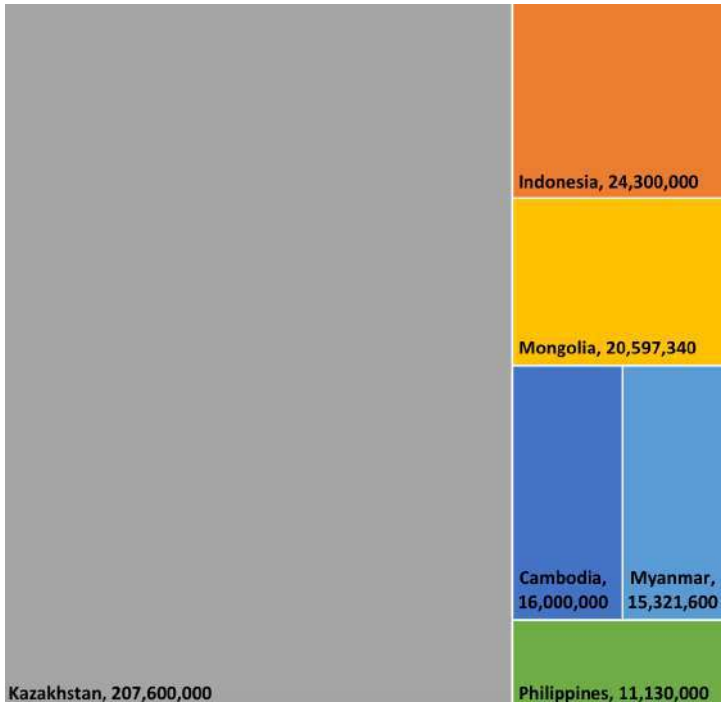

Figure 1. Total land degradation area by country in hectares

2. The critical role of Landscape Partnership Asia in restoring dryland ecosystems

Asia has the world's largest area of drylands, yet regional dryland restoration programs are scarce. The Partnership seeks to fill this gap through a multi-stakeholder platform that will mobilize resources to address dryland degradation and desertification. The processes embedded in the Partnership aim to inspire action-oriented policies on dryland management and greater recognition of the role of Asian drylands and drought-prone areas in global environmental and human well-being.

From experience and an extensive literature review, we found various ways to potentially increase ecosystem co-benefits in drylands and, hence, restore degraded agricultural, forest and grazing lands.

- Create and enhance the institutional framework for sustainable dryland management
- Improve rangeland management to enhance grass and tree productivity and carbon storage
- Support small-scale water infrastructure and community-based management systems
- Expand the area of farm woodlots for timber and bioenergy production and fruit farmer trees for food production and authorise community management of state forest lands
- Expand farmer-managed or assisted natural regeneration of trees on forest-, farm- and rangelands, where trees fertilize and protect crops and fodder grasses
- Establish shelterbelts of trees on all field and farm boundaries and in alleys and on contour lines, especially fruit, nut and timber trees
- Create agroforestry buffer zones around protected areas and within inhabited protected areas
- Increase the use of perennial crops for food production
- Establish fertilizer and fodder shrubs and trees throughout crop fields and rangelands

In realizing the potential in enhancing drylands and drought-prone areas across Asia, the Partnership will work with governments, non-governmental and civil society partners in 'engagement landscapes', featuring a wide range of biophysical and socioeconomic conditions to:

1) expand the scale of proven, integrated, dryland restoration techniques and approaches, including agroforestry, farmer-managed or assisted natural regeneration, small-scale water infrastructure, bioenergy production and sustainable management of forests and rangelands;

2) directly invest in extension services and 'farmer-champions' (including 'farmer-to-farmer' extension to share experience, knowledge and innovation); 'researcher-to-farmer' approaches to build knowledge; participatory co-design and co-development of locally appropriate options and innovations; value chain establishment; high-impact small-to-medium enterprises; seed and seedling systems for, particularly, indigenous trees and underused crops;

3) de-risk farm and forest community enterprises through innovative financial mechanisms and the development of public–private–community partnerships; and

4) enhance institutional capacity through gender and socially inclusive policy dialogues and policy working groups; learning networks involving diverse users and stakeholders; mutually beneficial management agreements between governments and land users.

The medium- to long-term returns include less dependence on natural forests and greater land-use efficiency for formerly degraded lands. There is overwhelming evidence that these nature-based solutions can pay for themselves quickly, leading to job creation and poverty reduction. Through employing smarter, user-friendly restoration techniques, the Partnership aims to restore degraded lands and capture more carbon to secure land productivity and human well-being. The Partnership will build on lessons learned by leveraging successful dryland restoration approaches already taking place.

3. Vision

By 2032, national dryland restoration efforts are substantially enhanced, with large areas brought under integrated dryland and drought management, to a minimum of 10 million hectares from baselines.

3.1 Target Groups

The Partnership supports the needs and aspirations of people engaged in drylands, including 1) smallholders, graziers and forest users; 2) small-to-medium-sized enterprises; 3) larger businesses; 4) governments; and 5) non-governmental organizations. Consultations with these groups will be held throughout the Partnership's life to ensure participatory and sustained engagement.

4. Barriers and Challenges

While ecosystem restoration across different landscapes has similar challenges in programming activities, these challenges are especially pernicious in dryland landscapes. The combined effects of biophysical and socioeconomic factors, which constitute the 'drylands syndrome', result in dryland populations being among the most marginalized groups on Earth. From discussions with UNCCD focal points in Asia, we grouped obstacles to dryland restoration into four categories.

4.1 Low ecological productivity and high spatial heterogeneity

Drylands display non-linear responses. High temporal and spatial variability in rainfall characterizes these systems, making vegetation productivity strongly linked to water availability. Unpredictable precipitation patterns owing to climate change have led to unprecedented alterations in the functioning of dryland ecosystems. Recently, Abel et al found that the tropical drylands of Asia had the largest share of vegetation that became less responsive to available rainfall over time. The negative trends indicate extended droughts and more vegetation impeding the ecological functions of drylands.

4.2 High poverty rates and limited financing opportunities

Most dryland populations have very low human development index scores and are often in a 'poverty trap'. Labour migration to urban or more humid areas has enabled some people to alleviate poverty in their communities and participate in restoration activities through remittances. However, this interregional flow of resources is only a prescriptive solution and does not address the root problem of dryland degradation, which stems primarily from population pressures and climate change. Unlike ecosystems such as tropical rainforests, which contain lush flora and iconic fauna species, people frequently view drylands as 'barren.' Thus, procuring funds to restore drylands is much more difficult.

4.3 High mobility and geographical remoteness

Despite national campaigns to sedentarize dryland communities across Asia, human mobility is still a central strategy of Asian pastoral populations. Movement allows diverse dryland communities to access water during the dry season and reduce their footprint at sites where vegetation cover is regenerating. In addition to having larger management units in sparsely populated areas, drylands are more distant from economic and policy centres. The costs of providing extension and policy support to drylands are high relative to other ecosystems, further increasing resource constraints for dryland restoration.

4.4 Critical knowledge gaps

Much of the Asian drylands are not widely known scientifically. Many tools that researchers apply in dryland sites, such as remote-sensing techniques, were developed in other ecosystems, which have distinct biophysical conditions from drylands. Nonetheless, recent advances in dryland research indicate the immense contribution of these systems to the global carbon cycle and dynamic socio-ecological interactions for human and environmental well-being. A photo-interpretation approach, for example, revealed that the areas of global drylands with more than 10% tree cover were 40 to 47% higher than previous estimates, corresponding to 467 million hectares of unreported forests.

5. Activities

The Partnership will scale up recognized restoration successes to complement governments' efforts and accelerate the achievement of national targets. Training and capacity building at various levels will be the backbone for fostering the achievement of the Partnership's vision. Capacity building activities will focus on empowering restoration champions (in government, civil society and communities) who will share their technical skills, knowledge and experience with others.

Enabling policies will be encouraged where needed to secure investments in restoration. The Partnership will develop a small-grants scheme to enable countries to conduct studies on financial and mainstreaming mechanisms, thereby achieving landscape restoration at multiple scales and for local communities to lead in, and have ownership of, initiatives.

The Asian Drylands Knowledge Hub will enable social learning and knowledge sharing. The Hub will disseminate the progress of participating countries to support refinement and further uptake. The Hub will also collect and manage knowledge from other restoration programmes throughout Asia and beyond.

Restoration goals will align with national and international commitments to societal progress, including the Sustainable Development Goals, NDCs, National Biodiversity Strategic Action Plans and the Bonn Challenge. The Partnership will quantify investment impacts through achievements in land degradation neutrality targets, landscape carbon capture, biodiversity enhancement, bioenergy development, increased nutritious food production, and improved livelihoods. *The Partnership's activities are grouped into seven key areas.*

5.1 Establish baselines for people-centred restoration

a. Map exemplary restoration practices for potential LPA interventions
b. Establish restoration baselines of environmental, sociological, cultural, and political factors, which may affect the suitability and longevity of interventions

> **i)**This activity includes documenting carbon stock levels, inter-and intra-migration flows, land tenure, gender and youth access to resources and land, and policy outlook

c. Conduct gender, livelihood, and policy analysis to identify the most suitable interventions that will empower marginalized groups, including women, migrants and indigenous people

5.2 Expand the scale of proven restoration approaches

a. Establish engagement landscapes with a range of restoration approaches, such as:

> **i)** Establish shelterbelts of trees on field and farm boundaries
> **ii)** Establish small-scale water infrastructure
> **iii)** Establish nurseries for the production of high-quality tree planting materials
> **iv)** Establish farm woodlots and farm fruit trees (e.g. coffee, cocoa)
> **v)** Increase the use of perennial crops for food production
> **vi)** Expand farmer-managed or assisted natural regeneration
> **vii)** Establish agroforestry buffer zones around and within protected areas and watersheds

5.3 Training and Capacity Building

a. Develop innovative, participatory, technical, training packages
b. Build the capacity of extension workers, policymakers, local NGOs and associations of farmers, graziers, forest users
c. Build the sustainable production and marketing capacity of existing small-to-medium-sized enterprises and facilitate the establishment of new ones
d. Establish learning networks involving different groups, such as pastoralists and livestock herders for example, to encourage information-sharing and capacity building

5.4 Expand the scale of financial mechanisms and support small-to-medium-sized enterprises

a. Assess and build the capacity of target groups in understanding financial mechanisms, integrating behavioural strategies and technical skills
b. Identify and implement customized incentive mechanisms
c. Identify and pilot contextually appropriate business opportunities, including opportunities to enhance or establish sustainable value chains
d. At least USD 7 million into landscape-level, performance-based, microfinance schemes, community development funds, and small-to-medium-sized enterprises

5.5 Small-grants scheme to assess financial and mainstreaming mechanisms

a. Establish planning and review committees and guidelines
b. Develop selection criteria, for example, compiling information on restoration, identifying opportunities; reviewing national policies; analysing financial flows, actors, mechanisms, and feasibility
c. Award a minimum of 32 grants in 5 years to organizations in participating countries

5.6 Enabling policy and mainstreaming

a. Establish policy working groups to lead analysis and develop mainstreaming strategies for dryland restoration approaches
b. Engage large companies at the national level to support standards for sustainable production
c. Work directly with ASEAN Working Groups (AWG) on Social Forestry (SF), Forest Management (FM), and Nature Conservation and Biodiversity (NCB) and similar regional bodies in Central, East and South Asia

5.7 Knowledge management and monitoring and evaluation

a. Set baselines, criteria and indicators for the Partnership's sub-regional programmes
b. Create an Asian Drylands Knowledge Hub to develop communication and dissemination strategies and build a critical mass of knowledge for increasing the scale of restoration
c. Participate in global events (for example, UNCCD, Global Landscapes Forum, IPBES, IUCN, World Forestry Congress) to share knowledge and solicit feedback

6. Roadmap

2022	By 2027	By 2032
Establishment phase	**5 million hectares brought under integrated dryland and drought management**	**10 million hectares brought under integrated dryland and drought management**
Funding obtained for LPA Secretariat coordination	Inception of regional, multi- and country-specific restoration projects with: • Tree nurseries producing high-quality germplasm increased by at least 25% • Small-scale water infrastructure increased by at least 25% • Farmer-managed and assisted natural regeneration and agroforestry deployed on at least 25% more hectares • Sustainable forest management enhanced on at least 25% more hectares • Rangeland management enhanced on at least 25% more hectares • Bioenergy production deployed on at least 25% more hectares • Carbon storage increased by at least 25%	Scale-up of regional, multi- and country-specific restoration projects
Funding obtained for sub-regional restoration projects: Central, East, South and Southeast Asia	Established 500 engagement landscapes, with support from 5 new donors to LPA	Established 1000 engagement landscapes

Funding obtained for LPA small-grants scheme in local enterprise development	Implemented 8 grants per year over four years through the small-grants scheme with national and local partners	Implemented a total of 32 grants through the small-grants scheme in collaboration and coordination with national and local partners, with knowledge synthesized
Funding obtained for multi-country and country-specific restoration projects (List of participating countries in Annex 1)	Engaged 400 farmer groups in sustainable production and trade through gender and socially inclusive value chains	Engaged 800 farmer groups in sustainable production and trade through gender and socially inclusive value chains
Established baselines, criteria and indicators in alignment with national and international dryland restoration goals	Trained 5,000 agricultural and forestry extensionists in restoration techniques	Trained 10,000 agricultural and forestry extensionists in restoration techniques
Partnership established at the national and project-site levels	Trained 250,000 farmers, graziers, and forest users in restoration techniques	Trained 500,000 farmers, graziers, and forest users in restoration techniques
Convene regular meetings with beneficiaries, including dryland communities, extension agencies, the private sector, donors, and civil society organizations, and engage governments through policy dialogues to ensure suitable restoration approaches and provision of enabling environment for restoration.	Representatives of 40 partner organizations (government and non-government) acquire new skills and knowledge Facilitated 16 policy dialogues at national and regional levels on dryland restoration and integrated dryland management	Representatives of 80 partner organizations (government and non-government) acquire new skills and knowledge Investment increased in national land degradation neutrality targets by at least 25%, resulting from policy dialogues, capacity building, and other support from LPA Reformed and developed policies that encourage sustainable dryland management in at least 6 countries

Asian Dryland Knowledge Hub is established and fully operational to facilitate cross-country learning through webinars, technical workshops, and multi-sectoral dialogues

Created 4 sub-regional learning networks and 10 national ones consisting of diverse dryland users and stakeholders

Published 20 outcome stories, with outputs communicated through at least 20 events (global, regional, national)

7. Expected long-term results

7.1 Contribution to mitigation of, and adaptation to, the climate crisis

By restoring Asian drylands, the Partnership will significantly contribute to global efforts toward meeting land degradation neutrality targets. The restoration techniques to be deployed include, but are not limited to, incorporating trees into agricultural systems via agroforestry, farmer-managed natural regeneration of trees on farmlands and rangelands and assisted natural regeneration of trees in degraded forest lands. These will result in a net increase in tree biomass, supporting mitigation through reducing greenhouse gas emissions and increasing landscape carbon stocks.

Restoration techniques will also foster the conservation of biological resources and wildlife habitats. Greater land productivity, land diversification and sustainable enterprise development will improve livelihoods and coping strategies, delivering adaptation benefits to dryland communities.

The Partnerships' biodiversity conservation and climate change adaptation and mitigation indicators align with UNCCD, UNFCCC (including REDD-plus) and the CBD indicators.

7.2 Contribution to the Sustainable Development Goals

The Partnership will increase the availability of nutritious food in an affordable and sustainable manner through restoration techniques such as agroforestry (SDG 2 Zero Hunger). Efficient value chains developed from the Partnership will improve producers' access to markets and increase income (SDG 1 No Poverty) and reduce waste (SDGs 2 and 12 Responsible Production and Consumption). Bioenergy production will contribute to SDG 7 (Affordable and Clean Energy). Contribution to SDGs 13 and 15, Climate Action and Life on Land, will be made through sustainable natural resource management.

The Partnership will mainstream integrated dryland management in economic development through financial instruments that connect producers to markets (SDG 8 Decent Work). These will boost social well-being and empower marginalized dryland groups, including women (SDG 5 Gender Equality). The changes will be sustainable through the cooperation of land users, policymakers and the private sector, all of whom will benefit from transformed agricultural and forest management (SDGs 16 and 17 Peace, Justice, and Strong Institutions and Partnerships). The transformation will also de-risk agriculture and forestry, lessening local vulnerability to shocks and increasing investment for sustainable land use.

7.3 Securing sustainability

The Partnership will secure the sustainability of activities through learning networks and active participation of households in adopting, and expanding the scale of, restoration practices that are cost-effective and user-friendly. These practices will improve livelihoods, environmental outcomes, such as restored, productive drylands, and the business viability of small-to-medium-sized enterprises. The Partnership will support the widespread adoption of people-centred interventions amongst producers and communities through the small-grants scheme, policy working groups, and incentive mechanisms tailored to local socio-cultural conditions and knowledge barriers.

In addition, the Asian Drylands Knowledge Hub will help foster partnerships with the private sector to increase the scale of restoration across Asian drylands. Through the active involvement of target beneficiaries, local ownership of interventions will be a central focus of the Partnership to help sustain dryland capacity building and financing in the long term. In coordination with national governments via policy dialogues, capacity building and related support mechanisms, the Partnership will foster an enabling environment to help boost overall investment in land degradation neutrality targets.

7.4 Replicability of results, potential multiplier effect, innovative potential

- Coordination with national governments and regional bodies will facilitate regional replication.
- Awareness and adoption will be increased through the Asian Drylands Knowledge Hub, wide-scale and targeted communication methods, presentations at COPs to UNFCCC and UNCBD and other global events.
- Innovation is in building partnerships for Asia-wide restoration to expand the scale of proven restoration options and financial, policy and related incentives for large-scale transformation of Asian drylands.

8. Partnership Structure

To build the consortium, the founding partners — AFoCO, CIFOR and ICRAF, and Global EverGreening Alliance — have 1) identified the roles, skills and resources necessary to implement the Partnership; 2) identified partners within their networks who have such capacities; 3) invited the identified partners to join the consortium; 4) prepared partnership agreements; 5) identified any remaining gaps in programme development; 6) invited other partners with the needed capacities to join the consortium (via point 4); and 7) convened a meeting of consortium partners to define next steps.

8.1 Roles and Responsibilities

8.1.1 Founding Partners

Each of the four founding partners agrees to the following general roles.

- Leverage and mobilize internal and external resources to implement restoration projects and sub-regional programmes in target countries and regions.
- Actively engage in networking with its organizational membership and others to build engagement to achieve and promote the Partnership's goals.
- Perform co-leadership in pursuit of growing the Partnership's programme and partnerships and deliver restoration benefits on the ground.
- Reach out to global partners and funders to secure operational and project resources that address the needs of the Partnership's partners.
- In addition, each founding partner undertakes specific roles.

Asian Forest Cooperation Organization

- Host, staff and co-manage the Secretariat of the Partnership as per the separate Terms of Reference of the Partnership Secretariat.
    - The Secretariat will ensure effective and timely communication between founding partners and others, including the broader partnership, consolidate information about funding bodies and national entities, and support coordination of the various activities under the Partnership, including project management and budget execution.

- Seek and manage commitments from AFoCO member countries to actively support and collaborate in implementing restoration projects generated or funded through the Partnership; leverage internal and internationally-supported restoration projects to synergize with those of the Partnership.
- Coordinate and facilitate the use of the Regional Education and Training Center as a venue for capacity building and knowledge sharing.
- Develop and submit project and sub-regional proposals, with a primary focus on government engagement, facilitation and leveraging country initiatives and investors, to secure Partnership funding in collaboration with founding and invited partners.

Center for International Forestry Research and World Agroforestry

- Provide strategic, technical, scientific and other advice as appropriate, drawing on lessons learned from research in the development sector throughout the world.
- Provide analytical, communication, monitoring, evaluation and co-learning services to the Partnership, selected engagement landscapes and other stakeholders.
- Develop and submit project and sub-regional proposals, with a primary focus on research and/or technical innovation, to secure Partnership funding in collaboration with founding and invited partners.

Global EverGreening Alliance

- Coordinate the input and participation of the members of the Global EverGreening Alliance in the design, implementation and communication of the Partnership and the Partnership's programme.
- Provide strategic, technical, communications, monitoring and other services and advice as appropriate, drawing on lessons learned from collaborative design and implementation of large-scale restoration and carbon programs, and from members of the Alliance throughout the world.
- Monitor the donor landscape and maintain a detailed knowledge of the donor environment and funding mechanisms.
- Develop and submit project and sub-regional proposals, with a primary focus on collaborative large-scale restoration and/or carbon offsetting, to secure Partnership funding in collaboration with founding and invited partners.

8.1.2 Government Partners

National governments

- Provide direction to the Partnership regarding national restoration targets, areas and appropriate approaches.
- Foster in-country coordination amongst agencies to ensure synergies.
- Integrate the Partnership's objectives into national policies, plans, programmes and budgets.
- Implement restoration projects with support from funding, implementing, and technical partners.
- Provide in-kind support and matching funds to the Partnership-developed restoration projects through internally and externally funded projects.

8.1.3 Implementing Partners

Non-governmental international, regional and national development organizations, civil society organizations, community-based associations, large private companies, government agencies

- Implement restoration projects and activities to help meet national targets.
- Support cross-sectoral, local–national and regional links.
- Develop and share knowledge and experience.
- Support in the mobilization of resources.

8.1.4 Technical Partners

National, regional, international research and/or development organizations

- Implement restoration projects, focusing on providing technical expertise, evidence-based knowledge and advice regarding restoration options and approaches, including innovative funding mechanisms.
- Build knowledge and experience generated from diverse partners in the Partnership.
- Support in the mobilization of resources.

8.1.5 Funding Partners

International funding agencies, multi-lateral donors, overseas development assistance agencies, global funding mechanisms and large private companies with a 'restoration agenda

- Deploy investments to restore multiple functions of Asian drylands and drought-prone areas for climate resilience, land degradation neutrality, and food and livelihood security.

8.2 Implementation Strategy

The growing momentum for ecosystem restoration through global initiatives, such as the UN Decade of Ecosystem Restoration, Bonn Challenge and the New York Declaration on Forests, presents a strategic opportunity to restore Asian drylands. The Partnership will work with suitable partners in dryland ecosystems according to the following principles.

8.2.1 Placing local people at the centre of dryland restoration

Most policies and development agendas in drylands are top–down driven, contradicting the practices and livelihoods of local people. Studies have consistently shown local participation is essential to the success and sustainability of reforestation programs. Enlarging the role of local people in dryland restoration will strengthen local autonomy in governance. Along with designing activities inclusive of all, especially the poor and indigenous and female-led households, the Partnership will organize participatory policy dialogues to address institutional drivers of land degradation.

8.2.2 Identifying and selecting landscapes for the greatest impact

With drylands covering over half of the total land area of Asia, the Partnership will adopt results-based decision-making to maximize returns on investment. Specifically, large-scale contiguous sites of degraded drylands and drought-prone areas featuring low human development index scores will be targeted as suitable restoration sites. Strengthening the resilience of dryland populations is critical to alleviating the socioeconomic burdens of prolonged droughts. Integrated land-use management in areas with a high frequency of severe droughts mitigates the extent of these impacts by tackling the sources of degradation. Thus, the Partnership emphasizes both the adaptation and mitigation potential of restoration interventions, which will deliver significant livelihood and ecosystem co-benefits.

8.2.3 Deploying cost-effective, user-friendly and scalable technologies

Considering that some dryland populations manage large units of land to counteract the effects of climate change and resource competition, the Partnership will deploy cost-effective, user-friendly and scalable technologies for implementation. Many of these technologies already exist in participating countries but require additional resource mobilization and knowledge transfer. Examples of successful restoration approaches include the planting of indigenous tree species, such as saxaul in the Aral Sea, assisted natural regeneration and afforestation in Mongolia, and agroforestry in the Central Dry Zone of Myanmar. Interventions will demonstrate cost-efficiency without undermining the effectiveness of impact delivery through participatory dialogues and workshop training.

8.2.4 Recognizing interactions at different scales

Drylands display high resilience to external shocks yet are also sensitive to hydroclimatic factors, closely binding human and non-human elements. The exposure of these ecosystems to multiple stressors, such as unpredictable rainfall, temperature increase, rapid urbanization and land-use change, requires appropriate tools and technologies across different spatial and temporal units. The Partnership will take a landscape approach to develop and coordinate interventions in participating countries. Information about plot- and site-level interactions will also be gathered to elicit finer-scale relationships that characterize the slow transformational changes of drylands.

8.2.5 Enhancing development of sustainable enterprises and value chains

Alongside ecological restoration, the Partnership will develop small-to-medium-sized enterprises and associated value chains to ensure that communities directly benefit from the restored land. Local people will be able to make sound decisions about suitable tree selection on their farms and appropriately manage forests to produce goods and services while enhancing their environment. Innovative financing mechanisms to de-risk farm and community-managed forest portfolios, such as payment for ecosystem services and public–private partnerships, will be incorporated into projects' designs as incentives for the uptake of sustainable technologies.

8.1.6 Creating synergies with national dryland policies and targets

Restoring drylands and drought-prone areas can be economically attractive because doing so contributes to multiple goals, such as land degradation neutrality, climate change mitigation and adaptation, and food and nutrition security. With participating countries facing numerous socioeconomic and ecological challenges, the Partnership will link dryland restoration objectives and activities with existing frameworks, creating synergies with national policies and targets. This process will lead to early attainment of expected outcomes and measurable progress within shorter periods. The Partnership will also help countries devise new policies and targets, where necessary, that link with restoration opportunities at the regional and global levels.

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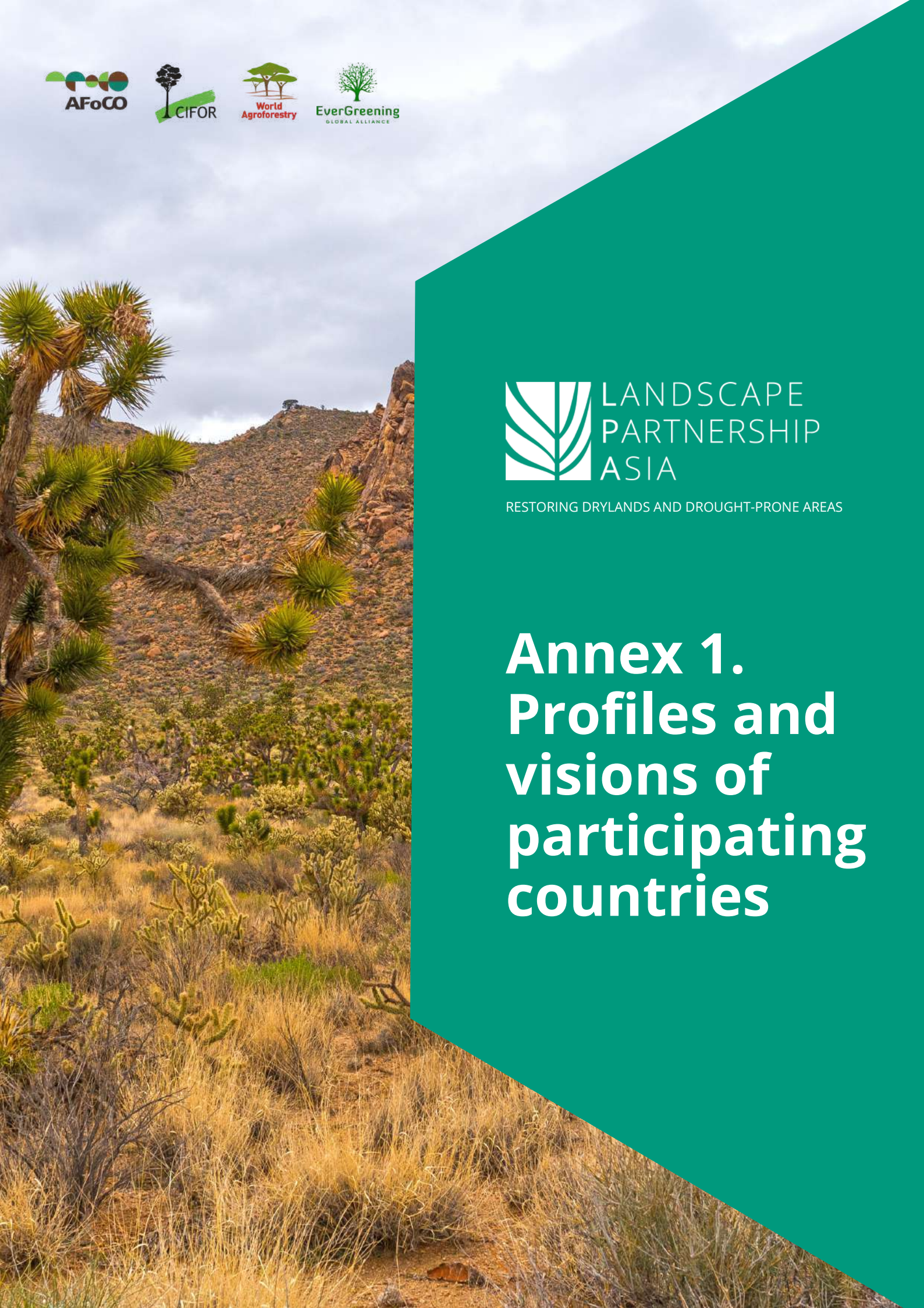


LANDSCAPE PARTNERSHIP ASIA

RESTORING DRYLANDS AND DROUGHT-PRONE AREAS

Annex 1. Profiles and visions of participating countries

CONTENT

A1.1 Bhutan

Background:

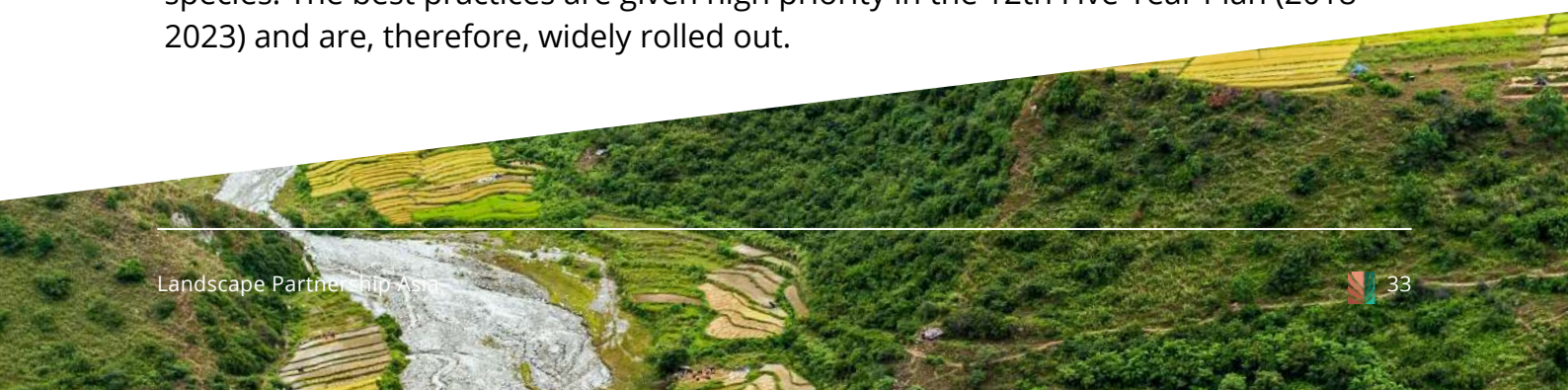
The total area of drylands in Bhutan is 226,261 hectares or about 5.93% of the country's total area. Most of the drylands are degraded. Drylands are mainly located on steep slopes, inclusive of rainfed and terraced areas. While Bhutan does not have an official definition of dryland degradation, it is generally understood to be caused by soil erosion (splash, sheet and rill), gullies, ravines and flash floods.

The primary land degradation drivers include cultivation on steep slopes without sustainable agricultural techniques, infrastructural and industrial development without proper environmental assessments, and improper water management. Forest fires, excessive use of forest resources, and overgrazing also contribute to the degradation of forest land. Land degradation affects the livelihoods of 58% of the Bhutanese population, which are engaged in the agricultural, livestock and forestry sectors.

The responsible Government agencies for dryland management are the Department of Agriculture, Department of Forests and Park Services and Department of Livestock, all of which exist under the Ministry of Agriculture and Forests. Bhutan has established soil erosion plots to measure annual soil loss from drylands. Geospatial tools are used to ascertain soil loss in specific watersheds. The soil erosion rates are measured annually. Major challenges to monitoring and evaluating the health and extent of dryland ecosystems are a lack of appropriate technologies (for example, access to satellite imagery), limited technical expertise, human and financial constraints and low priority attached to land degradation owing to low public awareness and understanding of socio-ecological interactions.

Successful Approaches:

Bhutan has successfully piloted different sustainable land management approaches and practices. These approaches and practices include terracing across slopes, contour hedgerows or alley plantations, stone bunds in stony fields, and agroforestry in degraded areas (gullies and landslide areas) through the construction of check dams and plantations of bamboo and other multipurpose native tree and grass species. The best practices are given high priority in the 12th Five-Year Plan (2018–2023) and are, therefore, widely rolled out.



Targets and Way Forward:

Through the 12th Five-Year Plan (2018–2023), Bhutan aims to restore 10,703 hectares of degraded drylands by June 2023 and an additional 3557 hectares for the Land Degradation Neutrality target of Bhutan by 2030. Bhutan is the only carbon-neutral country in the world and pledged to remain so in perpetuity at COP 21 in 2016. Within the next 5–10 years, the Ministry of Agriculture and Forests and other government agencies intend to achieve the following.

- Assessed national land degradation status and extent
- Mapped hotspots and key drivers (national level)
- Documented best dryland restoration practices
- Up-scaled dryland restoration practices through landscape approaches to achieve targets
- Built capacity of land users and extension officers

Requested Assistance from Landscape partnership Asia

Central challenges to dryland restoration in Bhutan are the absence of overarching land use and management policies, lack of priority in planning and resource allocation and limited financial support to incentivize farmers to invest in sustainable land use. The Partnership will attend to the needs of Bhutan in first procuring technical and financial support to establish national baselines for dryland degradation before carrying out specific interventions.

A1.2 Brunei Darussalam

Involved only in training and capacity-building activities.

A1.3 Cambodia

Background:

Dry forests make up around 17% of the forest cover in Cambodia. A large portion of these forests exists in the northeastern part of Cambodia, which borders Viet Nam. Cambodia has faced frequent droughts throughout the past decade. Drought-prone areas span the southern and northeastern parts of Cambodia. The primary land degradation drivers are land-cover change through deforestation and agricultural activities, unsustainable land management (for example, cultivation on steep slopes), climate change, soil erosion, pests and diseases, and infrastructural development (MAFF 2018). Indirect drivers include lack of market access, land tenure insecurity, and poverty (MAFF 2018).

The Ministry of Agriculture, Forestry and Fisheries is responsible for managing drylands and drought-prone areas and the Department of Forestry and Community oversees activities in dry forests specifically. The national land degradation assessment indicates that 7.79 million hectares, or 43% of the total land area, is degraded, affecting 3.58 million people (MAFF 2018). The provinces most vulnerable to drought are Kampong Chhnang, Kampong Cham, Tbong Khmum and Prey Veng (Drought Initiative-Cambodia 2019). In 2016, the Royal Government of Cambodia declared a state emergency because of severe drought, the first time in the country's history (Sithirith 2017).

Deforestation worsened this event as it not only led to loss of biodiversity and other services but diminished water quality and provisioning of material supplies. Cambodia's annual deforestation rate was estimated at 7.59% from 2010 to 2014, caused by illegal logging, forest land encroachment and land conversion for agricultural purposes (Ministry of Environment 2016). Forest ecosystem services are crucial to the sustainability of agriculture, such as lowland rice, which is the main crop in Cambodia.

Successful Approaches:

Sustainable forest management through community forestry and enterprises has supported the ecological and social functions of the country's extensive forests. Financial modelling based on conservative estimates shows that forests can be self-financing, as embodied in Cambodia's National Forest Programme (2010–2029). In this programme, the Government emphasizes meaningful local participation in forest management. Emerging issues associated with conservation concessions and outsourcing, such as climate change and innovative financing and cost-efficient mechanisms, offer the potential to increase revenues from forestry (Royal Government of Cambodia 2011).

Targets and Way Forward:

In 2018, the Royal Government of Cambodia approved the 10-year National Action Programme (NAP) to combat land degradation. Priority programming activities include scaling out sustainable and effective soil-management technology, restoring watersheds and forest-ecology services, developing policy and legal frameworks on sustainable land use, strengthening human-resource capacity in sustainable land and watershed management, and developing financial mechanisms for sub-programmes.

- Increase forest cover to 47% of total land area (baseline 45.26% (MoE 2016))
- Increase agricultural growth by 5% per annum (baseline 3% (MAFF 2015))
- Increase soil organic carbon stock of forests and cropland by 1.2% per year
- Establish 23,500 km^2 of protected forests and 3900 km^2 of production forests to maintain and enhance ecosystems and their services

Cambodia also aims to reforest 25,000 hectares of degraded land each year through the National Forest Programme 2010–2029.

Requested Assistance from Landscape Partnership Asia

The main challenges to dryland restoration in Cambodia are limited national data on key dryland performance indicators, lack of technical capacity to process data and weak institutional coordination. The Partnership will enhance the human and technical capacity of relevant stakeholders to identify and upscale restoration efforts in Cambodia.

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A1.4 Indonesia

Background:

Dry climatic areas in Indonesia have an annual rainfall of less than 1000 mm, which include most of the northern and southeastern coasts of Bali, most of East and West Nusa Tenggara and Central Sulawesi provinces. Along with limited water availability throughout the year, these areas feature some of the lowest Human Development Index rankings. Climate predictions indicate further decreases in rainfall, increased rainfall variability and prolonged and hotter dry seasons. The extent of degraded land in Indonesia is increasing, especially in dry areas owing to deforestation from export-led agricultural expansion, shifting cultivation, misuse of land resources, and overgrazing.

Dryland degradation has led to soil compaction, expansion of shrubland, wasteland and unproductive land from water erosion and salinization and, in turn, increased rural poverty (Government of Indonesia 2015). Between 2000 and 2010, the total area of shrubs, grasslands and sparsely vegetated areas increased by 3% or 277 million hectares while the total forest area decreased by 1.7% or more than 2 million hectares (Government of Indonesia 2016). Primary and secondary dry forests make up about 39% of the country's land area, indicating the importance of integrated dryland management.

The Ministry of Environment and Forestry and Ministry of Agriculture are responsible for managing drylands and drought-prone areas. To identify areas for landscape restoration, the Government of Indonesia has developed the Vulnerability Data Index Information System (SIDIK). SIDIK describes the level of local exposure, sensitivity and adaptive capacity to environmental risks against biophysical, social and economic indicators (Government of Indonesia 2016). Since 2012, local governments have used this system for building local capacity in land use planning related to climate change adaptation and forest fire and landslide risk management. ProKlim is another national instrument that collects community data to support local climate change adaptation and mitigation.

Successful Approaches:

Successful interventions to address land degradation include community land use management and awareness-raising about forest fire prevention. Alongside local participation, developing regulations for forest governance, improving human resource capacity to enforce rules and regulations, and establishing early emergency response systems have reduced the occurrences of forest fires. The use of satellite technology, such as NOAA and MODIS, has greatly benefitted the monitoring and early detection of fires. Furthermore, the Government of Indonesia has hosted the ASEAN Coordinating Centre for Transboundary Haze Pollution Control to strengthen regional cooperation on fire control. The Perhutanan Sosial (Agroforestry) program has also supported livelihood improvement and environmental well-being through promoting sustainable agriculture and forestry.

Targets and Way Forward:

Indonesia has established goals for forest rehabilitation and sustainable land management in degraded drylands and drought-prone areas (Government of Indonesia 2015). Specifically, the Government has identified West Nusa Tenggara, East Nusa Tenggara, and Central Sulawesi provinces as focal areas for restoration because they have among the driest climates in Indonesia. Under the Land Degradation Neutrality programme, the Government aims to restore 2637.30 km^2 of the country's degraded shrubs, grasslands and sparsely vegetated areas through forest rehabilitation by 2040.

In addition, 25,071.60 km^2 of shrubs, grasslands and sparsely vegetated areas are targeted for restoration under sustainable land use management by 2040. Corrective measures include soil and water conservation technologies. The Land Degradation Neutrality action plan is supported by Indonesia's Nationally Determined Contributions (2017), which states the country's commitment to restore 12 million hectares of degraded lands and 2 million hectares of peatland by 2030.

Requested Assistance from Landscape Partnership Asia

Despite ambitious targets set by the Government to rehabilitate 5.5 million hectares of severely degraded lands, including drylands and drought-prone areas, between 2015 and 2018, the allocated budget would cover less than one-fifth of the target. Accordingly, resource mobilization remains a top priority. The Partnership will direct resources to improve the productivity of drylands in Indonesia and provide alternative livelihoods through sustainable land use management.

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A1.5 Kazakhstan

Background:

About 98% of Kazakhstan's land area is drylands (Prăvălie 2016). Most of the drylands are degraded and exist in 'saxaul' forests *(Haloxylon spp)*, steppes and agricultural land. The primary drivers of land degradation include intensive agriculture and fuelwood and charcoal production, which result in water and wind erosion as well as salinization. Land degradation is most widespread in forests, rangelands and pastures. Vegetation density on forestland and rangeland has decreased by 10% in the recent decade.

The Ministry of Agriculture of the Republic of Kazakhstan is responsible for managing drylands and drought-prone areas. The Committee on Land Management provides technical support on Land Degradation Neutrality projects. This committee has begun work on geobotanical and soil surveys and soil fertilization to support State programs on agro-businesses (Government of Kazakhstan 2018). The country aims to increase the total irrigated lands by 40% by 2030, representing 2 million hectares.

Currently, there is no accurate data on land productivity and degradation. Many agencies do not have experience in measuring above- and below-ground carbon stocks. Differences in methodological approaches for assessing land resources and the absence of national data systems for capturing land datasets also pose measurement challenges. To overcome restoration barriers, the Government is in the process of establishing baseline conditions for Land Degradation Neutrality indicators and streamlining targets into national policies and commitments. In 2018, the Center for Space Research launched a project to assess total and seasonal vegetation degradation using GIS technology.

Successful Approaches:

The Aral Sea was the world's fourth-largest lake, which underwent adverse changes due to excessive water consumption, causing salinization since the 1980s. The eventual evaporation of the Aral Sea formed a new desert, Aralkum, which is the world's fastest-growing desert. Compared to diverting water from glaciers and nearby water basins, scientists found that foresting the dried sea bottom with indigenous species was the most cost-effective and ecologically sustainable solution. Test sites show the high survival rate of saxaul, sarzasan and tamarisk as restoration species.

To promote land rehabilitation, the Government banned the trading of saxaul in the

2017 Forestry Code. Funding and expertise from the Korean Forest Service and other global and local partners have successfully established over 91,000 hectares of saxaul in the Aral Sea. The roots of one saxaul shrub can retain four tons of sand. Alongside trapping soil, these trees stabilize the dry seabed for livelihood development. Regional bodies, such as the Interstate Commission for Water Coordination of Central Asia and the International Fund for Saving the Aral Sea, continue to coordinate restoration efforts.

Targets and Way Forward:

Kazakhstan's Concept for Conservation and Sustainable Use of Biodiversity by 2030 specifies the Aral Sea and protective tree borders along roads and railway lines as targets for forest and wooded land restoration. The Concept sets a target to increase wooded land to 4.7% of land area by 2020 and 5% by 2030. This target is to be achieved through reforestation and afforestation on a total of 500,000 hectares by 2030. Interventions include establishing fast-growing tree plantations, establishing green belts around cities, and planting 10,000 hectares of shelterbelts.

These interventions are covered in Kazakhstan's Framework Strategy for 2018–2030 under the UNCCD, which has the following objectives.

- Improving the status of affected ecosystems, combating land degradation, promoting sustainable land management and contributing to net-zero land degradation.
- Improving the living conditions of affected populations.
- Reduction of the effects of drought and adaptation to them.
- Ensuring global benefits through the effective implementation of the UNCCD.
- Mobilization of basic and additional financial and other resources to support the implementation of the UNCCD.

Requested Assistance from Landscape Partnership Asia

The Partnership will support baseline data collection of the Government by involving national and regional technical experts in developing a dryland knowledge management system. Capacity building of communities and technical extension staff in management approaches will also be carried out alongside monitoring dryland degradation and interventions.

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A1.6 Kyrgyzstan

Background:

The annual costs of land degradation in Kyrgyzstan are estimated to be USD 601 million or 16% of GDP (Government of Kyrgyzstan 2018). About 70% of the country's land area is drylands (Prăvălie 2016). Due to the mountainous terrain, water erosion is a prominent feature of agricultural areas. About 50% of all agricultural areas experience some form of degradation. Chyi, Issyk-Kul and Jalal-Abada regions have the most degraded agricultural areas. Land degradation threatens national food security and development. Since the late 1960s, 36% or 160,000 hectares of juniper forests and half of walnut and fruit-berry forests have been lost, increasing national forest cover decline to more than 35%.

The primary land degradation drivers are associated with the agricultural sector, which employs 29% of the country's population (Global Mechanism of the UNCCD 2018). Agricultural expansion accounts for 5.6 million hectares of water-eroded areas and 1.2 million hectares of salinized areas. In 2010, 33% of the rural population in Kyrgyzstan lived on degraded agricultural land, with this area increasing by 16% over one decade (Global Mechanism of the UNCCD 2018). Moreover, more than one-third of Kyrgyzstan's households rely on coal or fuelwood for heating, which adds to forest degradation.

The Agency for Forestry of the Ministry of Agriculture, Water Industry and Regional Development is responsible for managing drylands and drought-prone areas. The Agency assesses the health and functioning of dryland ecosystems using the land productivity indicator, which combines land use datasets at multiple levels. These datasets capture the productivity of pastures, productivity of forests, and yields of farmland. While national forest assessments have not yet been conducted, there have been attempts to assess land degradation through the country's forest inventory in 2008. However, support for assessment tools is needed to ensure the accuracy and reliability of results.

Successful Approaches:

The Government has initiated restoration efforts through tree planting on more than 1,000 hectares, mostly on mountain slopes. The country has also formulated a Development Strategy 2040 that provides, among others, tax rebates to individuals and corporations for establishing plantations. To strengthen measures for implementing the UNCCD, the Government has developed national voluntary goals on Land Degradation Neutrality (SDG target 15.3.). Moreover, in partnership with regional and international institutes, national scientists have made progress in the conservation and use of wild and domesticated genetic diversity.

Targets and Way Forward:

Kyrgyzstan has established a national goal to increase forest cover up to 8% by 2040. The country's Land Degradation Neutrality targets are in line with SDG 15.3, which focuses on combating desertification. The country's voluntary Land Degradation Neutrality targets include the following.

- Improve environmental conditions of pastures through pasture rotation system in at least 30 village districts.
- Better access to 10,000 hectares of pastures via improved pasture infrastructure.
- Adopt sustainable land management practices on 100,000 hectares, including both pastures and forests.
- Conduct land improvement activities on 10,000 hectares.

Requested Assistance from Landscape Partnership Asia

Under the Concept for the Development of the Forestry Sector of Kyrgyzstan, the Government will carry out reforestation activities on 23,200 hectares of forest lands and 300,000 hectares of degraded rangelands by 2030. Activities will enhance capacity building and knowledge sharing to reduce land degradation. The Partnership will support these and related targets by working with national and regional stakeholders to design user-friendly and cost-effective solutions, attracting international support. Specific emphasis will be on the country's green economy

vision, which notes creating conditions for land restoration and preserving the ecological integrity of pastures.

References

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A1.7 Lao PDR

Background:

While Lao PDR's total area of classified drylands is small compared to other ecosystems across the country, dryland degradation is a rising issue. The primary drivers of dryland degradation include commercial plantations, unsustainable cultivation in the uplands, and infrastructural development (Government of Lao PDR 2020). In forest areas, land use conversion and shifting cultivation or 'slash and burn' are primary causes of degradation. Cultivation on slopes, intensive monocultural farming and excessive use of synthetic pesticides have increased degradation in agricultural areas. In central Lao PDR, including Bolihamxay, Khammuan and Savannakhet provinces, farmers have experienced substantial crop losses from droughts and soil erosion (Government of Lao PDR 2020).

The Department of Forestry is responsible for managing drylands and drought-prone areas. The health of dryland ecosystems is measured once a year using UNCCD methodology and tools. The main challenges to restoration include limited resources and technical skills to deploy sustainable land use technologies, lack of national land use and land-cover data, and overlapping jurisdictions of administrations on land use. Policies are not yet in place to ensure effective coordination between the various land use agencies, leading to poor service delivery and weak relations between farmers and extension officers.

Successful Approaches:

Community participation in land use management is among the most successful countermeasures to dryland degradation. In particular, the village forestry programme has enabled local people to secure improvements in their livelihoods while conserving natural resources. Communities are encouraged to plant trees in degraded forest areas in exchange for land titles. Participatory plantation models have also been adopted by land users with support from the private sector.

Targets and Way Forward:

In the Forestry Strategy 2020, the Government of Lao PDR is committed to increasing forest cover to 70% or 16.58 million hectares of the country's total land area. This achievement will contribute to the reduction of greenhouse gas emissions. Also, the national voluntary Land Degradation Neutrality targets include the following.

- Ensure food security/potential commercial production to develop good, safe and sustainable agriculture by 2030.
- Protect the use of agricultural land on steep slopes and maintain fertility so that upland farmers have stable yields.
- Increase soil organic carbon in forests by 2030, in six provinces in northern Lao PDR.

Requested Assistance from Landscape Partnership Asia

The Government will promote organic agriculture, community forestry and reforestation of watersheds and degraded areas as key restoration approaches to tackle dryland degradation. The Partnership will work with the Government and others in programmatic areas, such as policy dialogues and capacity building, to enable national achievements in dryland restoration.

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A1.8 Mongolia

Background:

About 97% of Mongolia's total land area is drylands (Prăvălie 2016). The country spans the transitional zone between the deserts of Central Asia and the Siberian Boreal Taiga Forest. Mongolian forest cover consists of deciduous and coniferous forests in the north and saxaul (*Haloxylon ammodendron* Bunge) forests in the south. Desertification and land degradation have been evaluated five times at the national level, with the latest one conducted in 2020. These evaluations use multiple criteria to assess aridity, wind and water erosion, vegetation-cover change, and soil degradation. Based on a recent assessment, 76.9% of the country's total land area is considered degraded. These figures were validated through field studies by the National Agency for Meteorology and Environmental Monitoring.

The primary drivers of land degradation are vegetation loss, deforestation, agricultural expansion and encroachment into woodlands. These drivers are associated with drought, soil erosion, overgrazing and unsustainable land use. Drought affects around 25% of the country, occurring once every 2 to 3 years; and 50% of the country, once every 4 to 5 years. The number of dust-storm days has increased 3 to 4 times since the 1960s (Tsogtbaatar and Khudulmur 2014). About 3% of the total land area is severely eroded by wind (NCCD 2018). Rural–urban migration, overgrazing and insecure land tenure have increased resource competition, resulting in further land degradation.

The Ministry of Environment and Tourism is responsible for the management of drylands. Some restoration challenges are the absence of coordinated and strong institutional units on land use management, lack of subregional capacity to identify gaps and implement corrective measures, and lack of communication between institutions to create synergies. Opportunities to restore degraded lands include strengthening partnerships between NGOs and local communities, establishing efficient cooperation on sustainable land-management approaches with adjacent countries, and harmonizing actions under the One Road and One Belt initiative and other international agreements.

Successful Approaches:

The most successful countermeasures to dryland degradation include assisted natural regeneration, soil conservation, and rangeland and forest management. The participation of local communities, such as herders, has been critical in ensuring the effectiveness and sustainability of interventions. These approaches are evaluated through the national land assessments, which use data from multiple sites.

Targets and Way Forward:

Various land restoration commitments exist in Mongolia, including the Bonn Challenge and National Green Wall Programme. Mongolia has pledged to put 600,000 hectares under restoration for the Bonn Challenge. In 2005, Mongolia adopted the National Green Wall Program, with the primary goal of creating green belts and groves to cover the entire border of the Gobi and steppe regions. In the Action Plan for 2020–2024, the Government of Mongolia aims to increase the total area covered by forests to 8.6% and create a legal framework to provide monetary incentives to individuals and businesses that contribute to green development. Through the long-term Vision 2050 strategy, the area of land undergoing desertification and land degradation is expected to be below 22.9% by 2030. Also, there are plans to achieve the following Land Degradation Neutrality targets by 2030.

- Reduce deforestation and forest degradation to maintain forest area and reach 9% of total area by 2030 compared to 7.85% in 2015.
- Promote sustainable grassland management and stop further grassland degradation.
- Increase agricultural yields by 2.5 t/ha per annum by 2030, compared to 1.6 t/ha per annum in 2015.
- Ensure no net loss of wetlands by 2030 compared to 2015 (3963.30 km^2).

Requested Assistance from Landscape Partnership Asia

To achieve the restoration targets, the Government will reforest degraded lands, establish a forest-fire monitoring and prevention system, implement agroforestry practices, such as silvo-pastoral animal husbandry and shelterbelts, on the steppe and forest steppe regions, and implement payment for ecosystem services. Policy actions will focus on integrating greening programs into urban development projects, amending the soil protection and desertification prevention law, and revising norms and standards on pesticide use in the agricultural sector. The Partnership will support Mongolia's priorities of afforestation and land use management by facilitating policy dialogues, training and networking.

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A1.9 Myanmar

Background:

Drylands in Myanmar exist in the rain-shadow area known as the Central Dry Zone, which experiences less than 1000 mm of rainfall and less than 50 rainy days per year. Temperature ranges from a low of 10 °C to a high of 36°C. Prolonged drought periods can occur from November to April and sometimes last throughout the monsoon and rainy season in July. Nearly all drylands in the country are considered drought-prone areas and degraded. The total area of drylands is 8.17 million hectares or 12% of the country's total land area. Dry forests cover 2.9 million hectares of this area. While no national definition of degraded drylands exists, these areas are identified by high evapotranspiration, soil erosion, high soil pH levels, poor soil fertility and land productivity, and limited natural vegetation.

The primary causes of dryland degradation are poverty, population pressures, agricultural expansion, unsustainable agricultural practices, excessive use of dry forests, overgrazing, and land use change from human settlements and physical infrastructure. Along with the Dry Zone being the most water-stressed, it is one of the most food-insecure and densely populated regions in the country. Over 10 million people live in the Central Dry Zone, of whom approximately 43% fall below the poverty line and 40–50% of the rural population is landless (Singh Boori et al 2017).

Agencies responsible for managing drylands include the General Administration Department, Land Record and Land Settlement Department, Dry Zone Greening Department, Forest Department, Department of Agriculture, Environmental Conservation Department, Irrigation and Water Utilization Management Department and Rural Development Department. These agencies have employed remote-sensing tools and field inspections to measure dryland degradation. Some challenges to monitoring and evaluating the health and extent of dryland ecosystems are the low technical capacities of extension officers and dryland communities and limited equipment and funding available for interventions.

Successful Approaches:

Myanmar has engaged in successful dryland restoration through the Dry Zone Greening Department, which was established in 1997, preceding the UNCCD. The department has achieved success with community forestry, agroforestry, soil and water conservation (for example, stone check dams and ponds) and forest plantations in rehabilitating and reforesting drylands. Data of the forest inventory is used for

evaluating natural forest regeneration, survival counting for forest plantations, and soil deposits and water availability for soil and water conservation.

Targets and Way Forward:

In the 10-year Myanmar Reforestation and Rehabilitation Program, Myanmar aims to plant 2,661,750 trees across the country and has allocated a portion of this target to 230,675 hectares in the Central Dry Zone. In the National Sustainable Development Strategy, the Central Dry Zone is highlighted as the most urgent area for restoration, owing to past and current deforestation and severe climate change impacts. Within the next 5–10 years, the Dry Zone Greening Department and other agencies responsible for dryland management in Myanmar intend to achieve the following.

- Existing dryland restoration targets increased.
- Proper agricultural and grazing techniques employed in the Central Dry Zone.
- Improved soil and water conditions for rural dryland communities.
- Improved electrification for rural dryland communities so that fewer people encroach nearby degraded forests for fuelwood.

Requested Assistance from Landscape Partnership Asia

Limited capacity and financial resources hinder governmental and civil society organizations' ability to engage in dryland restoration. Given that poverty in the Central Dry Zone is a national concern, the Partnership will focus on deploying interventions that will address the living and working conditions of dryland populations so that local people can fully participate in restoration activities.

References

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A1.10 Philippines

Background:

Grasslands, shrublands and sparsely vegetated areas represent 29% of the Philippines's total land area and are prominent features of upland agriculture (Government of the Philippines 2018). While there is no national definition of dry forests, denuded forestlands, which refer to forestland lacking natural or planted tree cover, spanned over 2.6 million hectares in 2019. Land degradation is estimated to be 37% or 11.13 million hectares of the Philippines' total land area (Government of the Philippines 2018). Of this amount, 3.69 million hectares are in grasslands and shrublands, which are experiencing the most degradation (Government of the Philippines 2018). In these areas, the primary land degradation drivers include typhoons, unsustainable land uses, slash and burn, shorter fallow periods, increased water usage, and unregulated human settlement and agricultural expansion.

The increasing frequency of El Niño events has also added to the country's drought vulnerability. The effects of these occurrences contribute to low agricultural and forestry productivity, reduced water availability from sedimentation, loss of watershed values and functions, and loss of biodiversity. Droughts between 2015–2016 led to significant losses of agricultural and fishery production, with 85% of the country's provinces affected. Drought vulnerability in the Philippines amplifies the burdens of the struggling economy and the subsistence nature of agriculture, whereby cropping is small-scale and may often only be sufficient to feed a farmer's immediate household.

The Department of Environment and Natural Resources and the Department of Agriculture are responsible for managing grasslands and shrublands. The Philippine Atmospheric, Geophysical and Astronomical Services Administration, Climate Change Commission, National Irrigation Administration and local government units are also involved in reporting dryland degradation. Dryland degradation is measured using UNCCD indicators of land-cover change, land productivity dynamics and soil organic carbon. These measurements are completed every 2 to 4 years. The constraints of dryland monitoring and evaluation include lack of availability of high-resolution national and global datasets, limited resources for ground-truthing and low capacity of technical staff to undertake assessments.

Successful Approaches:

Successful restoration approaches include the adoption of low-cost soil conservation technologies, such as natural vegetative strips and agroforestry. Watershed management led by local government units, assisted natural regeneration, and community-based forest management with agroforestry components have also restored forest and cropland areas. These activities have contributed to positive land-cover trends in the Philippines, which witnessed a decline in shrubs, grasslands and sparsely vegetated areas between 2003 and 2010 (Government of the Philippines 2018). Yet, further work is needed to maintain the health of forest cover and reduce the conversion of natural ecosystems to intensive croplands.

Targets and Way Forward:

Under the Land Degradation Neutrality targets, the Government of the Philippines aims to bring 60% (4.05 million hectares) of forest lands, shrub lands/grasslands and wetlands with negative trends into neutrality by 2030. About 50% or 2.2 million hectares of degraded cropland are also targeted. The Government will achieve the targets by adopting a policy for payment for ecosystem services, establishing public–private partnerships, and implementing proven low-cost forest and agricultural management practices, such as assisted natural regeneration and climate-smart agriculture. The Enhanced National Greening Program complements these targets in forest areas.

Requested Assistance from Landscape Partnership Asia

The challenges to maintaining and improving the health of grasslands and shrublands include the lack of emphasis on agrobiodiversity in protected area assessments and planning, limited intervention support by both the Department of Environment and Natural Resources and the Department of Agriculture, and insufficient programme support for market access. The absence of a unified national land use policy, such as a National Land Use Act, and weak enforcement of existing land use and land management policies reduces cross-sectoral collaborations for restoration. The Partnership will support the needs of the Philippines by advancing national policy dialogues, cross-sectoral investment programmes, and stakeholder advocacy among local government units for sustainable land use.

References

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A1.11 Thailand

Background:

Drylands cover multiple land use types in Thailand. Annual drylands cover 22% of the country's land area, mostly existing in the central part of the country, and seasonal drylands cover 84% of the land area. The Land Development Department and others, including Government partners, civil society organizations and communities, monitor and evaluate land use changes to implement land management plans against land degradation and desertification. Drought severity in Thailand is grouped by frequency, from less than three times every decade to more than six times every decade.

The key drivers of land degradation include climate change, deforestation, intensive and rapid agricultural and industrial development, and urbanization. Rubber, which is one of the fastest-growing sectors of the Thai economy, drives much of the large-scale deforestation. Land for rubber plantations is cleared on steep slopes, often with poor management practices, resulting in soil and water erosion. Inappropriate agricultural practices have also led to the removal of organic matter and plant cover for regeneration. In areas where rainfall is low, salinization occurs from improper irrigation systems. The overuse of chemical fertilizers and pesticides has also contributed to land degradation on farmlands. Population increases coupled with urbanization have shortened the fallow periods in shifting cultivation, reducing the ecological health of the country's natural landscapes.

The departments responsible for managing drylands are the Royal Forest Department, the Department of Water Resources, the Land Development Department, and the Royal Irrigation Department. Monitoring and evaluation of drylands occur every four years through the Land Degradation Neutrality assessment. Challenges to these assessments include lack of standards and unsuitable equipment across study sites as well as limited research capacity of dryland ecosystems. Furthermore, land use change, climate change and natural disasters impede dryland restoration.

Successful Approaches:

The most successful countermeasures to dryland degradation are agroforestry, soil conservation and integrated water management, forest management, and regenerative farming. In addition to enhancing sustainable land use, these measures have helped mitigate landslides. The Land Development Department has identified 56 provinces in Thailand as landslide-prone, representing 1.65 million hectares.

Deforestation and illegal logging are central sources of landslides in northern Thailand.

Targets and Way Forward:

Under the Land Degradation Neutrality project, Thailand is committed to the following targets.

- Increase the proportion of national forest cover through reforestation and rehabilitation of degraded forest with local community participation.
- Increase the productivity of degraded land with an emphasis on sustainable agriculture.
- Reduce soil carbon loss and increase soil carbon sequestration through soil and water conservation, community participation and awareness-raising.

Requested Assistance from Landscape Partnership Asia

Within the next five years, the Government of Thailand aims to restore more than 2 million hectares of degraded lands, including those in drought-prone areas. The Partnership will work with people at various levels in Thailand to mobilize resources and capacity for meeting this goal.

A1.12 Timor-Leste

Background:

Between 1990 and 2010, Timor-Leste lost about 14,000 hectares of dense forest. Since 2003, forest coverage has declined by 58%. An estimated 42% of the population lives below the national poverty line, with the majority being farmers. Without adequate capital resources, farmers have converted forests to agricultural land through slash-and-burn practices (NAP 2017). The rise in population growth has also negatively affected natural resources through greater resource competition for arable land.

The conversion of forest into farmland has compromised soil quality and productivity. Also, a lack of emphasis on conservation measures has resulted in further degradation of natural resources in critical ecosystems. The Government has been unable to halt rapid deforestation owing to ineffective law enforcement, weak forestry policies and regulations and inadequate human resources. Land degradation is exacerbated by the challenging socio-economic situation, such as post-conflict tensions.

Successful Approaches:

Timor-Leste has taken several countermeasures to tackle dryland degradation. These include agroforestry, soil conservation, forest management, and regenerative and resilient agricultural farming. An example of a successful project is the Carbon Farming Initiative, which provided small annual monetary payments to households as incentives for them to reforest the land through establishing community-based plant nurseries of indigenous and domesticated varieties.

Targets and Way Forward:

Under its Land Degradation Neutrality targets, Timor-Leste aims to achieve the following.

- To protect an estimated 73% of critical areas for forest functions and conservation of water resources, soil and biodiversity by 2030.
- To involve more than 53% of identified villages in community-based forest management by 2023.
- To sustainably manage at least five out of 29 priority watersheds by 2023.
- To conserve a total of 228,174.57 hectares of dense forest cover, 278,999.19 hectares of sparse forest cover and 238,508.55 hectares of non-forest areas by 2030.

Requested Assistance from Landscape Partnership Asia

The Directorate General of Forestry, Coffee and Industrial Plants is responsible for the partial implementation of the National Adaptation Plan. However, the annual State budget could only allow the planting of trees on up to 1000 hectares of land. Comparing this replanting figure against the annual losses rate of 10,000–12,000 hectares, Timor-Leste may likely experience severe forest losses. The Partnership will support partnership development in Timor-Leste to enable national restoration targets through nature-based solutions, such as tree planting and watershed management.

A1.13 Viet Nam

Background:

In Viet Nam, drylands, including drought-prone areas, cover 1,307,200 hectares or about 4% of the country's total land area. According to Circular No. 14/2012/TT-BTNMT of the Ministry of Natural Resources and Environment, dryland degradation is defined based on the ratio of average monthly rainfall and evaporation. Physical land degradation drivers range from land-cover change, variable rainfall, climate change, to landslides. Anthropogenic drivers range from the exploitation of forests and mineral resources, intensive agriculture, to unsustainable land uses. The Northwest, Highlands, and South-central regions are hotspots of land degradation and drought.

The Department of Natural Resources and Environment and the Department of Agriculture are responsible for managing drylands and drought-prone areas. The national focal point for implementing the UNCCD belongs to the Viet Nam Administration of Forestry of the Ministry of Agriculture and Rural Development. Restoration barriers include unpredictable weather changes and natural disasters, resource competition for infrastructure development, lack of research capacity and weak policy frameworks for integrated land use management.

Successful Approaches:

The most successful restoration approaches include agroforestry on sloping land, drip irrigation for arid areas, and socially inclusive programs that engage women, ethnic minority groups, and children. The involvement of rural households and the provision of technical training to forest users have helped curb indirect drivers of land degradation. These approaches are evaluated by land and food productivity indicators, such as yield outputs and forest cover change, and human development indicators, such as income, health and education levels.

Targets and Way Forward:

Under the Land Degradation Neutrality programme, the Government of Viet Nam (2018) aims to support water efficiency through applying agroforestry-related technologies on 320,000 hectares of agricultural land with national support and an additional 500,000 hectares with international support. In forest areas, forest protection will occur on 3 million hectares, natural forest restoration on 410,000 hectares, afforestation on 375,000 hectares, and forest plantations with large timber species on 180,000 hectares (Government of Viet Nam 2018). To achieve these targets, the Government will invest in drought-resistant plant systems, advanced silvicultural practices, agroforestry systems as well as cattle husbandry and biotechnology in forest-fire prevention. Policies that support these programs include the Forestry Development Strategy (2021–2030) and National Forestry Master Plan (2021–2030).

Requested Assistance from Landscape Partnership Asia

The Government will support the functioning and roles of localities and communities in forest management and protection and finalize forestry policy on these protocols. Investment in agroforestry projects will also be directed to sloping lands. National forest inventory assessments will be carried out every five years to ensure progress towards the Land Degradation Neutrality targets. The Partnership will support the country's long-term vision to protect and develop forests through mobilizing resources for the implementation of solutions to land degradation and drought from 2021 to 2025 and onwards.

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