IsDB
البنك الإسلامي للتنمية
Islamic Development Bank

An Innovative Finance Framework for Sustainable Dryland Development

"Right finance, right people, right time"

November 2024

Contents

Acronyms

AfDB	African Development Bank
AFOLU	Agriculture, Forestry and Other Land Use
AI	Artificial Intelligence
CBD	Convention on Biological Diversity
CO2	Carbon Dioxide
COP	Conference of Parties
CSO	Civil Society Organization
CSR	Corporate Social Responsibility
DFI	Development Finance Institution
DLDD	Desertification, Land Degradation and Drought
GCF	Global Climate Fund
GGW	Great Green Wall
GLI	Global Land Initiative
FAO	Food and Agriculture Organization
GBF	Global Biodiversity Framework
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GLM	Global Land Mechanism
IDB	Inter-American Development Bank
IPCC	Intergovernmental Panel on Climate Change
IsDB	Islamic Development Bank
LDC	Least Developed Country
LDN	Land Degradation Neutrality
MEWA	Ministry of Environment, Water and Agriculture (KSA)
MGI	Middle East Green Initiative

MSME	Micro, Small & Medium Enterprise
NAP	National Adaptation Plan
NBSAP	National Biodiversity Strategy and Action Plan
NDC	Nationally Determined Contribution
NDP	National Drought Plan
NDP	National Development Plan
NGO	Non-Governmental Organization
ODA	Official Development Assistance
PES	Payment for Ecosystem Services
PPP	Public-Private Partnerships
REDD(+)	Reducing Emissions from Deforestation and Forest Degradation
ROI	Return on Investment
SDG	Sustainable Development Goals
SGI	Saudi Green Initiative
SDM	Sustainable Dryland Management
SLM	Sustainable Land Management
SME	Small & Medium Enterprise
TA	Technical Assistance
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
WBG	World Bank Group

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Ultimately, it is intended that the findings from this study benefit global dryland communities.

Executive Summary

1. **Drylands constitute over 40 percent of global land area. More than one-third are already degraded, and this figure is increasing, threatening sustainable development**. Desertification, dryland degradation and drought threaten local livelihoods, food and water security, and ecosystem services. They increase health, conflict, and migration risks and are exacerbated by climate change. Annual global costs of desertification, land degradation, and drought are estimated at USD878 billion.

2. **In response, the international community has introduced frameworks to promote sustainable dryland management (SDM) and dryland restoration interventions**. High-level initiatives, such as the Sustainable Development Goals (SDGs), UN Decade on Restoration (2020-2030), Paris Agreement, Global Biodiversity Framework (GBF), G20 Global Land Initiative (G20 GLI), and Land Degradation Neutrality (LDN) outline strategic frameworks for action. However, despite increasing national and local level actions, global land degradation trends are not being halted or reversed.

3. **However, large financing gaps remain – there is an annual shortfall of USD278 billion to 2030 to address drought, land degradation, and desertification. Significantly greater volumes of public and private finance are needed**, supported by improved governance, technical and socioeconomic systems.

4. **Hence, there is a need to better understand sustainable financing models to help ensure that the "right finance reaches the right people at the right time"**. Financing models remain a limiting factor for the design, mobilization and deployment of sustainable funding and support. Current approaches in drylands tend to be reactive rather than proactive.

5. **In response, this study draws upon literature and recent case studies and proposes an Innovative Finance Framework for Sustainable Dryland Development**. The objective of the study is to identify where both traditional and innovative forms of public, private and alternative finance can be scaled up to support SDM.

6. **The Framework is structured around the centrality of climate and non-climate related shock events in drylands, across temporal and spatial scales. It comprises three distinct but interconnected and overlapping development phases**. The Framework is premised on the integration of inevitable, intermittent shock events into longer-term sustainable development and resiliency-building pathways. The Framework design recognizes that whilst shock events cannot be eliminated, resilience can be built ex-ante, impacts managed, and recovery ex-post can transition back towards sustainable

development. As such the Framework defines three phases: (i) Phase 1: Sustainable Productivity and Resilient Development; (ii) Phase 2: Bracing for Shock; and (iii) Phase 3: Transitioning Back Better (Figure i).

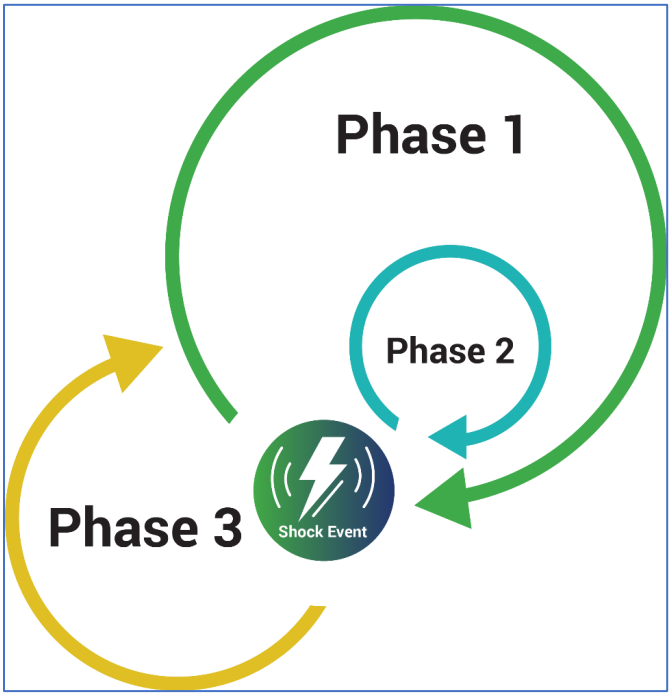


Figure i – Innovative Finance Framework for Sustainable Dryland Development, comprising Phase 1, 2 & 3

7. **Within the Framework, Phase 1 represents the ambition for sustainable dryland development**. It includes a focus on sustainable dryland productivity across all sectors (integrating conservation and restoration) and integrates resilience building measures. Phase 1 includes the promotion of bankable investment opportunities, with potential appeal to both public and private financiers. Such investments may offer acceptable risk profiles and returns on investment, with the potential for scaling up and supporting macroeconomic development. Phase 1 may ultimately lead to self-reinforcing development, subject to sustainable investments, resilience building, and management of periodic shock events (including integration of proactive Phase 2 measures). Ultimately, Phase 1 may embed sufficient resiliency to avoid Phase 3 (see Figure i).

8. **During Phase 1, there is an opportunity to focus on both the scaling of existing financing mechanisms, which are well-established and well-understood, as well as introducing new approaches, utilizing a wide variety of modalities**. Major public finance sources include national budget, which can integrate bespoke dryland support vehicles, and international concessional lending, particularly to support traditional infrastructure and asset investments and for trialing new approaches. Innovative approaches, like value chain programs, can better integrate infrastructure and

commodity components, promoting SDM practices and offering more opportunities for producers. Where public finance is limited, engaging the private sector through blended financing presents opportunity, including a shift towards outcome- and impact-based financing, such as results-based models. Some private sector actors are introducing innovative financing vehicles, such as thematic bonds, debt swaps, and private equity vehicles, to support sustainable dryland development. Market-based instruments for SDM are beginning to attract first-mover private finance. Households – often overlooked as private investors – are pivotal stakeholders, serving as both sources and recipients of finance.

9. Phase 2 recognizes that climate and non-climate shock events are periodically inevitable and that they may be proactively managed to reduce potential adverse impacts. Ultimately, Phase 2 modalities should be embedded into Phase 1 resiliency building. Uncertainty and volatility characterize many drylands. Proactive actions in Phase 2 may avoid, mitigate or reduce potential adverse impacts of shocks, which in turn may reduce the need for recovery, rehabilitation, and reconstruction efforts. Explicit Framework focus on finance mobilization for Phase 2 may help to promote ex-ante and disaster preparedness measures. Ultimately, Phase 2 measures should be integrated as a subset into Phase 1 to reduce the probability of periodically descending into Phase 3. Phase 2 is highly dependent on knowledge and information to support forecasting, early warning and resilience building.

10. Phase 2 builds upon a smaller range of financing modalities than Phase 1, with a targeted focus on both resilience building and bracing for shock events. Phase 2 relies heavily on forecasting and preparation, emphasizing the important role for public finance instruments which may be quickly redirected during crises. Proactive resilience measures by public authorities, such as Government-funded public works programs can build resilience and encourage private sector support. Insurance, both traditional and evolving approaches, such as parametric insurance, supports community resilience against shocks. Thematic debt instruments, including resilience bonds, are also increasingly relevant.

11. Phase 3 represents a during- and post-shock period focused on coping, relief, recovery and rebuilding back better. Due to shock events and associated adverse impacts on people, economy and environment, Phase 3 will likely involve significant costs, which are often borne by public finance and private finance (particularly at the household and community levels). Ultimately, with time, Phase 3 may integrate communities back into Phase 1 via transition to resilient sustainable development.

12. There is an opportunity for Phase 3 to move away from a predominant focus on reactive and relief financing towards transitioning back better. There are increasing modalities being trialed in this space, some at landscape scale. Public finance, through grants and humanitarian aid, is crucial for coping with and then transitioning out of shock events. Increasingly, concessional lending from multilateral donors includes structured debt clauses and deferred payments for disasters. Additionally, lessons from COVID-19 recovery shows that public finance can support green and resilient recovery. Landscape-scale interventions blend public and private and may have sufficient scale to influence macroeconomic and enabling conditions for transitioning degraded areas towards sustainable development pathways. Debt instruments, such as debt swaps, catastrophe bonds and diaspora bonds, represent emerging modalities for consideration to support recovery. Remittance flows, though largely informal, play a significant role in disaster management and recovery and may be more efficiently leveraged.

13. In conclusion, the three-phased Framework is designed to acknowledge the increasing reality of stability-shock cycles being experienced by communities on the ground in dryland environments. By structuring financing modalities and actors around these phases may serve as a framing for new solutions and finance deployment, which may ultimately support impactful and sustainable actions.

1. Introduction

1.1 The current state of drylands

Drylands are expansive global regions sustaining diverse and dynamic populations. Drylands cover over 40% of global land[1] (Figure 1), are home to more than 2 billion people[2], and classified into arid, semi-arid, and dry sub-humid regions[i]. They traditionally support pastoralists, agro-pastoralists[ii], and smallholder agriculturalists, with a growing presence of rural and urban settlements, as well as mining and industry stakeholders[3].

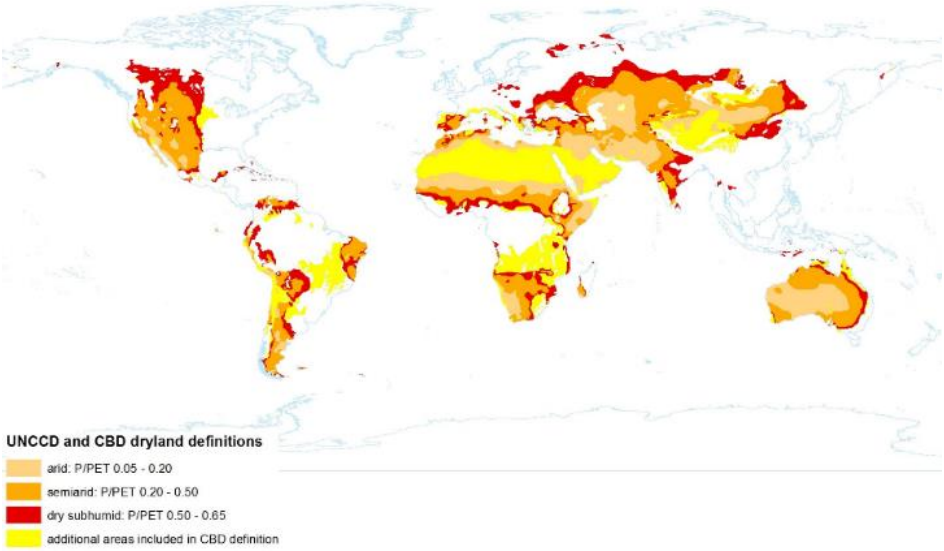


Figure 1 – Global drylands (as defined by UNCCD & CBD)

Water, or its absence, is the principal factor defining drylands[4]. Drylands have low and variable precipitation and high evaporation, with productivity limited by water scarcity. Droughts, although affected by climate change, are natural and recurring events in dryland systems.

Drylands contribute a range of critical services and can be highly valuable, productive and resilient regions. Drylands provide essential ecosystem, cultural, and supporting services, including water, raw materials, food, soil formation, recreation, tourism, biodiversity, pollination, water flow, climate regulation, cultural identity, indigenous knowledge, and nutrient cycling[5]. Globally, they make up 44% of croplands and 50% of livestock[6] (including 46% of global livestock diversity[7]), with pastoralism alone supporting several hundred million households and over one billion animals[8].

[i] A ratio between average annual precipitation and potential evapotranspiration.

[ii] Pastoralism is the use of extensive grazing on rangelands for livestock production. Agro-pastoralists are largely sedentary, combining livestock and crop production.

Dryland degradation[iii] is a current and growing challenge. Dryland ecosystems are fragile[9], with susceptibility to degradation due to low soil fertility, erosion, and slow vegetation recovery[10]. A combination of climate (prolonged droughts, flash floods, increasing temperatures) and non-climate (land use changes[11], overexploitation, population growth[12]) factors are accelerating degradation[13]. Today, over one-third of drylands are degraded[14] and at least 100 million hectares of land (including drylands) is degraded annually[15].

Degraded drylands have high associated socioeconomic costs. They have lower productivity and higher poverty rates, affecting around 1 billion people in over 100 countries[16]. Annual global costs of desertification, land degradation, and drought are estimated at USD878 billion[iv17]. By 2050, land degradation and climate change could reduce crop yields by 10% globally and up to 50% in some regions[18].

Ceasing and reversing dryland degradation now can have significant socioeconomic and ecosystem benefits but will require significant global reframing. Greater than half of global GDP depends on nature and its services[19], including in drylands[20]. The UNCCD estimates the economic costs of degraded lands could reach USD23 trillion by 2050, while addressing degradation would cost USD4.6 trillion[21]. Studies have found that benefit-cost ratios of select drought resilience interventions may range from 2:1 to 10:1[22].

1.2 Policy framing for sustainable dryland management

Internationally, the Sustainable Development Goals (SDGs) and the Rio Conventions provide overarching global mandates for sustainable natural resource management, including in drylands. SDG 15 (Life on Land) aims to protect and restore terrestrial ecosystems, manage forests, combat desertification, and halt land degradation and biodiversity loss[23]. Target 15.3 seeks land degradation neutrality (LDN) by 2030. Integrated approaches include the Global Biodiversity Framework (GBF), which aims to protect 30% of terrestrial areas by 2030, and the Paris Agreement, under which agriculture, forestry and other land use (AFOLU) is critical for reaching mitigation and adaptation goals.

Several strategic initiatives support sustainable land management (SLM), including in drylands. Initiatives including the UN Decade on Restoration and the G20 Global Land Initiative (GLI) aim to prevent, halt, and reverse ecosystem degradation. The GLI targets a 50% reduction in degraded land by 2040, with over 115 countries pledging to achieve land

[iii] Land degradation is generally defined as a persistent decline in the provision of goods and services that an ecosystem provides, including biological and water-related goods and services and land-related social and economic goods and services (FAO & GLM 2015).

[iv] These costs largely pertain to development countries.

degradation neutrality and aiming to restore over 1 billion hectares by 2030[24]. Preceding that, the Bonn Challenge aimed to restore 150 million hectares by 2020.

Increasingly, national-level mechanisms are being implemented to support Sustainable Dryland Management (SDM). Many countries are integrating Desertification, Land Degradation and Drought (DLDD) agendas via policy frameworks and related plans, including National Action Plans (NAPs), UNCCD reporting mechanisms[25], as well as integration into Nationally Determined Contributions (NDCs) and National Biodiversity Strategies and Action Plans (NBSAPs)[26]. In select cases, National Drought Plans (NDPs) are being developed and locally led actions are supported by conducive national and sub-national policies.

1.3 Challenges to mobilize and deploy dryland finance

In spite of established international and national framings and strong socioeconomic, technical, and policy imperatives, commensurate finance for SDM is not being mobilized or deployed.

Challenges for dryland finance mobilization includes a range of physical, sociocultural, economic, and perception issues. Dryland ecosystems are more fragile, recover more slowly, and have lower standing biomass than other ecosystems, such as tropical forests, where financing models are better established (e.g. REDD+). Limited soil productivity and recently observed frequent droughts can affect restoration costs and success metrics[27]. Some dryland communities are (semi)nomadic[28] with climate-vulnerable, fluid and seasonal livelihoods[29]. Dryland tenure may comprise communal, formal, and informal arrangements and changes in access to resources can disrupt pastoral systems and inter-communal relations. Historical marginalization[30] and perceptions of low dryland productivities and high business costs may deter some investors[31].

Consequently, drylands are currently aggregate conduits of financial outflows. Drylands often experience capital "leakage", without reinvestment[32], which undermines sustainable development prospects. Drylands have even been referred to as "forgotten" in relation to the undervaluation of their ecosystem services and investment opportunities[33].

In the absence of sufficient finance, both local and large-scale SDM initiatives are limited. Low levels of awareness of financing opportunities and a lack of understanding of SDM among investors[34] represents both supply and demand-side challenges. Despite growing interest in large-scale dryland restoration initiatives globally – from the Great Green Wall in the Sahel to Pakistan's Bilion Tree Tsunami – sustainable financing remains challenging[35]. Further, locally led initiatives often struggle to access adequate financing.

1.3.1 Inadequate historical and current financing

Of the three Rio Conventions on biodiversity, climate change and desertification, the United Nations Convention to Combat Desertification (UNCCD) receives the least finance. Global climate finance surpassed USD1 trillion in 2021/22, with nearly half from private sources[36]. In 2023, multilateral development banks provided USD125 billion in climate finance, mainly to developing economies. Under the 2022 GBF Fund, a "10 Point Plan" aims to mobilize USD200 billion annually for biodiversity and repurpose USD500 billion in harmful subsidies by 2030[37]. The UNCCD's Global Mechanism and the LDN Fund support financing for SLM investments. Whilst each Convention mobilizes cross-cutting finance, meeting collective targets requires finance flows for nature-based solutions to triple by 2030[38]. However, finance for combating desertification lags significantly (Figure 2), despite its strong co-benefits and lower total financing requirements[39].

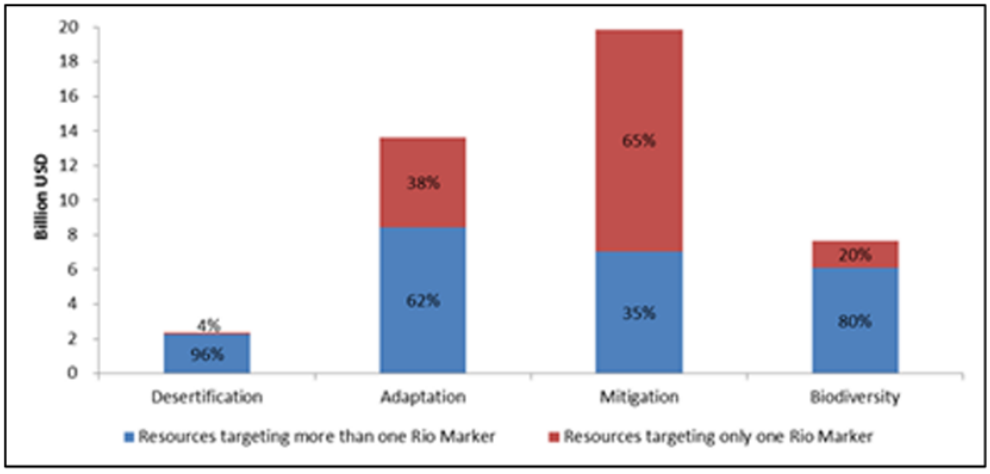


Figure 2 – Bilateral Official Development Assistance across Rio markers (Annual average 2014-2016) (UNCCD 2019[40])

Of the 17 SDGs, Life on Land (#15) also receives minimal finance support. As outlined in Figure 3, SDG 15 has the second lowest number of funds and facilities[41].

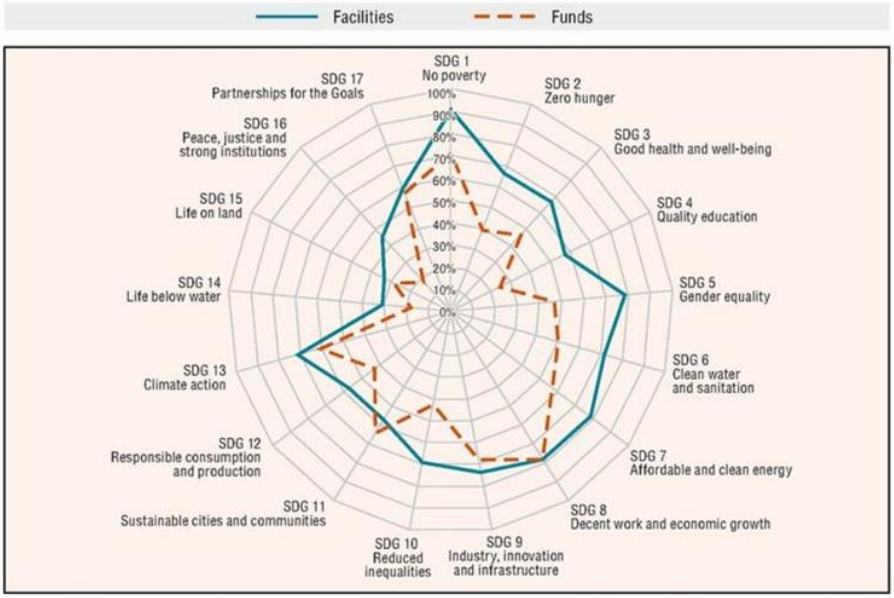


Figure 3 – Funds and facilities targeting different SDGs (OECD 2018[42])

However, between 2016 to 2022, investments in DLDD increased, with most originating from domestic resources (72 percent) and bilateral and multilateral resources (22 percent). Annual investments in DLDD grew from USD37 billion in 2016 to USD66 billion by 2022, predominantly from domestic resources. Bilateral and multilateral resources reached 30% in 2022, emphasizing international cooperation through grants, loans, and technical assistance. Private sector investments were low (Figure 4) but with strong growth potential[43].

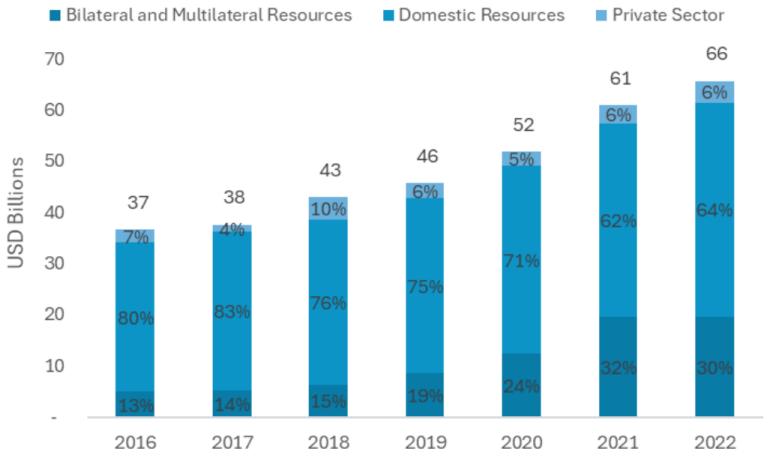


Figure 4 – Trends in DLDD investments by finance source (2016-2022, USD billions,%) (Global Mechanism UNCCD 2024[44])

Drought finance also increased over the same period but more is needed across all global regions. The FAO Drought Finance Tracker (2.0) finds that financial flows towards drought and activities supporting drought resilience have been increasing[45] (Figure 5). The major

sectors of investment supporting drought included water supply and sanitation, and agriculture, forestry and fisheries.

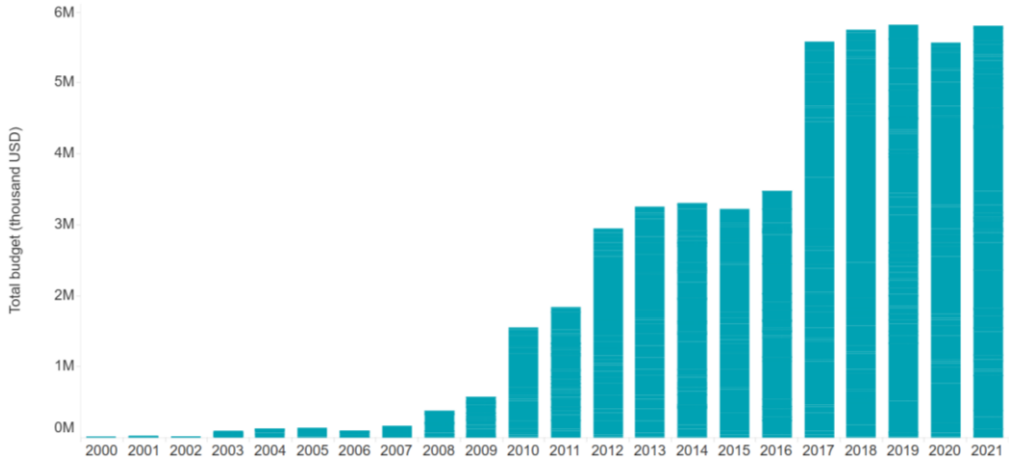


Figure 5 – Annual allocation of financial flows for drought (FAO Drought Finance Tracker 2.0[46])

Further, most drought finance is reactive, flowing towards sector support and emergency response whilst periods of ex-ante prevention, preparedness and social infrastructure and services and ex-post reconstruction receive less financing (see Figure 5). There is a need for more holistic focus for financing overall, particularly for periods of pre- and post-shock.

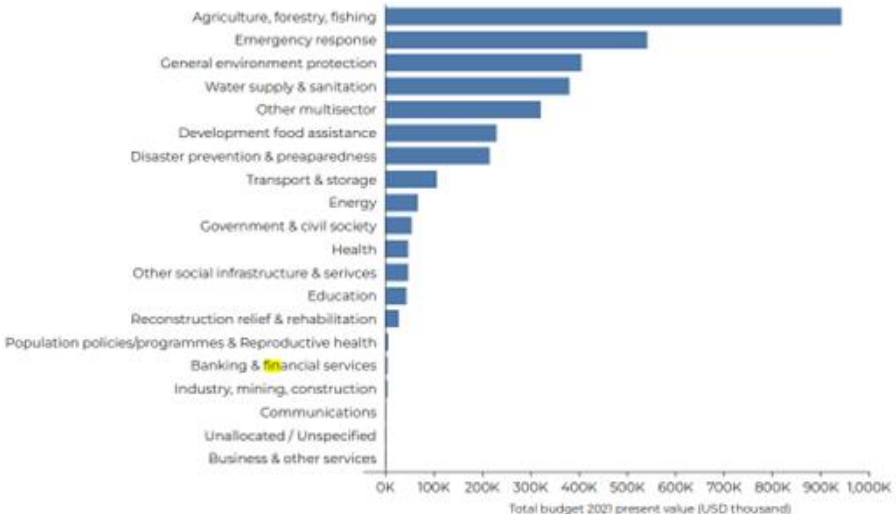


Figure 5: Annual allocation of drought finance flows per sector (aggregated value 2000-2021, in 2021 present value) (FAO Finance Tracker 2.0 in FAO Drought Portal, 2024)

Beyond drought, enhanced support for other hazards which affect drylands, such as heatwaves, wildfires, storms and flash flooding, is also required. The social and economic costs of a range of natural disasters in drylands can be significant. For example, whilst data is scant, annualized losses from wildfires can be high[47], as illustrated by a single wildfire event in South Africa in 2021 causing economic losses over USD100 million[48]. More broadly, adaptation costs in Sub-Saharan Africa are estimated at USD30–50 billion

(2–3% of regional gross domestic product (GDP)) annually over the next decade[49]. Figure 6 outlines the extent of nature hazard concerns across African countries, many of which include major dryland zones.

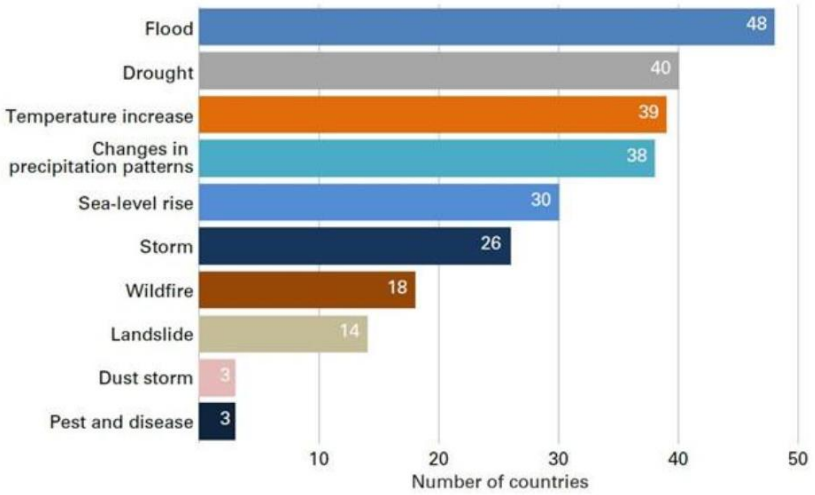


Figure 6 – Hazards of greatest concern for Africa, based on Nationally Determined Contributions (NDCs) documentation (Source: World Meteorological Organization, 2024)

Among a broad range of dryland interventions recorded by the UNCCD, financing measures currently represent a minor focus. Compared to activities such as SLM interventions; enabling environment; data, knowledge and research; communication and outreach; and capacity building; financing is under-prioritized (Figure 7).

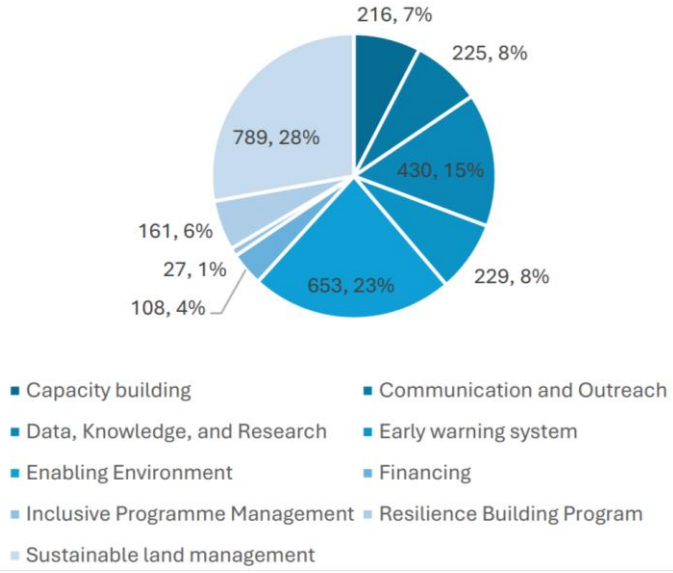


Figure 7 – Number of measures by categories (Global Mechanism UNCCD 2024[50])

1.3.2 Future financing requirements

Historical and current trends indicate significant financing gaps for drylands to 2030. The 2024 UNCCD Needs Assessment estimates that USD 355 billion will be required annually

between 2025-2030 to achieve UNCCD targets. Forecast trends project investments of USD 77 billion annually between 2025-2030, constituting a USD 278 billion annual funding gap. To date, only 18 percent (USD 479 billion) of the estimated USD 2.6 trillion needed between 2016-2030 has been realized, despite this period being almost two-thirds elapsed. The remaining 82 percent or USD 2.1 trillion must be mobilized between 2025-2030[51].

As such, there is an urgent need to overcome existing barriers and confirm to public, private and alternative finance stakeholders that drylands can be strong investment destinations. The scale of investment required necessitates multiple funding streams and the engagement and involvement of all stakeholders, from public, private and alternative sources. Complementary and new financial sources are needed to support SDM.

2. Study Objective

To help overcome the USD278 billion annual financing gap to 2030, the objective of this study is to review the evolving global landscape of financing modalities for SDM and to identify public, private and alternative financing modalities, including both conventional and innovative, to help" get the right finance to the right people at the right time". This study draws on literature and field case studies to explore current interventions and recent innovations to identify opportunities for targeted finance enhancement. The study includes examples from within and outside dryland settings, to identify potentially transferable learnings and applications, including an array of modalities, vehicles, and specialized structures.

The target audience for this study is ultimately dryland communities. However, much of the structuring and mobilization of finance modalities will need to be undertaken on their behalf, by good actors at international, national and sub-national levels. Regional, national and subnational SDM implementation requires financial support. Insufficient volumes of finance, and a lack of access to finance for many stakeholders, remain major impediments to increase SDM. This study seeks to engage and activate public, private and alternative finance actors to help scale existing successful finance modalities and to innovate to support new finance modalities for SDM.

This study will be launched on Finance Thematic Day at UNCCD COP16 in Riyadh, Kingdom of Saudi Arabia, December 2024. It is intended to build upon and complement an increasing body of work on the economics and finance of DLDD for launch at COP16. This study aims to support discussions on finance mobilization in-line with an increased emphasis on financing at UNCCD COP16. It aims to complement the UNCCD Financial Needs Assessment (2024) and the Riyadh Global Drought Resilience Partnership – both of which are proposed for launch at UNCCD COP16. As such, this paper does not address macro-economic assessments or restructuring (see Section 4 for overview). The paper may complement resource mobilization strategies outlined under the UNCCD and other partners.

3. An Innovative Finance Framework for Sustainable Dryland Development

This study proposes an Innovative Finance Framework for Sustainable Dryland Development ("the Framework"), which recognizes the centrality of intermittent climate and non-climate related shock events in drylands across temporal and spatial scales. The Framework is premised on the integration of those shock events into longer-term sustainable development and resiliency-building pathways. In support of the Framework premise, conventional and innovative financing modalities are presented. Box 1 defines shock events in drylands.

The Framework aims to move beyond "whether proactive investment should be undertaken" to "when and how proactive investment could be undertaken (and in what forms)"?[52] The Framework, which aligns with the proactive approach championed by the Riyadh Global Drought Resilience Partnership, shifts the focus to how investment could be structured and designed to maximize the economic benefits for all, with particular attention to support for the most vulnerable communities.

Box 1 – Defining shock events in drylands

Shock events in drylands may include natural disasters, economic recessions, infectious disease pandemics, and civil disorder/conflict. Due to their water scarce nature, major climate-related shock events in drylands include drought, extreme heat, and increasingly more extreme drought-flash flood cycles. Middleton & Sternberg (2013) highlight that virtually all types of natural hazard occur in drylands, but climate hazards assume a greater relative importance in these highly dynamic environments. Further, many of these climate hazard risks are forecast to become more frequent, more widespread and/or more intense with climate change in many regions.

Shock events may have acute and longer-term impacts. For example, water and food insecurity may be adverse implications of climate or non-climate related shock events. For example, famines are often caused by political (in)action.

Whilst the timing, magnitude and frequency of shock events are largely uncontrollable, many (particularly climate-related) shocks are increasingly predictable. Local communities and national societies may increase their readiness and adaptive capacity to future shock events, thereby ultimately limiting the adverse impacts of such events. Such knowledge can be integrated into planning, preparedness, management and development, and is captured in the Innovative Finance Framework for Sustainable Dryland Development.

3.1 A Phased Framework Approach

The Framework is structured around the centrality of climate and non-climate related shock events in drylands, across temporal and spatial scales. It comprises three distinct but interconnected and overlapping development phases. The Framework is premised on the integration of inevitable, intermittent shock events into longer-term sustainable development and resiliency-building pathways. The Framework design recognizes that whilst shock events cannot be eliminated, resilience can be built ex-ante, impacts managed, and recovery ex-post can transition back towards sustainable development. As such the Framework defines three phases: (i) Phase 1: Sustainable Productivity and

Resilient Development; (ii) Phase 2: Bracing for Shock; and (iii) Phase 3: Transitioning Back Better (Figure 8).

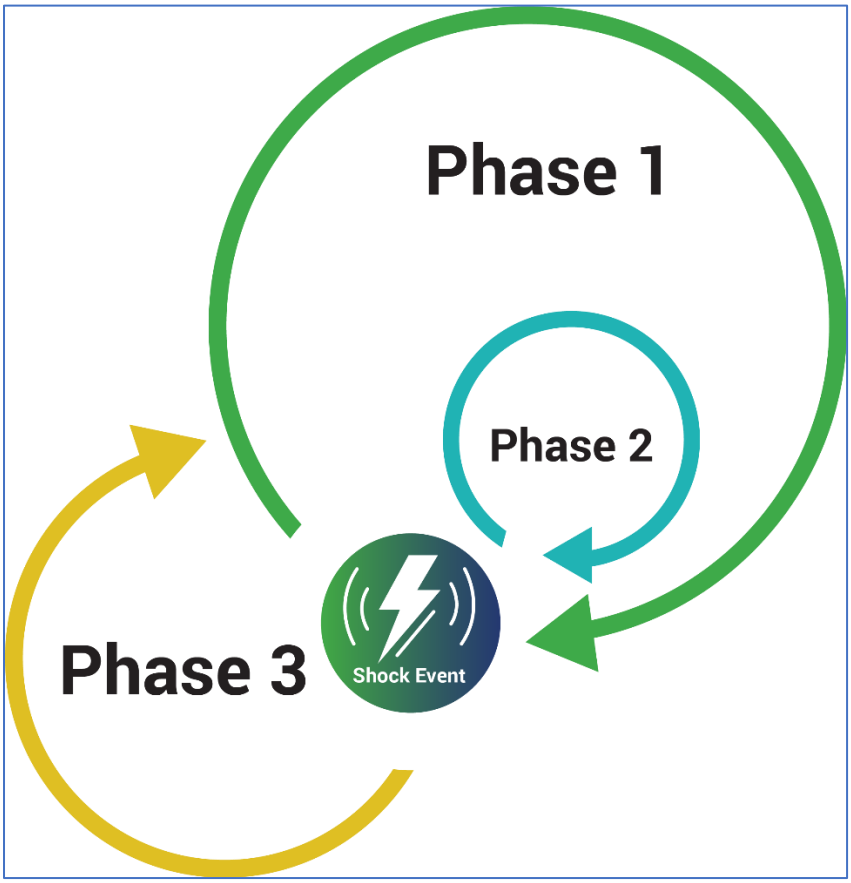


Figure 8 – Innovative Finance Framework for Sustainable Dryland Development, comprising Phase 1, 2 and 3

By defining distinct phases of dryland development – where shock events are acknowledged as inevitable but manageable – the Framework aims to highlight periods and types of under-investment and opportunities for resilience building and enhanced investment. Table 1 outlines the timing, investment intent and investment type for Framework Phases 1, 2 and 3.

Table 1 – The timing, investment intent, and investment type for Framework Phases 1, 2 & 3

	Phase 1	Phase 2	Phase 3
Timing	• In between shock events (during periods of relative stability) • During periods of shock managed by resilient systems	• Preparing for shock event/s during periods of relative stability • Preparing for shock events during periods of imminent shock	• During shock events and in immediate aftermath • During period of recovery and rebuilding

	Phase 1	Phase 2	Phase 3
Intent of investment	• Sustainable productivity and resilient development • Resilience building	• Preparing for shock event/s • Minimizing potential impact of shock event/s • Ideally accompanying sustainable productivity and resilient development	• Managing shock event and recovering from shock event • Ultimately transitioning back to sustainable productivity and resilient development
Type of investment	• Resilient infrastructure and assets • Sustainable productivity (e.g. agrifood commodities, nature) • Socioeconomic development • Livelihood improvement • Resilience building	• Early warning systems • Disaster risk reduction and management • Insurance against shocks • Contingent disaster financing • Local-level resilience building	• Relief support and humanitarian aid • Structured debt management • Large-scale interventions to transition entire landscapes • Socioeconomic transition

The Framework builds and extends from other framings. It is evident from the literature that no agreed and endorsed taxonomy exists for drought finance[53], let alone dryland finance more broadly. The Framework builds upon temporal components from Harris & Jamie (2019) and FAO's impact-horizon categorization[v] of drought financial instruments[54]. Other frameworks oriented around factors such as investment phase[vi], risk levels or pillar-based[vii], are also noted. Distinguishing features of this Framework include a broadening to sustainable productivity; including climate and non-climate induced shock events; and transitioning post-disaster.

The Framework focuses on financial modalities primarily (public, private and alternative[55]) and financial actors secondarily. Across all phases, there is scope for (i) scaling up financing from current modalities; (ii) expanding/adapting the scope of current financing modalities to meet SDM and land restoration objectives; and (iii) introducing/crafting new financing modalities and mechanisms bespoke for dryland socioeconomic settings. Regarding actors, common public finance stakeholders include international, regional, and domestic entities like Governments, NGOs, multilateral development banks, and bilateral donors. Common private sources include international and domestic financial institutions (e.g. banks, insurance companies), corporates (including SMEs), producer organizations, philanthropies, micro-credit institutions, and individual households. Blended finance approaches, which often engage both public and private actors are also included.

[v] Comprising improved resilience, early response, and recovery and restoration.
[vi] Such as readiness, implementation, and sustained financing.
[vii] Such as early warning and monitoring, vulnerability and risk assessment, and mitigation actions (Pek & Salman 2023).

An important component built into the Framework is layered risk management[56] (Figure 9). Risk financing aims to preserve the status quo[57], which is pertinent for Phase 1, where risk management is the focus. As risks increase (i.e. for Phase 2 and Phase 3) there is a need to shift towards risk absorption. For all phases, different financial actors can be mobilized depending on their risk and return appetites[58].

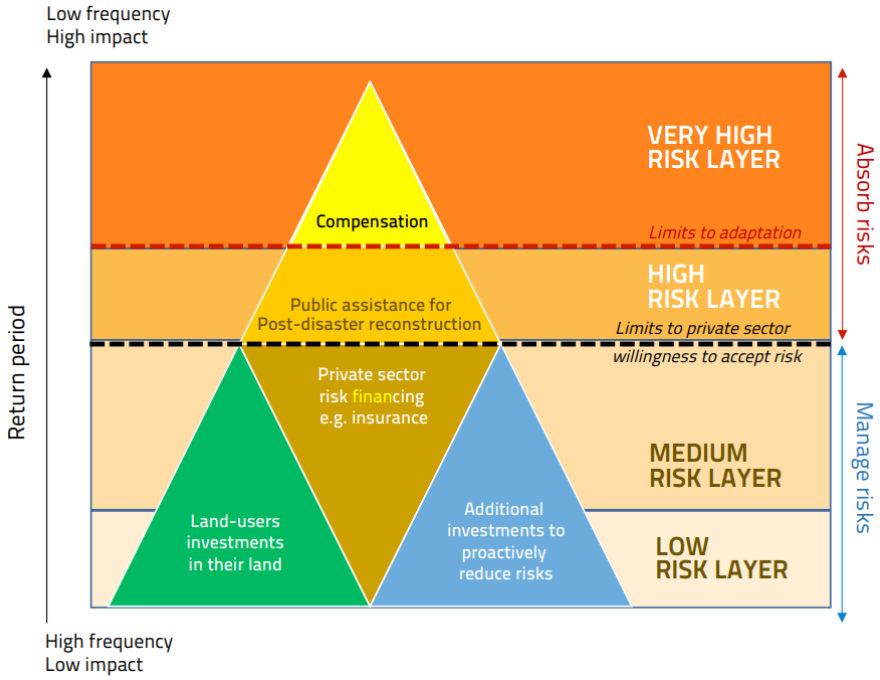


Figure 9 – Layered risk management (King 2021, modified from Mechler et al. 2014)

As outlined in Section 4, effective application of the Framework finance modalities will require a range of critical enabling conditions across all phases, including sociocultural, governance, physical, technical and economic.

3.1.1 Phase 1 – Sustainable Productivity & Resilient Development

Phase 1 represents the ambition for sustainable dryland development. This phase aims for stable growth with resilient, sustainable production systems (such as agrifood, livestock, enterprises, SMEs, restoration). It focuses on opportunities to enhance dryland productivity, resilience, and livelihoods. It has scope to focus on short-, medium-, and long-term sustainable development goals.

Phase 1 promotes bankable projects, with opportunities to engage a range of private and public financiers. Phase 1 offers investment opportunities with potentially competitive returns on investment and manageable risk profiles, in-turn attracting private, public, and alternative finance actors. These investments may focus on improving local livelihoods or enhancing national and regional economies (e.g. value chain commodity approaches). The

variety of opportunities in this phase may appeal to multiple actors, especially for debt, equity, and co-investment.

Phase 1 is self-reinforcing (Figure 7) subject to limited shock events and the integration of proactive Phase 2 measures. Ultimately, Phase 1 (with Phase 2 measures) may avoid Phase 3. Phase 1 includes a focus on proactive measures that address the root causes of shock events (e.g. climate smart measures, restoration activities, etc.) and build resilience during non-shock periods. Via the establishment of sustainable and resilient dryland systems and integrating Phase 2 "Bracing for Shock" measures, Phase 1 will help to optimize system resilience to external shocks, and thereby limit the potential impacts of shocks. As such, Phase 1 will ultimately avoid Phase 3.

3.1.2 Phase 2 – Bracing for Shock

Phase 2 recognizes that climate and non-climate shock events are periodically inevitable and that the potentially adverse impacts of such events may be proactively managed and reduced. Whilst drought, extreme heat, flash flooding, storms and pest invasions may not be completely avoidable, their potential impacts may be significantly reduced to more manageable levels by increasing levels of early warning, readiness, risk management, and resilience building. Importantly, proactive approaches such as disaster risk reduction and management measures will be critical for protecting the most vulnerable against such shock events to avoid falling into deeper cycles of poverty.

Proactive actions in Phase 2 mitigate potential financial and socioeconomic costs of shocks and avoid highly disruptive impacts, which in turn, can reduced the need for coping and recovery efforts. Upfront investments in resilience-building before shocks such as drought are among the most cost-effective actions that can be taken[59]. The economic rate of return on enhancing resilience can be significant[60]. By investing in resilience-building measures, the overall economic burden associated with drought events can also be significantly reduced.

The explicit Framework focus on finance mobilization for Phase 2 may promote ex-ante and disaster preparedness measures. However, ultimately, Phase 2 measures should be integrated as a subset into Phase 1 (see Figure 7) to reduce the probability of periodically descending into Phase 3. Despite the onset and impacts of drought being difficult to predict[61] and being regarded as the most harmful natural hazard globally[viii], Phase 2 may focus greater financial flows to preparedness, which has constituted only 5 percent of ODA linked to disasters in the past decade[62]. This phase supports traditional and innovative forms of financing support options, such as insurance and drought finance. Both public

[viii] Having affected more people globally in the past four decades than any other natural hazard (FAO n.d.).

and private financing modalities can support local-level preparation and coping mechanisms.

3.1.3 Phase 3 – Transitioning Back Better

Phase 3 represents a post-shock period focused on coping, relief, recovery and rebuilding back better. This phase occurs during or after acute or chronic shock events, with an initial focus on coping, relief and recovery measures, before ultimately transitioning back towards a sustainable development pathway. This phase comprises traditional financial support from emergency, humanitarian and development agencies and innovative financing modalities. Recent examples where Phase 3 measures could be implemented include the recurrent drought conditions in the Horn of Africa and Sahel regions, post-flood conditions in Pakistan, and post-civil war in dryland states, such as Sudan.

Ultimately, with time, Phase 3 integrates back into Phase 1 via transition to resilient sustainable development trajectories. Where Phase 3 interventions adequately address the acute or chronic shock event, the stages of coping, relief and recovery shift towards rebuilding a resilient and sustainable development pathway (see Figure 6).

3.1.4 Illustrative examples of the 3 Phases

A comprehensive review of case examples of financing activities for each of Phase 1, 2, and 3 is provided in Section 5. Table 2 outlines illustrative examples.

Table 2 – Case examples of Innovative Finance Framework for Sustainable Dryland Development Phase 1, 2 & 3

	Case example
Phase 1	The SAGCOT Investment Project aims to boost new technologies and marketing practices among smallholder farmers by fostering partnerships with agribusinesses in Tanzania's Southern Corridor. It focuses on strengthening SAGCOT Support Institutions, enhancing investment planning, government/private sector intermediation, business environment, and investment promotion. The project also aims to link smallholder farmers to agricultural value chains, manage funds, provide matching grants, and ensure effective project management and evaluation.
Phase 2	Established in 2014, the African Risk Capacity (ARC) is a sovereign risk pool providing insurance to African Union countries during climate shocks. Its mission is to protect food security by leveraging weather risk diversification across Africa. Participating countries customize the Africa RiskView software, sign MOUs, define contingency plans, and set risk transfer parameters. Payouts are triggered by significant rainfall deviations. From 2014 to 2020, ARC collected over USD 100 million in premiums, provided USD 720 million in insurance coverage for 72 million people, and paid USD 65 million in drought relief. ARC also strengthens capacities in early warning, disaster risk management, and risk financing.

Phase 3	The Horn of Africa recently faced its worst drought in nearly 50 years, with six consecutive failed rainfall seasons. This crisis directly affected 50 million people and indirectly impacted 100 million. Around 20 million faced acute food insecurity, over 4.4 million needed humanitarian aid, and hundreds of thousands became refugees. Low adaptive capacities worsened the impact, spiking food prices, harming GDP, and increasing insecurity. Climate change exacerbates drought-flood cycles, displacing vulnerable populations. The region, home to many nomadic herders and smallholder farmers, faces severe water infrastructure challenges. The 2024 Groundwater Access Facility (GaFa) initiative aims to support a regional transition.

4. Enabling conditions for the Innovative Finance Framework for Sustainable Dryland Development

The Innovative Finance Framework for Sustainable Dryland Development focuses on public, private and alternative finance modalities, and actors. However, financing exists within a complex network of sociocultural, governance/political, physical, technical, and economic realms. Key issues within these realms, outlined below, may help to ensure that enhanced financing is appropriate and sustainable.

4.1 Sociocultural

Many drylands are experiencing disruptions in traditional ways of living, caused by factors such as climate change, land use changes, and increasing competition for land. The expansion of commercial agriculture, infrastructure, mining, energy and settlements into pastoral and smallholder drylands may bring benefits but can also lead to adverse impacts such as unsustainable land use (e.g. excessive wood extraction, overgrazing, erosion), wildfires, floods, invasive species, and increasing tension between traditional and new stakeholders[63]. Climate change may alter traditional practices and mobility patterns, and migration and internal displacement may impact both host and migrant communities.

Many dryland communities have strong cultural attachments to traditional ways of living, including communal land practices and assets, such as livestock. As such, where innovations (including on finance) are proposed, they should build upon locally appropriate baselines and dynamics. Many dryland communities have long occupied traditional lands, developing intimate local knowledge and sustainable practices. Hence, provision of support must be culturally appropriate and locally driven, where community preferences and practices are integrated into financial offerings.

Dryland communities comprise both rural and urban dwellers and there is potential to strengthen connections and domestic financing exchanges between these stakeholders. Connecting rural and urban dryland stakeholders may leverage understandings of local conditions, social networks, access to finance, and technical expertise. Many rural and urban areas are experiencing growth and are increasingly interconnected to economic activities and resource use within broader landscapes[64]. There may be opportunity to leverage respective stakeholder strengths to enhance partnership business models[65], including the provision of improved services and infrastructure for communities.

There is an opportunity to both improve finance service offerings to dryland stakeholders and to support stakeholder financial literacy capacity building. Financial capital is the most flexible type of capital[66]. However, dryland communities often lack access to formal credit and banking systems. They may rely on investments in livestock or crops, which are

vulnerable to shocks like drought and disease[67]. Their livelihood strategies may be oriented towards dynamic improvisation, creativity and innovation[68], reciprocity, permanent sharing, and collective decision-making[69]. Innovative financial solutions, such as community banking; mobile cash transfers; microfinance institutions; and alternative collateral may enhance financial support and resilience for dryland communities. However, low financial literacy, lack of trust of financial actors, and reluctance to embrace new technologies may require capacity building to help facilitate processes of change and investment[70]. Promotion, dissemination and sensitization of appropriate financial products may be required[71].

Finance and investment models in drylands must acknowledge stakeholder diversity and seek to address existing inequalities (not exacerbate them). Financing must prioritize engagement and support for marginalized groups, including women, youth and indigenous communities. Inequalities exist both within and between dryland communities. If new finance and investments are overlaid on such existing inequality, international best practice benchmarks should be adopted to improve rights of marginalized groups, provide education and capacity building where necessary, and to help realize clear economic benefits. Box 2 highlights the need to increase gender positive interventions in drylands.

Box 2 – Supporting women in drylands

Women are particularly vulnerable to climate hazards and studies have shown that they are disproportionately impacted due to lower decision-making power, fewer productive resources, and barriers in the labor market. Shockingly, only a small percentage of global drought finance prioritizes gender issues as a principal objective, while most of the projects do not target gender at all. There are opportunities for new financing to help address gender disparities in drylands.

UNCCD's HerLand campaign helps draw attention to this issue by promoting examples of women and girls' leadership in SLM, mobilizing support to secure land rights for women and girls across the world.

Source: Food & Agriculture Organization (FAO), UNCCD.

Leveraging partnerships and building synergies and efficiencies in investments is important in drylands to overcome high costs of doing business[72]. As outlined in Section 1, drylands pose unique challenges for business. Given the interdependence of many stakeholders on landscapes for their livelihoods[73] and well-being, building partnerships and alliances on topics of mutual interest may enhance SDM. Such partnerships can extend across public and private sectors and reduce the costs of doing business.

Non-financial intermediaries can play a key mediating role between financiers and beneficiaries to manage risk and support effective and inclusive resource distribution in drylands[74]. Intermediaries may be accredited or trusted entities that can bridge between stakeholders. They can support technical assistance, social and cultural engagement,

information provision, layered financial mechanisms, or monitoring and evaluation[75]. Intermediaries may help to make investment deployment more impactful in drylands.

4.2 Governance/political

There is a need for public and private sector stakeholders, including country governments and donor agencies, to support sufficiently ambitious policy signals, strategies and structures to implement SDM at scale. In the absence of high-level directives at country level, effective operationalization and implementation of SDM becomes less unlikely. Governments may broadly create enabling SDM business environments: institutions, incentives, and investments[76]. For example, Government incentives may be required for financial service providers to offer services to dryland communities at affordable terms. Some Governments, such as in Ethiopia, are demonstrating strong leadership in this space (Box 3).

Box 3 – Effective national dryland restoration strategy

Many countries experience a lack of national land use policy for drylands. Such policy is required to strategically govern land use and its changes and to manage productivity and employment challenges and opportunities.

Ethiopia's National Drylands Restoration Strategy provides a comprehensive and integrated approach to SDM. It provides sound strategic guidance for key drylands, built around the thematic areas of (i) Integrated Natural Resources Management, (ii) Land governance, (iii) Livelihoods, value chains and markets, and (iv) Policy alignment and sectoral coordination. Effective implementation of the Drylands Restoration Strategy can help Ethiopia's efforts to meet its international environmental commitments, as well as its social and economic goals under the Green Economy Strategy.

Source: Ethiopia Ministry of Agriculture & PENHA 2022.

There is a need to manage regulatory and political risk so that Government can support improved macroeconomic environments and conducive market conditions for SDM. Governments can implement measures to help manage inflation and exchange rates for goods and services that can support SDM. Markets play a big role in enhancing resilience, under appropriate governance arrangements[77]. Emerging approaches, such as agrifood value chain approaches may help to develop local, national and regional markets and governments may simultaneously support capital markets to encourage investor entry.

There is a need to ensure that dryland stakeholders, particularly communities, are central to SDM policy development and implementation. For example, land governance is an increasingly important issue in drylands, given the diversity of stakeholders at the interface of traditional and contemporary land uses. Stakeholders, such as pastoralists and smallholder farmers, must have a voice at national and sub-national levels.

Ensuring continued access to land and/or tenure is a key condition for security, preventing increased inequality, and for promoting investment. Customary tenure held by pastoralists should be acknowledged and respected to prevent direct expropriation and distortions created by commercialization[78]. Equally, where appropriate, public and private stakeholders may be granted access to drylands to support sustainable development transitions. Access to land and water rights needs to be clear and secure to provide local stakeholders sufficient incentive to invest in livelihood productivity and restoration measures.

There is a need for increased policy coherence at regional, national and sub-national levels to support enhanced SDM. Governments may support coherent spatial planning for drylands, including for transboundary systems. Greater coordination between sector ministries, such as Finance, Agriculture, Environment, and others could help align SDM efforts at national and sub-national levels. Landscape-scale or watershed approaches may help to frame spatial planning based on physical parameters for effective SDM. Additionally, regional collaborative bodies (for example, the Nile Basin Initiative) could be leveraged for enhanced dryland conservation and management.

4.3 Physical

SDM and restoration scope must extend beyond increasing tree cover, to include croplands, grasslands, and pasturelands. Sustainable cropland, pastureland and grassland management and restoration can improve livelihoods and food security while also reducing conflicts and storing important above- and below-ground carbon pools.

SDM and restoration should prioritize indigenous and locally appropriate vegetation and livestock species. Such approaches may help to improve soil fertility, groundwater recharge, and biodiversity, leading to more economically, socially and environmentally resilient landscapes[79]. Non-indigenous species may disrupt local ecosystem balances.

Baseline levels of degradation and timescales and likely success rates of restoration activities should be integrated into SDM from the outset (where possible). Where landscapes are degraded, the cost and risk of investment for restoration may be proportionate with the level of degradation[80]. Typically, investors will preference low degradation, high productivity environments[81]. Some ecosystems may take decades to recover, requiring long-term finance support, and their ultimate levels of production may be meagre.

Attention will be required to avoid potentially negative impacts of SDM interventions. Local observations should be recognized[82] and, where appropriate, potentially negative impacts

and tradeoffs must be acknowledged. Forecast climatic changes should also be integrated into planning and design at local levels.

A balance between intensification and extensification, particularly of agricultural and pastoral activities in drylands, is needed. Intensification of production activities may create space to protect priority conservation areas. However, it may also increase management challenges on issues around intense livestock and agricultural practices, environmental pollution, and competition for scarce resources. Alternatively, extensification may increase the spatial footprint of impact at lower intensity levels. Extensification may lead to low productivity agriculture or pastoralism or expansion into marginal lands which may be more prone to mismanagement. Consequently, a sustainable balance between these approaches, including acknowledgements of potential benefits and tradeoffs, should be informed by research and local experience.

Conservation of systems should be prioritized over restoration. Expansion and improvement of managed areas is needed in drylands to protect biodiversity and traditional lifestyles. Managed areas, which may include protected areas, can help to preserve biodiversity, ecosystem goods and services, and traditional lifestyles. Destocking fragile areas may prevent their mismanagement and avoid the need for restoration. Maintaining functional ecosystems is highly preferable to restoring already degraded and less functional systems. Mosaic landscape approaches, including scope for adequate managed areas (and potentially sustainable industries, such as tourism), is recommended.

4.4 Technical

There are increasing examples of locally successful interventions, which may warrant scaling or replication, with relatively meagre financing support. Authors such as Reij et al. (2021)[83] emphasize the success of grassroots innovations and interventions in developing simple, replicable, low-cost and effective SDM solutions. From water harvesting and tree crops to local pastureland and livestock management practices, small-scale efforts multiplied by many land users may have low-cost and high impact results at landscape scale.

There is scope to move beyond stubborn supply and demand challenges by improving links between successful local-level initiatives and potential financiers/funders. Often, communities are unable to access financing or connect with policymakers to help scale locally successful initiatives. Conversely, financiers often point to a lack of information and bankable investment opportunities. Aggregation of small-scale initiatives is one potential solution. Another is the engagement of intermediaries to overcome the knowledge and project finance structuring disconnections between stakeholders.

Financing innovations must support solutions that address both the symptoms of underlying challenges as well as the underlying challenges themselves. Whilst shock event minimization strategies and measures at a local scale will be necessary, this can occur as part of a broader approach to address shock sources, where possible. For example, flooding impacts may be addressed by localized management measures but may be more effective when integrated into landscape scale interventions.

Enhanced financing modalities should both incentivize best practices and disincentivize destructive practices. The importance of mobilizing finance for positive impacts on dryland ecosystems and communities is equally matched by the importance of diverting or ceasing mobilization of finance supporting negative impacts on those systems. Positive practices may contribute to conservation, restoration and sustainable management and direct financial flows away from projects with negative impacts DLDD and to projects that mitigate negative impacts or pursue positive impacts as co-benefits[84].

Improved tagging and tracking of mobilization and deployment of financing resources for drylands may help to refine and scale interventions, thereby optimizing scarce resources[85]. Enhanced nomenclature, tagging and tracking of climate finance (and increasingly, nature finance) has helped to scale resources and impacts in recent years. Similar approaches could be adopted for SDM to support increased transparency, accountability, and encourage greater finance mobilization.

SDM requires functioning physical and social infrastructure to support development both prior to, during and ex-post shock events. Drylands often suffer from inadequate hard and soft infrastructure and public service delivery[86]. Critical infrastructure for dryland communities includes transport connections, energy access, water sources and supplies, health and veterinary services, education access, and information technology. Such infrastructure may be Government-funded, community-funded, or externally supported. Digital technologies may help to leapfrog some infrastructure requirements and enable access to financial and other services. Market development and livelihood improvements will rely on improved connections between rural and urban areas. Hard infrastructure can support relief and recovery efforts. Soft infrastructure may include improved customs procedures or government cooperation during or after shock events[87].

Technology and digitalization, including fintech, may play an important role in enhancing finance in drylands. Financial technology or Fintech is being used by both established and emerging finance sector actors[88]. Fintech solutions may include mobile phone-based payments, online crowdsourcing/funding, monitoring and reporting, and (potentially) blockchain technology to reduce transaction costs and increase transparency. Remote

sensing and satellite technologies also offer potential support. Processing and dissemination of information may be accelerated by combining digital innovation with social learning[89] and artificial intelligence (AI).

There is a need to better link advancements in early warning systems to link to local contexts and locally appropriate financing models. Increasing access to early warning systems must then be connected to early and effective ex-ante resilience building measures[90].

4.5 Economic

Some drylands face a legacy of negative narratives as "unreliable investment destinations" or "investment deserts". Such narratives can influence policy and investment decisions, reinforcing negative status and leading to limited and misdirected investment, poor service provision, and general lack of support and innovation[91]. Such perceptions may be overcome by capturing holistic value and creating conditions conducive for investment.

The economic value of SDM, and its real contribution to GDP, should be confirmed at national and subnational levels to justify public financing. An important imperative to justify public investment in SDM will be to demonstrate its economic value and tangible contribution to GDP. For example, increased public policy and financial support may be justified for sustainable pastoralism systems where productivity is considered significantly higher than alternative landuses, such as ranching systems[92].

Similarly, for the private sector, clear internal rates of return on investment (ROI) and risk profiles can help to scale SDM finance. Studies show that select landscape restoration investments can achieve rates of return of up to 80 percent[93], which may present potentially attractive business case for a range of public and private investors.

Macroeconomic and policy conditions for drylands must be improved to promote increased investment. In many cases, economic incentive structures continue to support unsustainable land management, resulting in distortions such as the underpricing of risk and value in private investment decisions[94]. Opportunities for investment and access to finance need to be supported at a policy level. There is a need to increase transparency around investment opportunities with greater publicly available information about costs and revenue sources of SDM activities[95].

Local-level incentives can engage and activate communities and private citizens for SDM. Aligning incentives to engage and activate local-level stakeholders is key to initiating, implementing and sustaining initiatives, whether they be top-down, bottom-up, or multi-directional. Authors, such as Reij et al. (2021)[96] emphasize that locally led SDM and restoration can have sound records of success and cost-effectiveness, where immediate

and equitable benefits are clearly linked to their efforts. Local ownership, rights of management, resource (e.g. land) security, and decentralized models may incentivize local level stakeholders.

Conversely, where there are financial costs associated with SDM interventions, it is important to clearly identify and manage which stakeholder/s will bear those costs. Costs related to implementation, maintenance and production, such as training for new production methods, certifying or monitoring impacts of a production system, or obtaining carbon credits should not be underestimated. Where opportunity costs relate to foregone income from using land for alternative purposes, it is important to consider who will bear them. Local communities, for example, should not be burdened with too many costs (e.g. through additional but unpaid labor)[97], otherwise they may be incentivized to revert to previous practices.

Support for emerging economic activities, from landscape restoration and eco-tourism to green businesses and indigenous products, may create niche and value addition opportunities at local and national scales. Such social innovations could bring landscape stakeholders closer together and generate sustainable livelihood opportunities.

Crowding-in first-mover private sector stakeholders into SDM will be critical for scaling initiatives. Building upon conducive macroeconomic conditions, risk profiles and investment returns must be attractive enough to crowd in some private sector financiers. For example, there may be important roles for private sector entities of multilateral development banks (MDBs) to take first investment risks and to demonstrate opportunities for other domestic and international private sector actors to enter.

There is a need to support financial institutions to offer bespoke services and to reduce the costs of delivering financial services for dryland communities. Currently, livestock are not considered as collateral, and this, coupled with perceived high transaction costs, results in high costs of financial services delivery[98]. This may involve the provision of reliable information for financial institutions to better estimate creditworthiness and risk.

Informal, unregulated and fluid economic activities in drylands should be integrated into decision-making and finance. Despite its size and importance globally, the informal economy often has low visibility and attention given to it by more formally organized government or private sector institutions[99]. Many activities in the rural economy may be informal[100]. Globally, one in three workers in the informal economy works in agriculture, and nine in ten workers in agriculture are under informal employment[101]. Shock events, such as drought, may impose significant costs on dryland informal economies. Further value recognition in this space is recommended, particularly regarding welfare and safety net support.

5. Financing Modalities for Sustainable Dryland Development

The three phases of the Innovative Finance Framework for Sustainable Dryland Development (introduced in Section 3) are presented below and categorized by public, private and alternative forms of finance and illustrated by a range of modalities, vehicles, and instruments.

5.1 Phase 1 – Sustainable Productivity and Resilient Development

Phase 1 includes a focus on securing and scaling dryland productivity across all sectors and integrates ex-ante preparedness and resilience building measures. It includes a range of investment opportunities with varying returns on investment and scope for scaling. Phase 1 can support both public and private infrastructure and farm-level investments. Climate-proofing measures should be mainstreamed into productivity investments. Examples of investment types could include climate-smart agriculture, livestock and irrigation systems, post-harvest facilities, land and ecosystem restoration practices, agroforestry, value chain approaches, and physical and social infrastructure[102]. Additionally, early warning systems support resilient development. To date, most investments in drylands is publicly (state) driven, but there is scope for private sector engagement. Moving forward, integrating resilience building into investments should be viewed as supporting sustainable infrastructure development rather than as an additional initial expenditure.

Phase 1 aims to address deficiencies in dryland investments across key areas identified by the UNCCD and raise the profile of other areas requiring investment support. The UNCCD Financial Needs Assessment (2024) identifies major investment gaps (between commitments and required investments) in forest management (>USD500 billion), agroforestry (>175 billion), and irrigation and water management (>USD12 billion). Both policy and investment profile-raising is required for terracing and bunding, improved ground cover, and protected areas. This phase may support improved markets with better infrastructure and long-term (patient) capital to address underdevelopment in drylands[103].

Phase 1 may attract a variety of investors with different expected returns on investment (ROI) and rates of return. Traditional investors, such as pension funds, commercial banks and private equity impact funds may be more focused on financial returns, while others, such as crowdfunding platforms, non-governmental organizations, and public foundations may have a greater focus on environmental and social returns. Each actor has a potentially important role to play in enhancing sustainable and resilient development in drylands finance architecture.

Regarding land degradation status, Phase 1 may include a focus on maintaining low degradation status or restoring moderately or highly degraded land towards low

degradation status. Different forms of finance, and actors would be expected to play different roles as degradation status changes.

5.1.1 Public Financing modalities

Public finance will play a critical role in Phase 1, including creation of the conditions conducive for blended or private financing (see Sections 5.3.2 and 5.3.3). The major forms of public finance modalities are grants (often accompanied by technical assistance), Government sourced modalities (such as direct spending, taxes, subsidies, tariffs), and loan instruments (including concessional lending).

5.1.1.1 Grants

Grants are non-repayable funds that may be used to spur innovation, support feasibility studies, confirm concepts, and support pilot projects. They are typically one-time support and not self-sustaining. Grants can help to meet basic needs, pilot new approaches, and trigger broader development phases. Early-stage grant funding can attract other investors and is often paired with technical assistance (TA).

There are multiple public sources of grant finance. These include development finance institutions (DFIs) (including bilateral and multilateral donors[ix] - see Figure 10), public foundations (including non-governmental organizations (NGOs) and philanthropic organizations), and Government grant programs.

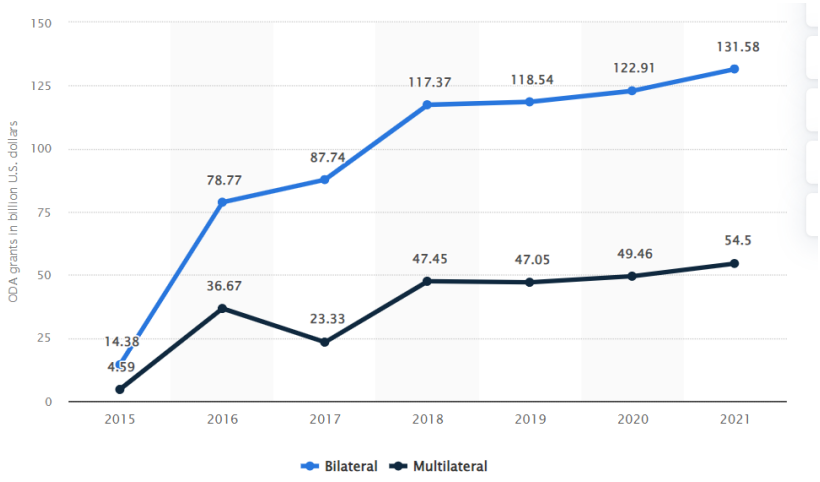


Figure 10 – Total amount of bilateral and multilateral official development aid grants 2015-2022 (USD billions, by DAC members)[104]

[ix] Multilateral financial flows consist of core contributions from donor governments to multilateral agencies (e.g. multilateral development banks). Bilateral financial flows involve direct transactions between a donor country and a recipient country, through governmental or non-governmental organizations.

Public grants can be sourced from multiple actors and channeled to both public and private actors. Public grants can be channeled towards a range of public stakeholders, such as national or subnational Government or private stakeholders, such as households, farmers or pastoralists. Boxes 4 to 6 illustrate the variety of uses for public grants (sourced from international or national public organizations), outlining various modes of support for civil society, entrepreneurs, and private sector production.

Box 4 – GEF-UNDP Small Grants Program

The Global Environment Facility (GEF) is the largest multilateral environmental fund that provides grants and blended finance for projects on biodiversity, climate change, land degradation, sustainable forest management, food security, and sustainable cities in developing countries. The Small Grants Programme (SGP), funded by the GEF and implemented by the United Nations Development Programme (UNDP), has supported nearly 27,000 civil society and community initiatives in 136 countries. SGP empowers local civil society and community-based organizations, including women, indigenous peoples, youth, and persons with disabilities, through a decentralized delivery mechanism at the country level.

The SGP provides grants of up to USD 50,000 directly to CSOs and community-based organizations (CBOs) to undertake local projects that contribute to the global environment while generating sustainable livelihoods. Since the program's inception, the SGP has provided more than USD 541.7 million in grants, complemented by more than USD 686 million in cash and in-kind co-financing.

There is potential to enhance support for the DLDD under the UNCCD.

Source: GEF. UNDP. NDC Partnership.

Box 5 – Grant support for a network of Entrepreneurial Land Accelerators

Established in 2018 by the World Resources Institute (WRI), the Land Accelerator supports businesses whose primary business model is to be able to restore degraded lands. The Land Accelerator is a training program and network for entrepreneurs in Africa to restore lands and scale their impacts. Examples of business models include agroforestry, tree nurseries, timber forest products, apiculture and clean cooking solutions. The Land Accelerator assists entrepreneurs unlock business opportunities by optimizing their strategy and business models, linking them with mentors and linking them to an investment readiness program.

The Land Accelerator supports entrepreneurs in three phases: (i) technical assistance support; (ii) Mentoring and business support; and (iii) grant financing. Furthermore, graduates of the Land Accelerator may access a linked fund (called Terra Fund) for support. The Land Accelerator aims to engage more partners and to support more entrepreneurs.

Grant financing is a critical foundation for the Land Accelerator and to help communicate and connect with investors the merits of small-scale innovations that have opportunity for scaling.

Source: Regreening Africa 2023.

Box 6 – Grant scheme for private-sector production

Dryland afforestation efforts have achieved mixed results to date and innovation is required to scale up impacts. In 2002, the Sawlog Production Grant Scheme became Uganda's first private-sector forestry initiative to support smallholders and medium-scale farmers to invest in timber plantations. The Grant Scheme included provision of seedlings and money and grant finance towards planting costs.

The most recent phase of the Grant Scheme includes a campaign to promote afforestation in the driest part of the country, through demonstration sites and training courses. Financial incentives, provided by the grant financing, helped to trigger community interest.

Looking forward for sustainable financial solutions, innovative financing models — such as credit financing and low-interest loans with long repayment periods — are needed, as well as participatory community and private-sector business models to resolve trade-offs between plantations and sustainable livelihoods

Source: Reij et al. 2021.

Grant finance is often used in conjunction with other finance modalities, particularly to support new or innovative approaches. For example, Box 7 outlines the importance of grant support in trialing new approaches, such as results-based financing models.

Box 7 – Grant support for results-based financing

The Adaptation Benefits Mechanism (ABM), initiated by the African Development Bank (AfDB) in 2019, is a results-based financing tool providing grants to project sponsors to repay commercial investors and attract private investment into adaptation projects. It aimed to deploy USD 50 million within four years.

Grant payments are based on third-party, non-market valuations of adaptation benefits. The ABM is well-suited for land use and forestry projects, where benefits are quantifiable, and subsidized capital can bridge gaps between market terms and community affordability.

The ABM is flexible, accepting funding from various sources (e.g., DFIs, philanthropies, private sector), accommodating both for-profit and nonprofit projects, and allowing debt and equity investors to provide conventional funding. The terms aim to be non- or minimally concessional.

Beneficiaries include individuals and communities benefiting from ecosystem conservation and sustainable economic activities. They are involved in project design, implementation, and monitoring, with third-party verification of adaptation benefits. National leadership on adaptation and nature-based solutions supports ABM activities, with Ghana and Cote d'Ivoire leading in its development.

Source: Richmond et al. 2021

As outlined in Figure 9, bilateral donors are critical sources of official development assistance (ODA) grants for resilience building in drylands. There is a well-established global community of bilateral donors who provide a combination of grant (and technical assistance) and co-financing to support dryland resilience building (see Box 8).

Box 8 – Bilateral donor support for dryland resilience building

At the 28th UNFCCC Conference of Parties, the UK Foreign and Commonwealth Development Office (FCDO) announced support for sustainable farming and clean water access in climate-vulnerable countries. This builds on the UK-hosted Global Food Security Summit.

The FCDO launched the Just Transitions for Water Security program with £39 million in funding to help low-income countries manage water resources, improve climate resilience, support sustainable food systems, and enhance drought and flood management. The program also aims to ensure access to clean water and mobilize investment in water projects.

Additionally, the FCDO partners with the World Bank and FAO to promote climate-resilient farming and improve smallholder farmer incomes while reducing ecosystem impacts.

Source: Government of United Kingdom

Grants are also commonly integrated into loan instruments to reduce the cost of lending. For example, MDBs often combine grant financing with concessional lending (see Section 5.3.1.3).

Technical assistance

Technical assistance (TA) typically involves provision of resources (often grant financing) for improving policies and project design, enhancing skills, and strengthening implementation capacity. Bundling TAs with grants and loans can help to stimulate broader knowledge generation and exchange, and may lead to improved SDM outcomes and impacts. TAs are a common form of assistance from bilateral and multilateral donors. Box 9 outlines an example of a south-south and triangular cooperation modality, with strong potential to help address technical gaps in dryland development.

Box 9 – South-south technical assistance mechanism

As a south-south multilateral development bank, the Islamic Development Bank (IsDB) champions south-south cooperation as one of its founding principles. IsDB aims to bring countries together to solve common development challenges.

IsDB's bespoke Reverse Linkage Mechanism is a technical cooperation mechanism whereby countries exchange their knowledge, expertise, technology and resources to develop their capacities and devise solutions to support autonomous development.

Across a decade, more than USD 220 million of support has been provided via the Reverse Linkage Mechanism, with more than 33 provider and recipient countries participating. Sectors and themes covered by the Mechanism have included agriculture and food security, disaster risk management, renewable energy, health, and education.

IsDB's Reverse Linkage Mechanism offers a potential avenue for support on knowledge, capacity building and technology exchange for dryland development.

Source: Islamic Development Bank

Further, TAs can play a critical role in stimulating and supporting knowledge and technical innovations and piloting innovative approaches. Box 10 illustrates an innovative model where knowledge and support clinics, supported by technical assistance, could be applied in drylands.

Box 10 – Technical assistance delivery via clinics to enhance knowledge and finance for drylands

Adaptation clinics, introduced by BRAC (an international development organization founded in Bangladesh in 1972) are one-stop agricultural service centers for strengthening capacity of climate vulnerable farmers to manage the increasing risk of climate change. The main modality of these service centers is to facilitate context specific regenerative agricultural practices with a climate change lens following the horizontal and vertical extension approach to minimize gaps in agricultural production.

Clinics provide locally-adapted extension services, from where farmers can avail primary extension services related to their crop production such as diseases problem, crop variety selection, and climate adaptive technologies in agriculture. Each clinic is staffed by a knowledgeable person trained by BRAC who gives free advice and access to services.

Clinic principles include focus on limiting fallow lands/periods; transforming to multi-cropping; managing local climate risk; crop intensification through horizontal and vertical extension approaches; demand driven participatory approach; context-specific climate smart agricultural practices and techniques; year-round agricultural production following crop and disaster calendar.

There may be scope to link the BRAC Adaptation Clinic concept to financial resources for application in dyland areas.

Source: BRAC.

There is scope for existing TA mechanisms to be reoriented to support knowledge generation and exchange, and capacity building, on enhancing dryland finance. The physical, socio-cultural and business model challenges in drylands may often warrant TA support to enhance financing.

5.1.1.2 Fiscal policy

Fiscal policy is the use of government spending and taxation to influence the economy. Government budget allocation and spending can support SDM. Similarly, taxation, subsidization and/or tariffs can incentivize (or disincentivize) certain economic activities.

Public finance alone cannot support SDM, but it can play a critical stabilizing and/or catalytic role where the probability of market failure is high. This may include a public sector "distributive" function to foster equity; "allocative function" to ensure efficient provision of public goods; and "stabilizing" function to shield the economy from volatility

and uncertainty[105]. Increasingly, government may serve as supporters of SDM innovation via policy or finance signals.

Direct Government spending

Governments – both national and subnational – can channel domestic public funds via modalities such as grants, subsidies, and loans. There is significant scope for increased public finance allocations to SDM. Government spending on SDM is currently low (averaging 0.2-0.5 percent of total government expenditure) but increasing[106].

Governments may utilize public finance to engage in direct investments, or enable direct investments, to stimulate positive SDM actions, meet international commitments, and/or to generate income. For example, Government investments supporting SDM may generate tax income from expanded trade of commodities in restored areas or may help to meet internationally agreed commitments (e.g. for climate change, land neutrality, etc.)[107]. Box 11 outlines examples of country governments supporting the UNCCD's Land Degradation Neutrality (LDN) initiative, leading restoration efforts in drylands, supported by direct government spending.

Box 11 – National Government support for Land Degradation Neutrality

The UNCCD's goal of land degradation neutrality (LDN) aims to halt, and then reverse, land degradation. The UNCCD is assisting 131 of the world's 196 countries that have pledged (or are aiming) to arrest land degradation by 2030. More than 100 countries participate in the Changwon Initiative, which supports national voluntary target setting processes to achieve LDN. We define LDN as "a state whereby the amount and quality of land resources necessary to support ecosystem functions and services to enhance food security remain stable, or increase, within specified temporal and spatial scales and ecosystems."

In support of LDN, national highlights include:
- Botswana has reduced degraded land from 36 to 17 per cent of its territory. It has committed a total of 45.3 million hectares to LDN, including both measures to avoid further degradation as well as restoration interventions in selected land degradation hotspots. Botswana also reported 1.42 million hectares as "bright spot" areas, or areas that have been rehabilitated by implementing appropriate remediation activities.
- The Dominican Republic reduced its proportion of degraded land from 49 to 31per cent, between 2015 and 2019. Ongoing efforts support large-scale restoration in select river basins and in cocoa production areas.
- Uzbekistan has reduced degraded land from 30 to 26 per cent, since 2015. Notably, Uzbekistan is restoring the Aral Sea across an area of 1.6 million hectares, which may help to reduce salt and dust emissions.

Source: United Nations Convention to Combat Desertification (UNCCD) 2023

Governments play an important role in building a favorable enabling environment for SDM and thereby encouraging investment from stakeholders (domestic and international). An enabling environment conducive for SDM requires modern and relevant legislation and regulation, capacity development of key stakeholders, clarification of costs and benefits of SDM investments, establishing marketplaces for SLM, and developing risk coverage mechanisms. Leveraging development partners, such as MDBs and bilateral donors to demonstrate approaches, this can help to create "readiness"[108] and market signals[109] for other stakeholders to enter, such as commercial banks (national, regional or international), insurance companies, small and medium-sized enterprises (SMEs,) and larger domestic of multinational companies to support the intended SDM activities[110].

Public finance can provide an important kickstart to local-level SDM. Beyond conducive governance and market conditions, public finance can serve as anchor investment in activities such as local piloting, demonstration, and supporting key local stakeholders. The subsequent entry of private finance will often rely on proofs of concepts supported by public finance.

Natural capital accounting to confirm the value of drylands **Integration of SDM into national budgeting systems may be an effective tool to channel national financial resources towards improved practices. This may be supported by targeted allocation of state investments via sovereign wealth funds and demonstrating increased effectiveness via public expenditure reviews**. Whilst domestic public finance sources can make a substantial contribution to SDM, public actors can also set standards and best practices to guide financial resource allocation[111]. Public expenditure reviews for SLM and integrating SLM into national accounting practices may help to highlight the potential return on investments where public budgets are used for SLM. Natural capital accounting is being implemented (see Box 12) and could be highlighted for drylands.

Box 12 – Natural capital accounting for value confirmation in drylands

The United Nations System of Environmental-Economic Accounting (SEEA) integrates economic and environmental data to show the interrelationships between the economy and the environment. It uses standard concepts, definitions, and classifications similar to the System of National Accounts (SNA) for producing comparable statistics and accounts. The SEEA is flexible and can be adapted to different countries' priorities while providing a common framework.

Costa Rica, a leader in nature conservation, has prepared SEEA accounts for forests, water, and energy, helping it transform from a rapidly deforested country to one with over 52% forest cover.

The SEEA's "Land Accounts" are particularly relevant for drylands, assessing changes in land use and cover, and supporting dryland restoration interventions.

Source: United Nations System of Environmental-Economic Accounting (SEEA) website & Wealth Accounting and the Valuation of Ecosystem

Further, budgetary aid may help to enhance such transitions and even support larger-scale SLM policies and programs.

Public finance can act as an anchor investor for green investments. For example, public finance may be used to support the design of environmental funds that channel (and mobilize additional) resources for DLDD. Governments may also "green" their investment funds, such as sovereign wealth funds and pension funds[112], to avoid investing in sectors and activities that are counter to DLDD objectives.

Government formation of environmental funds may help address public funding shortages and address pressing environmental challenges. **Some national Governments have developed integrated financing strategies and mechanisms blending different capital sources (national, international, public, private) to invest in different phases (e.g. readiness and implementation) of SLM**. Both government and international public development finance is limited. National environmental funds may address multiple objectives of SDM. Countries such as Rwanda (and Costa Rica) have utilized such approaches. Box 13 outlines an environmental fund supported by the Rwandan national government.

Box 13 – An environmental fund supported by a national Government

The Rwanda Green Fund (FONERWA), established in 2012, is one of Africa's first national environment and climate change investment funds. It invests in public and private projects to drive transformational change, incubate green ventures, and attract climate finance.

FONERWA's core responsibilities include mobilizing resources for environmental protection, managing climate change funds, supporting public and private sector projects, and coordinating finance partnerships. It offers grants, innovation grants, and credit lines to support various initiatives.

A flagship project aims to strengthen climate resilience in northern Rwanda, targeting 252 villages and benefiting up to 380,000 people. Other notable projects include "Greening Girinka," "Rehabilitating River Nyabarongo," and "Ecosystem Rehabilitation and Green Village Promotion in Nyamasheke District."

Source: Rwanda Green Fund / FONERWA website (greenfund.rw); Green Cicumbi website (greenfund.rw/greengicumbi).

Public expenditure can be redirected to enhance dryland support and increase readiness for shock events. The World Bank Group conducted one of the world's first public expenditure analyses in Uganda in 1996. Since then, the approach has been used to increase transparency, efficiency and effectiveness of public finance expenditure. Today, it can be redirected to support specific sectors, such as SDM (see Box 14).

Box 14 – Redirecting public expenditure to enhance dryland support

Public expenditure can be assessed using tools like public expenditure reviews, tracking surveys, TrackFin, and budget briefs to optimize allocation, management, and effectiveness, especially in priority sectors. Performance indicators such as adequacy, efficiency, effectiveness, and equity are essential for transparency.

Enhancing public expenditure on SDM is possible, as illustrated by the FAO supporting public expenditure analysis for food and agriculture and the United Nations supporting social protection. Emerging themes like climate change can be integrated.

Drought management poses institutional challenges due to its cross-cutting nature. In countries like Kenya and the Philippines, numerous government authorities have mandates related to drought management, complicating coordination. A fit-for-purpose public expenditure analysis framework could improve financial management and coordination for drought management.

Source: Pek & Salman 2023.

Governments may also encourage sustainable intensification of commodity-based activities by utilizing public finance to promote specialized productivity corridors. Pooling of resources, such as water, energy and other essential infrastructure could help achieve efficiencies, increased productivity, and livelihood improvements. Box 15 outlines a government-supported dryland development corridor in Tanzania, which aims to crowd-in private finance.

Box 15 – Nationally coordinated dryland commodity corridors

The Southern Agricultural Growth Corridor of Tanzania (SAGCOT) Investment Project aims to increase smallholder farmers' adoption of new technologies and marketing practices by fostering partnerships with agribusinesses. It focuses on strengthening support institutions, enhancing smallholder business linkages, and improving project management and evaluation.

Funded by the Tanzanian government, international aid organizations, and partners like the FCDO, USAID, AGRA, the Norwegian Embassy, UNDP, and the World Bank, SAGCOT has achieved significant milestones: 859,000 ha of land under improved technology, over 903,000 smallholder farmers impacted, more than USD 351 million in commodity sales, and over USD 1.32 billion in private investments facilitated.

Source: Southern Agricultural Growth Corridor of Tanzania.

Taxes, subsidies, incentives, and tariffs

There may be scope for some countries to explore "feebates", a system of charges and rebates whereby best practices are rewarded while failure to adhere to such practices is subject to penalty. Feebates may be structured to reward green or environmentally friendly practices, including SDM measures, and penalize unsustainable land management practices.

Conversely, government subsidies can help incentive new or favorable SDM actions. Public subsidies constitute selective payments to subsidize inputs or practices, thereby encouraging certain market behaviors and potential to support transformational changes. For example, on-farm subsidies are a popular modality[113]. Subsidies to smallholder farmers could encourage their engagement in practices beneficial to SDM (e.g. restoration)[114]. Such fiscal policy levers can trigger widespread change.

Land taxes may represent an appropriate revenue source in some drylands. As new stakeholders and industries move into drylands, such as commercial agriculture and industry (e.g. mining, commercial business), property taxes and land rent taxation may be options for Government consideration to enhance revenue generation and redistribution. For example, such revenue could be redistributed as incentives for SDM and to support vulnerable dryland populations. Such proposals would need to consider the status of a land registry, administrative costs, compliance, evasion and political economy aspects. However, land taxes may potentially offer an additional (and often untapped) financing source for governments[115]. Box 16 outlines findings of land tax structural benefits and potential pitfalls.

Box 16 – Land taxes as a finance source for SDM

Research on land taxation for developing countries – utilizing household survey data from Rwanda, Peru, Nicaragua, and Indonesia – found that (i) land taxes provide a substantial untapped potential for tax revenues at minimal deadweight losses; (ii) linear land value taxes tend to put a high relative burden on poor households as land ownership is pervasive; (iii) non-linear tax schemes could avoid adverse effects on the poor; and (iv) with technological advances, administrative costs of land taxes have reduced substantially and are outweighed by tax revenues and co-benefits of formalized land tenure. Enforcement and compliance remain, however, a key challenge. As such, land taxes may offer new forms of Government revenue in some countries, particularly where land use competition, including new commercial and industry stakeholders are entering.

Source: Kalkuhl et al. 2018

Public finance may include national public incentive schemes, such as compensation mechanisms or payment for ecosystem services[116]. Governments can provide incentives to land users (and landowners) to support SDM practices and to protect and enhance key ecosystems. Government payments for environmental and climate goods and services may ultimately improve water and food security and limit negative externalities such as pollution, erosion, flooding, drought and others. Box 17 outlines a government scheme supporting SLM for agricultural landowners.

Box 17 – Government payments to landowners for environmental and climate goods and services

The UK is transitioning its agricultural policies to pay farmers and land managers for providing environmental goods and services alongside food production. The government's environmental land management scheme offers three payment modalities:

- Sustainable Farming Incentive (SFI): Pays farmers to adopt sustainable practices that protect the environment and support farm productivity.
- Countryside Stewardship (CS): Pays for targeted actions in specific locations, with extra incentives for collaborative efforts.
- Landscape Recovery: Funds large-scale, long-term projects to enhance the natural environment.

These schemes aim to deliver significant climate and environmental benefits. Additionally, the UK Government is developing frameworks to support high-integrity nature markets and attract private investment in nature.

Source: Government of United Kingdom.

Tariffs are a form of regulation of foreign trade and a policy that taxes foreign products to encourage or safeguard domestic industry. Tariffs may be adjusted to support SDM. Along with import and export quotas, tariffs are among the most widely used instruments to protect national production from unfair competition. Tariffs could be removed from SDM positive goods such as climate-smart crop or livestock varieties, irrigation infrastructure, solar photovoltaic panels, and other products. Relatedly, Box 18 explores the potential contribution of product and service levies in supporting health innovation.

Box 18 – Product and service levies for fund-raising

Unitaid, hosted by the World Health Organization (WHO), is a global health initiative working with partners to bring about innovations to prevent, diagnose and treat major diseases in low- and middle-income countries, with an emphasis on tuberculosis, malaria, and HIV/AIDS.

Unitaid is unique among global health organizations through is funding model as well as the way the funds are channeled:
– Unitaid's major source of funding (approximately 2/3) is raised via an airline-ticket levy, implemented by donor countries. For example, via this levy France has contributed almost € 1 billion to Unitaid since 2006.
– Unitaid focuses exclusively on addressing market shortcomings at the global level to contribute to scale-up access to treatment for people in developing countries. Unitaid leverages price reductions of quality drugs and diagnostics, which may be unaffordable for many developing countries, and accelerates the pace at which they are made available.

Source: Unitaid.

5.1.1.3 Debt instruments

Loans are instruments where all money requested (by a borrower) is provided in exchange for repayment of the loan principal, usually with interest. As distinct from credit, loans provide borrowers all the money requested at the time of issuance. Loans are typically medium- to long-term repayment obligations. Whilst interest is common for conventional lending, some forms of financing, such as Islamic finance, utilize interest alternatives.

Publicly financed loans may be provided by actors such as Governments and DFIs, and can support SDM investments, particularly those that are income-generating. For example, national governments may borrow from MDBs to enhance SDM-related policies, funds, or infrastructure and assets. International public finance may be channeled via national or local public or private banks.

Non-concessional

State-owned enterprises, such as agricultural banks, may provide loans to a range of customers to support key issues such as food productivity and security, and extending to SDM and environment practices. Such loans, which are not often concessional, tend to necessitate strong returns on investment for borrowers (i.e. increasing productivity) and may be linked to Government initiatives encouraging sustainable practices. Box 19 outlines a state-owned lending institution supporting agricultural productivity and sustainable land management practices.

Box 19 – State-owned lending institution for agricultural support

Agribank, a 25-year-old Namibian SOE, promotes agricultural growth through affordable financing, reaching rural customers across eight branches. It aims to transform agriculture by providing innovative financial solutions for socio-economic development.

Agribank offers various products, including traditional loans and those supporting sustainable dryland practices, such as the Affirmative Action Loan Scheme, solar farm systems, aquaculture, and biomass financing. It also supports the Green Scheme policy, providing significant grants for irrigation projects.

Similarly, in Nigeria, the Federal Government's Commercial Agriculture Credit Scheme offers low-interest credit to boost the agricultural sector

Source: Agribank website & FirstBank website.

Concessional

Concessional loans, or soft loans, have more liberal terms than market loans and thereby are often utilized to support lower income countries or communities. Concessional finance is below market rate finance (i.e. low or zero-interest loans) to clients to help accelerate development benefits. For example, concessional lending arms of MDBs can provide zero

or low interest loans (and grants) for project interventions in least developed countries (LDCs), where capacities to repay conventional loans is low.

Multilateral and bilateral donors are important direct and indirect sources of concessional finance for SDM, and this role is increasing. A significant upward trend is evident in both multilateral and bilateral resources for DLDD, highlighting an enhanced commitment to international cooperation in this area. In 2022, combined bilateral and multilateral resources constituted USD20 billion, which was up from just USD 6 billion in 2018, representing a more than three-fold increase in just four years (Figure 11). Bilateral resources comprised the bulk of those resources (80 percent between 2016-2022), but the proportion and gross from multilateral sources increased over the target period[117]. There may be scope for increased multilateral financing.

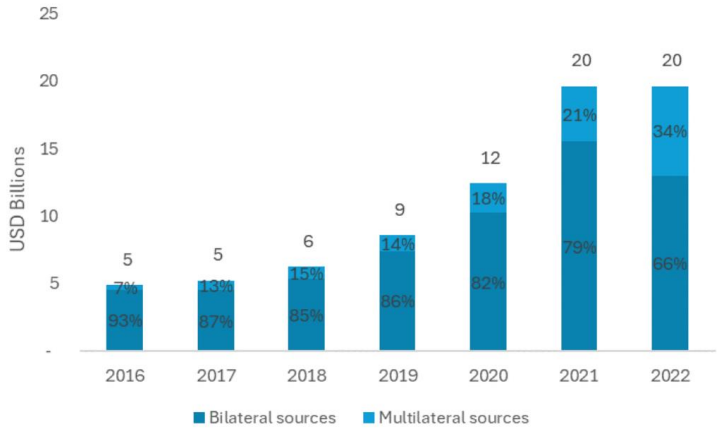


Figure 11 – Trends in bilateral and multilateral finance 2016-2022 (Global Mechanism UNCCD 2024[118])

Concessional sovereign lending from public sources, such as MDBs, supports sector investments aligned with SDM and, increasingly, SDM-specific investments. MDB sovereign lending for sectors relevant to SDM, such as agriculture, energy, water resources development, water supply and sanitation, transport, communications, and others can all support SDM. Additionally, SDM-specific investments are increasingly being requested by client countries. Box 20 outlines an SDM-specific project intervention in Ethiopia.

Box 20 – Conventional sector and SDM-specific sovereign concessional loans

In 2024, the World Bank Group provided USD340 million in concessional lending from its International Development Association (IDA) to the Government of Ethiopia to support pastoralist and agro-pastoralist communities (~3 million beneficiaries) living in climate-affected lowlands to enhance their livelihoods and climate resilience. Communities have faced frequent and severe droughts in recent years, interspersed with flash flooding, resulting in significant livestock losses. Such challenges are compounded by conflicts and environmental degradation, further disadvantaging these historically marginalized communities.

This second phase of the Lowlands Livelihood Resilience Project Phase builds upon an earlier phase, which made notable progress in enhancing the livelihood resilience of pastoral communities. Phase 2 more strongly integrates climate change by introducing an early warning and response system, integrated rangeland management, and the promotion of climate-resilient and sustainable livelihoods, along with policy engagement. The second phase promotes technologies, innovations, and practices that enhance climate change mitigation and adaptation at the household, community, production system, and ecosystem levels.

WBG finance will be complemented by USD80 million co-financing from the International Fund for Agricultural Development (IFAD).

Source: World Bank Group.

Vertical funds, which are development financing mechanisms confined to single development domains with mixed funding sources, provide grants, technical assistance, and loans. They are common co-financiers for specialized support and commonly blend finance with various actors (see Section 5.3.2.1). See Box 21 on the potential role of vertical funds for dryland support and Box 22 on an example of vertical fund support for a large-scale intervention.

Box 21 – Vertical funds: single development focus with mixed funding

Vertical funds are development financing mechanisms confined to single development domains with mixed funding sources. Vertical funds are a scaling up of the growing practice among major donors of earmarking non-core resources for specific purposes. Earmarking is favored by donors because it funds distinctive and narrowly defined programs. Examples include the Global Environment Facility (GEF) established by the World Bank Group, with UNDP and UNEP as founding implementing partners, and which provides grants and blended finance for projects related to biodiversity, climate change, land degradation, and other related environmental topics. A more recent version is the Green Climate Fund (GCF), established in 2015. Vertical funds represent innovative multilateralism, and their boards typically include civil society and for-profit representatives. However, they rely on implementing partners at local level. GEF and GCF are collaborating on large-scale initiatives, such as the Great Green Wall, which spans the Sahel region in Africa, from Senegal in the west to Sudan in the east.

There may be opportunity to establish vertical funds for DLDD.

Sources: Sherry, Mukherji & Ryan 2009. Lister et. al., 2010. Hulls et al. 2010. Browne & Cordon, 2015.

Box 22 – Vertical fund financial support for large-scale greening intervention sources

In 2021, the GCF and UN's International Fund for Agricultural Development (IFAD) announced a USD143 million investment in the Africa Integrated Climate Risk Management Programme. The program aims to help ensure that millions of the most at-risk rural people living in the Sahel region of West Africa can adapt to climate change, with a wide-reaching plan to restore degraded land and provide climate information systems and agricultural insurance. Operating across seven countries (Burkina Faso, Chad, The Gambia, Mali, Mauritania, Niger, Senegal), the program is part of the African-led Great Green Wall (GGW) initiative which aims to restore degraded landscapes in the Sahel, one of the world's poorest regions.

The GCF contributed an USD82.8 million grant, which was combined with USD60.4 million in co-financing from IFAD, African Development Bank and African Risk Capacity Group. The program seeks to benefit 5.4 million small-scale farmers and rural communities across the seven countries. In particular, the predictable funding can serve to help address the human impacts of natural disaster risks, especially for smallholder farmers and their families. The multi-agency approach for implementation aims to strengthen smart partnerships towards building climate resilience and adaptation in the region.

Source: IFAD

5.1.2 Public finance crowding in private finance

Public finance can help to crowd-in private finance for sustainable productivity and resilient development, often resulting in blended finance instruments and arrangements such as public-private partnerships (PPPs).

5.1.2.1 Blended financing & co-financing

Blended finance, or co-investment, brings together finance stakeholders in ways that may leverage their respective strengths and help manage their different risk-return profiles. Blended finance can be leveraged to de-risk investments. In many cases, public finance is utilized to attract private finance, particularly for scaling investments.

Public-private partnership vehicles

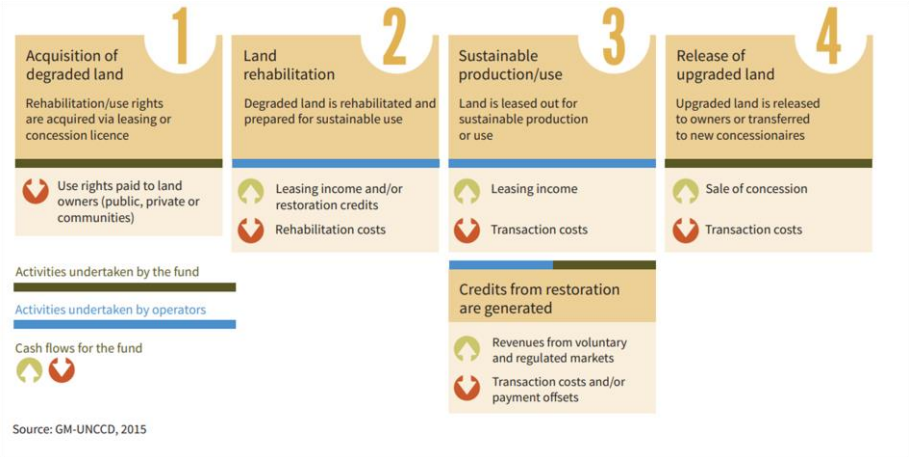
Commonly, public-private partnerships (PPPs) involve collaboration between a government agency and a private-sector company. Internationally facilitated PPPs may have scope to leverage significant financing for drylands. Box 23 outlines a globally leading PPP for drylands – the Land Degradation Neutrality Fund – supported by the UNCCD and which aims to achieve impact at scale, including in drylands.

Box 23 – Blended finance and Public-Private Partnerships (PPPs)

The Land Degradation Neutrality (LDN) Fund, established by the UNCCD and Mirova Natural Capital, is the first investment fund dedicated to preventing soil degradation. It invests in sustainable agriculture and forestry projects to rehabilitate degraded land.

The fund targets USD 300 million, with 70% from senior investors seeking commercial returns and 30% from junior investors providing concessional capital. The fund's layered structure appeals to different risk-return profiles, with junior tranches de-risking senior ones to attract private investment.

Investors include private entities (Fondaction, BNP Paribas Cardif, Garance), concessional sources (European Investment Bank, Fondation de France, Government of Luxembourg), and grants (Agence Française de Développement, Global Environment Facility).



To cater for the longer time horizon for land rehabilitation and forestry projects, and the gap between initial investments and first cashflow generation, the blended finance structure has also facilitated technical assistance, longer repayment periods, and repayment grace periods. The LDN Fund is crowding-in private sector investment in natural capital and catalysing new investment.

The SLM 2 is a follow-up to the LDN Fund. It aims for USD20-60mln of junior shares (first loss capital) to leverage up to USD300 million for investments in bankable private sector land restoration projects. The advisory fund is Mirova Nataxis.

Source: Baes et al. 2023; Global Mechanism of the UNCCD & Mirova 2015 & 2017; Quéru, 2017; WBCSD, 2018; Climate Action Stories

De-risking

Public finance can be utilized to de-risk investments, thereby potentially attracting private sector investment. Blended finance can improve risk-return profiles of investments by pooling capital with different return expectations, both financial and non-financial[119]. As such, concerns about financial uncertainty and other information gaps can be lessened, resulting in a greater amount of private capital being mobilized. Box 24 provides an example where de-risking of private investment is utilized to support public goods.

Box 24 – De-risking private investment for public goods

In recognition of potential country and contract investments risks, particularly in emerging areas such as drylands, many multilateral development banks (MDBs) contain investment guarantee arms/entities. For example, the World Bank Group's Multilateral Investment Guarantee Agency (MIGA) and the Islamic Development Bank's Islamic Corporation for the Insurance of Investment and Export Credit (ICIEC). Such entities may provide guarantees covering both country and contract risks to encourage investments.

For example, in Jordan, MIGA's guarantee of USD 13 million protected equity investments by private investors, covering them for a period of up to 20 years against the risk of breach of contract. This allowed private investors to finance the expansion of an existing water treatment plant to address more frequent and intense storms and drought, sea-level rise, saltwater intrusion, and the needs of a growing population.

Other entities, such as the Green Climate Fund (GCF) are also supporting private investment in adaptation by supporting climate resilience financial products to match risk profiles of products familiar to institutional investors via de-risking approaches.

Source: UNCCD 2023. Patel et al. 2021.

Environmental and impact funds

Government's may form environmental or impact funds to help address public funding shortages, address pressing environmental or sustainable development challenges, and to crowd-in public and private finance. Longer-term financing solutions may increasingly rely on contributions from the private sector and on instruments enabling self-sustained financing. Their capital comprises a wide range of sources (private, public, national, international or any combination of these). When investments in several sectors are targeted to support green economy strategies, environmental funds may align with landscape approaches[120]. Box 25 outlines an example of a trust fund with an environmental mandate, crowding-in finance for protection of at-risk ecosystems.

Box 25 – Financing to protect dryland World Heritage sites

Launched in 2023, the Nature Facility is a Multi-Partner Trust Fund investing in at-risk ecosystems to halt and reverse biodiversity loss and degradation. By leveraging private investment, it aims to create a financial ecosystem that values nature, delivering economically viable, nature-positive solutions.

The Facility focuses on protecting and restoring Natural World Heritage Sites (WHS), which cover less than 1% of the global surface but are crucial for biodiversity and ecosystem services. It targets three main pathways to unlock capital and create investment opportunities: Enabling Investment, Catalyzing Investment, and Direct Investment in at-risk WHS landscapes in the Global South.

The Nature Facility invests in World Heritage Centered Landscapes at local and national levels, engaging multiple actors to pilot innovative financing mechanisms that value nature and foster nature-positive investments and livelihoods.

Supported by partners like UNDP, UNCDF, UNESCO, and Cartier for Nature, one flagship program in Burundi and DRC uses a blended financing model to delink deforestation from commodity supply chains. It provides concessional finance to scale up nature-positive SMEs in agriculture, clean energy, forestry, and eco-tourism. Investments aim to create a virtuous cycle, reinvesting financial returns into local foundations for park management and peacebuilding.

There is scope to focus on dryland World Heritage sites

Source: UNCCD 2023. Patel et al. 2021.

Further, public finance may subsidize impact investing funds (including special vehicles), thereby helping to crowd in private finance. Box 26 outlines a specialized subsidized impact investor and project developer supporting agri-businesses and Box 27 overviews several blended finance partnerships supporting restoration finance.

Box 26 – Special financing vehicle concessional debt for enterprise development – Subsidized Impact Investing Fund

AgDevCo is a subsidized impact investor and project developer focusing on early-stage small and medium agri-businesses in Sub-Saharan Africa. It provides long-term capital and technical assistance (USD 2-10 million) to build sustainable businesses, operating in countries like Sierra Leone, Ghana, Rwanda, Kenya, and Zambia.

AgDevCo, a majority shareholder, has invested USD 1.7 million in equity and USD 1.6 million in long-term debt. It is funded by stakeholders including the UK FCDO and development finance institutions (DFIs). In 2019, 53% of its capital was private funding, showing a shift towards leveraging more private investment. One notable investment is Saise Farming Enterprises Ltd (SFEL) in Zambia, the first commercial seed potato producer in the region, reducing reliance on imports and improving local seed quality. The project uses irrigation and climate-controlled storage to ensure year-round production.

AgDevCo faces challenges as smallholder farmers often lack cash and investment appetite, but demand for its services remains high

Source: Richmond et al. 2021.

Box 27 – Blended finance partnerships supporting restoration finance

The Global Partnership on Forest and Landscape Restoration (GPFLR) is a global network bringing together various stakeholders, including CSOs/NGOs, UN and other development cooperation agencies, universities and research centers, to promote global outreach and communication on SLM and to support knowledge and practice on improved economics of landscape restoration. Initiated in 2003 by the IUCN, the GPFLR promotes voluntary action through sharing diverse restoration experiences that benefit local communities and nature. It encourages political commitments on forest and landscape restoration, aligned with the Bonn Challenge and the Decade on Ecosystem Restoration. The FLR approach aims to regain ecological functionality and enhance human well-being in degraded landscapes. GPFLR includes financing members like the World Bank Group, GEF, and the German Federal Ministry of Economic Affairs and Climate Action. It supports global projects such as those in Nicaragua, Rwanda, China, and Tunisia.

The Landscapes for People, Food and Nature Initiative (LPFN) is an international collaborative initiative of knowledge sharing, dialogue and action to support integrated landscape management to achieve three simultaneous goals: improved food production, ecosystem conservation, and sustainable livelihoods. LPFN brings together more than 60 partner organizations globally to pool resources and expertise to promote and strengthen landscape management. Members are drawn from international CSOs/NGOs, development agencies, and public and private institutions, and co-organizers include financiers such as the World Bank Group, Netherlands Government Ministry of Economic Affairs. LPFN contains a working group on sustainable landscape finance.

The Global Donor Platform for Rural Development (GDPRD) is a network of 40 bilateral/multilateral donors, international financial institutions, intergovernmental organizations, foundations, and development agencies to tackle global poverty and hunger via the development of agriculture, reshaping food systems, and investing in rural communities. The GDPRD supports knowledge development and exchange, including guidelines on responsible investment. It contains thematic groups on Land Governance and Sustainable / Blended Finance for Food Systems.

Source: GPFLR. LPFN GDPRD websites.

Climate & nature finance

Climate finance refers to local, national, or transnational financing that seeks to support mitigation and adaptation actions that will address climate change. Whilst global climate finance nearly doubled between 2019/20 and 2021/22, both adaptation and the agriculture, forestry and land use (AFOLU) sector contributions were relatively minor. Climate finance is increasing significantly year-on-year. Adaptation finance received only USD63 billion in 2021/22, of which only 11 percent went to AFOLU[121]. A climate finance shift towards adaptation and SDM is needed.

Sources of climate finance can be both public and private. Public sources may include ministries and government agencies, bilateral and multilateral financial institutions, climate funds, tax revenues, ODA in the form of bilateral aid flows and funding channeled through multilateral institutions and climate funds, carbon-related mechanisms (i.e. carbon taxes)[122], and in-country public revenues. Private sources may include voluntary and philanthropic contributions from corporate actors, private households, private equity, venture capital, and carbon market revenues[123].

Climate finance may face challenges regarding inclusivity and reaching local communities. Climate finance may be centralized (linked to Nationally Determined Contribution (NDC) processes), strategically determined at national levels, and may face challenges reaching local and marginalized communities. Further, funds may be less flexible and risk-averse, with capacity gaps[124] and a tendency to support larger investments. An overview of the climate finance landscape and its linkage to SLM objectives is outlined in Box 28.

Box 28 – Climate finance for SLM objectives

The climate finance landscape reached USD 125 billion in 2023 from MDBs alone. This figure has doubled in recent years, highlighting the growth of climate finance, which includes both mitigation (GHG reduction/sequestration) and adaptation (building resilience).

Climate finance is strongly linked to sustainable land management (SLM). Mitigation finance includes biosequestration, low-carbon agriculture, and agroforestry, while adaptation finance supports measures like irrigation and potable water investments to help communities adapt to climate-related disasters.

Instruments like the BioCarbon Fund and REDD+ integrate the landscape approach, and funds like the Adaptation Fund, GEF, and Climate Investment Funds focus on the climate-SLM interface. Despite the growth in climate finance, adaptation finance remains limited, with only 11% going to AFOLU in 2021/22. There is an opportunity to increase SLM-related investments within climate finance.

Source: Buchner et al. 2023; FAO & GLM 2015.

Box 29 outlines a large-scale fund at the interface of climate and nature finance. The fund builds from the Reducing Emissions from Deforestation and Forest Degradation (REDD+) mechanism, integrating donations for improved forest management.

Box 29 – Amazon Fund structure and application for drylands

The Amazon Fund is a REDD+ mechanism created to raise donations for non-reimbursable investments in efforts to prevent, monitor and combat deforestation, as well as to promote the preservation and sustainable use in the Brazilian Amazon. To date, the Fund has supported 653 institutions supported directly and through partners; generated over USD50 million in proceeds from the sale of products; 241,000 people benefited from sustainable productive activities; and 75 million hectares extension of forest directly managed.

Fundraising for the Amazon Fund is linked to the reduction of emissions of greenhouse gases from deforestation, that is, it is conditioned to the reduction of the annual deforestation rate. Based on data of emission reductions calculated by the Ministry of the Environment and attested by the Technical Committee of the Amazon Fund (CTFA, in Portuguese), BNDES is authorized to raise donations for the Amazon Fund and to issue certificates recognizing the contribution of the donors to the Fund. Each certificate identifies the donator and the amount of the contribution to the effort to reduce carbon dioxide emissions. These certificates are nominal, non-transferable and do not generate rights or credit of any nature. To donors to the Fund have included Norway, Germany, United States, Switzerland, Japan, United Kingdom, and Petrobras. The Amazon Fund structure and donation model may provide an example of potential application for drylands.

Source: Amazon Fund website.

The building blocks for nature finance, linked to the Global Biodiversity Framework (GBF), are being established and could serve as a pre-cursor UNCCD-aligned finance. Nature finance methodologies and mobilization have not yet reached the equivalent levels of climate finance. However, as illustrated in Box 30, high-level direction set by the Global Biodiversity Framework (and Fund) is being supported by evolving nomenclature and methodologies for finance mobilization.

Box 30 – Emerging finance nomenclature and tracking for nature

In 2021, at UNFCCC COP26, the multilateral development banks (MDBs) released a joint statement on Nature, People and Planet. The statement commits signatories to further mainstream nature into policies, analysis, assessments, advice, investments, and operations, in line with respective mandates and operating models, through: (i) Leadership; (ii) Tackling the drivers of nature loss by fostering and making 'nature positive' investments; (iii) Fostering national and regional level synergies; (iv) Valuing nature to guide decision making; and (v) Reporting.

Further, in 2023, at UNFCCC COP28, the MDBs launched Common Principles on Tracking Nature Positive Finance. In 2024, at CBD COP16, utilizing the common principles, several MDBs announced recent volumes of nature finance.

This journey on nature finance may provide guidance for technical and financial support for UNCCD-aligned goals.

Source: Multilateral Development Banks.

Value chain approaches leveraging concessional lending

Increasingly, the literature[125] supports the development and/or strengthening of agricultural and agroforestry value chains for sustainable productivity and SDM. Value chain approaches aim to strengthen the resilience of commodity production from grower to consumer. Financial risks and opportunities can be assessed as an interconnected system along the entire value chain. This may add value to commodities, benefiting all stakeholders and leveraging market roles for scaling. These approaches may combine short- and long-term value propositions, sustain incomes from restoration efforts, and help to guarantee product demand. Phase 1 investments may include scope for connecting and enhancing dryland commodity value chains.

Value chain approaches could apply to multiple sectors, from agriculture and horticulture to forestry, agroforestry, livestock, apiculture, and other land uses. Synergies may exist between sector and sub-sector value chains and policy alignment may help create win-win opportunities. Broader value chain approaches may help make some longer-term return commodities, such as non-timber product tree value chains, more viable. In some cases, value chain foci could extend to niche commodities where dryland communities have competitive advantages[126]. Such value chains can require processing, transportation, providing security, hospitality, credit and others, which offer livelihood opportunities, but which also require strategic organization and investment.

Value-chain approaches can integrate a wide range of stakeholders, enhance cohesion among them, and prompt coordinated and mutually beneficial practices. Value chain development may directly benefit more people who are restoring the landscape. By integrating a range of stakeholders along the value chain can identify and manage risks associated with different production phases[127]. Contract farming may be integrated into value chain approaches where investors have a space to control and manage production risks, while market risks are eliminated by the business strategies of contractors[128]. Additionally, value chain approaches may help strengthen the economic position of women, who often play a key role in the transformation of products. Increased flows of economic benefits may also lead to behavior changes for landscape scale restoration[129].

Governments can provide policy and financial support for value chain approaches. Support for value chains and associated enterprise and other livelihood opportunities could include streamlining bureaucratic complexity, offering financial incentives, and implementing favorable enabling policies[130]. Box 31 & Box 32 outline potential benefits of value chain approaches for agrifood and non-timber forest commodities, respectively.

Box 31 – Sustainable value chains for drought-smart non-timber forest products finance

Sustainable forest management can mitigate drought risks in drylands, leading to significant investments in reforestation programs like the Great Green Wall. Local-level sustainable practices aligned with conservation goals present both challenges and opportunities.

Senegal has invested in creating climate-smart livelihood opportunities through tree conservation, focusing on improving value chains and market access for non-timber forest products like baobab powder, jujube, honey, gums, resins, and mangoes, which are in high demand.

There is potential to strengthen regional markets and value chains. Building on past timber product successes, macro-level support, such as re-regulating trading systems and organizing regional producer groups, could help scale these markets. Multi-country programs like the Great Green Wall could integrate these concepts into broader governance and market reforms.

Source: Sanogo, D.

Box 32 – Regional Agrifood commodity value chain program - Cassava

In response to COVID-19, conflict, and climate change impacting food security, the Islamic Development Bank (IsDB) launched the multi-billion-dollar Food Security Response Program (FSRP). This program addresses acute food insecurity and builds long-term resilience, focusing on regional agrifood commodity value chains in West Africa, including cassava, rice, wheat, millet, sorghum, and livestock.

Strong national government support has helped strengthen regional food security and resilience, improve livelihoods, and enhance market efficiencies. Cassava, a drought-resistant crop, serves as a backup during droughts and can be used for local consumption or sold in regional value chains.

Financing comes from multilateral development bank loans, national government support, and private sector involvement to develop resilient and sustainable value chains

Source: IsDB

Integrating labeling certification schemes

In the context of converging nature, climate and DLDD challenges, consumers – in addition to producers and other value chain stakeholders – may contribute to sustainable product and certification schemes in drylands. Certification schemes are one avenue to encourage sustainable consumption in one part of the world, which has tangible impacts on another part of the world. Premiums, often associated with certification and niche markets, may add value and improve returns to producers.

The development of labeling and certification schemes, for value-chain approaches, may help to encourage product quality and value creation for increased producer (and other stakeholder) returns. Where premium sales can be confirmed, this may reinforce sustainable pastoralism and agricultural approaches at the local level. upgrading the value chain through certification for farmers to enter export markets.

5.1.2.2 Results-based & compensation-based payments

Performance- and results-based finance may attract investment and help to guarantee delivery of tangible outcomes. Results-based payments are conditional on actions undertaken by target beneficiaries (sometimes verified by third parties). Box 33 outlines a combined grant and results-based payment approach and Box 34 introduces a partnership to promote performance-based landscape restoration investments.

Box 33 – Exploring results-based payment modalities for enhanced dryland finance

The Oromia National Regional State Forested Landscape Program (OFLP) is a 10-year program, designed as part of REDD+ readiness process, and proposed as Ethiopia's first pilot sub-national emission reduction program. The program covers the jurisdiction of Oromia National Regional State, occupying almost one-third of Ethiopia's land area.

The OFLP comprises two financial instruments, managed by the World Bank Group (and implemented under its BioCarbon Fund):

(i) a mobilization grant, to finance program establishment, enhancement of a statewide enabling environment for scaling up actions, and implementation of selected on-the-ground investment activities over a 5-year period; and

(ii) a results-based payment, for net verified emission reductions, against the program's reference level, in a period of up to 10 years. The emission reduction payments will come from REDD+ and may be expanded to other sectors in later years of program implementation.

The OFLP is expected to generate financial and non-financial benefits. In particular, the program and its mechanisms were developed in close consultation with local communities. For example, communities helped determine the appropriate distribution of financial benefits across levels of governments and among the different actors involved. As such, approximately three-quarters of the rewards for the actions that lead to sustainable forest management and emissions reduction goes to the communities who are responsible for those actions. The key managerial role of local government is also recognized, with money allocated to cover the costs of a range of actions that government must take in support of implementation. The private sector is also integrated into the program. The program benefits sharing mechanism will be employed as payments begin to flow.

Source: Tesfaye in Haile et al. 2021

Box 34 – Partnering for performance-based landscape restoration investments

It is not well-known that Asia has the largest share of the world's drylands. Given this, a targeted initiative for restoring drylands was established to support national and international goals on sustainable development. Landscape Partnership Asia is a multi-stakeholder platform that will implement performance-based investments in the restoration of Asian drylands and drought-prone areas through networks of 'engagement landscapes' deploying evidence-based techniques. The Partnership aims to contribute to national and international targets on the restoration of forests, rangelands, agricultural drylands, and drought-prone areas in Central, East, South, and Southeast Asia by linking agriculture, agroforestry and sustainable forest management with financial instruments to connect producers with viable markets. The Partnership aims to initially bring 10 million hectares under integrated dryland and drought management by 2032.

The Partnership – co-founded by the Asian Forest Cooperation Organization, Center for International Forestry Research and World Agroforestry (CIFOR-ICRAF), and the Global EverGreening Alliance – seeks to create synergies by linking to other restoration initiatives, including the Bonn Challenge, the UN Decade of Ecosystems Restoration, and the Food and Agriculture Organization of the United Nations' Asia-Pacific Forest Landscape Restoration Strategy. An Asian Drylands Knowledge Hub will help secure long-term sustainability of results after the end of the Partnership by disseminating knowledge on replicable interventions.

Source: Landscape Partnership Asia & CIFOR.

Compensation-based payments may include schemes which reward stakeholders for adopting practices conducive for sustainable land management, such as payment for ecosystem services (PES). PES involves financial payments in proportion to the approximate value of the ecosystem services to those who manage their lands in a way that maintains the service[131]. PES is an option to help internalize the value of ecosystem services and thereby provide economic imperatives for SDM. Pricing policies must be implemented for natural resources that are appropriate at the national level, sensitive to social needs, and which establish market mechanisms to reduce the loss of ecosystem services in the most cost-effective way. Payments may be made directly to stakeholders who implement practices aligned with SDM principles. Payments may compensate for opportunity costs, loss of income or costs associated with transforming towards SDM practices. In doing so, such payments may distort local markets to limit economic activities misaligned with SDM. Investors in such schemes may include Governments, bi/multilateral donors, environmental funds, NGOs, and others.

Whilst most PES schemes are at watershed or landscape scale, REDD+ may be considered an international umbrella PES scheme. Local PES schemes for activities aligned with REDD+ (e.g. forest restoration, sustainable agriculture, etc.) may access financing from the REDD+ international mechanism. There may be opportunity to extend REDD+ focus

for more investment in dryland SLM, and/or build a dryland ecosystem REDD+ equivalent mechanism. REDD+ may crowd-in both public and private financing sources.

In the context of climate change and increasing shock events, such as drought and flood cycles, PES schemes offer potentially sustainable financial means to reward communities for implementing sustainable dryland management practices in-situ, which provide socioeconomic benefits for society more broadly. Further, PES schemes for shock resilience could be pioneered in dryland systems. PES offers a financing modality to support landscape-scale measures and to connect communities that are part of the same ecosystem. Whilst PES was originally designed for provision of ecosystem services between upstream and downstream communities for non-crisis situations, an evolution of this approach could be to design PES schemes for shock resilience. Box 35 outlines the potential benefits and application of PES in dryland systems, where whole-of-catchment approaches may benefit holistic water management.

Box 35 – Payment for ecosystem services for dryland drought management

Payment for ecosystem services (PES) schemes, though often used in non-dryland systems, are increasingly relevant for promoting sustainable dryland management. These schemes can support ecosystem restoration and optimize services like tributary flow moderation and carbon storage, benefiting both upstream and downstream communities.

PES systems channel finance to local actors, providing direct payments and significant societal benefits. They offer sustainable models for productivity, safety, and resilience to drought and flood cycles.

Ensuring water supply continuity in drylands, especially during crises, is crucial. Effective PES schemes need incentives for resilience building, transparent payment distribution, and open communication between communities. PES holds potential for holistic water management and drought preparedness in dryland regions

Sources: King-Okumu 2021 ; Author

5.1.3 Private finance

The business case for private sector financing for SDM is improving, supported by emerging innovative approaches[132]. There is significant scope for private finance to support Phase 1 productivity increases and resilience building to empower private sector stakeholders – from households and communities to MSMEs and corporations.

5.1.3.1 Grants and technical assistance

Private sources of grant finance include private foundations, non-governmental organizations (NGOs) and philanthropic organizations. Box 36 outlines a private philanthropic fund, which supports nature-based solutions, including in drylands. The

Fund aims to utilize grant financing to stimulate private sector enterprises. Box 37 presents a partnership between two philanthropic organizations to support resilience building of smallholder farmers in drylands.

Box 36 – Private philanthropic support for landscape conservation and restoration

The Bezos Earth Fund has committed USD2 billion to conserve and restore nature. To date, they have provided 41 grants totaling USD590.8M. The Fund promotes and supports nature solutions in places that are a high priority for biodiversity and carbon, making sure to work with governments and local communities. This includes protected and conserved terrestrial and marine areas and the restoration of degraded ecosystems by accelerating natural regeneration and reforestation.

An example of an intervention supported by the Fund includes grant support to drive private investment to African restoration startups in the Great Rift Valley and Rusizi Basin. Such interventions acknowledge that philanthropy alone cannot accelerate the restoration movement in Africa and hence delivery of technical assistance for private investment startups can support sustainable green growth. The local partner is Barka Fund, a woman-led African impact fund and technical assistance provider.

Source: Bezos Earth Fund

Box 37 – Philanthropic support for smallholder farmer resilience building

In 2022, the Qatar Fund for Development and Bill & Melinda Gates Foundation jointly pledged up to USD200 million in a strategic partnership called Nanmo ("grow together" in Arabic). Nanmo aims to invest in climate-adaptive agriculture tools and technologies to build resilient food systems and markets that provide nutrition, income, and economic opportunities to small-scale producers and their communities. It focuses on dryland smallholder farmers who are bearing the brunt of the effects of climate change.

The partnership aims to strengthen economies throughout the Global South via four key areas: (i) Equity as a primary driver of inclusive growth; (ii) Enterprise as a means of job creation and poverty alleviation; (iii) Agriculture as a primary source of food, jobs, and income in Sub-Saharan Africa; and (iv) Provision of access to technologies, financial tools, and emerging best practices as a driver of productivity, nutrition, and climate adaptation. The partnership will also seek to ensure women small-scale producers positively contribute to and benefit from decisions about how their communities grow food and create jobs.

Two of the first projects funded by Nanmo will focus on improving the livelihoods of low-income women farmers in several African countries, working with the World Poultry Foundation to provide them with improved breeds of chicken for egg and meat production.

More broadly, the Gates Foundation has contributed over USD5 billion since 2009 in total commitments to agricultural development to support the needs of smallholder farmers in sub-Saharan Africa and South Asia.

Source: Qatar Fund for Development, Bill & Melinda Gates Foundation

Increasingly, such private philanthropic financing is blended with public or private finance to enhance and extend impact.

5.1.3.2 Debt instruments

Debt instruments are any form of debt used to raise capital for businesses and governments. There are many types of debt instruments, but the most common are loans, credit products, or bonds. Debt instruments can be critical for crowding-in private sector finance for SLM.

Loans

Privately financed loans may be provided by actors such as commercial banks and pension funds. Such loans, which are not typically concessional, tend to necessitate strong returns on investment for borrowers. Increasingly, the private sector is integrating technological advancements into their lending portfolios. Commercial banks lend at non-concessional rates for sector-based investments, such as agricultural or forestry interventions. Such options are available in many countries and tend to be focused on productivity and yield increases, which justify up-front capital investments. Increasingly, the private sector is integrating technological advancements, including AI, to support finance mobilization and tracking (see Box 38).

Box 38 – Satellite technology and AI to support finance mobilization and tracking

Alternative data from satellite imagery can support financial institutions with credit assessment and monitoring of restoration progress.

Lending in the agricultural sector can pose challenges related to non-performing assets, thereby deterring lending institutions from venturing into such markets. However, emerging technological solutions may help to mitigate such perceived risks.

Alternative data-driven technologies may support enhanced risk assessment tools to extend credit to rural stakeholders. For example, real-time satellite imagery can help lending institutions identify viable agricultural zones and tailor their offerings strategically to expand their agricultural lending portfolios. Increasingly, artificial intelligence (AI) powered products may support risk assessment and management.

For restoration activities, satellite imagery may help to establish baseline conditions, track progress and ultimately support credit and results-based payment systems.

Source: Satsure. Author.

Innovative loan structures can provide concessional debt finance for activities that support SDM and engage new private sector actors. Box 39 outlines an investment mechanism to enable private investors to engage in smallholder forestry, whilst also reducing capital costs for forestry companies that provide technical support and market linkages for smallholders.

Box 39 – Concessional debt finance facility for smallholder forestry

On the coast of Kenya, a concessional debt finance facility has been established to encourage sustainable micro-forestry through empowering smallholder farmers. The instrument packages tree production partnership contracts with thousands of smallholder farmers and sells them to investors, providing farmers and forestry companies with access to low-cost, long-term finance while enabling institutional investors to access sustainable forestry investments. It was the first investment mechanism in Africa to enable private investors to invest in smallholder forestry in Africa, while also reducing capital costs for forestry companies that provide technical support and market linkages to smallholders.

The instrument reduces transaction costs for investors and reduces some risks of plantation forestry. By segregating the risks of the individual tree assets from those of an operating company, it is able to achieve a lower cost of capital while attracting a broader diversity of investors to participate than the operating company could achieve through traditional balance sheet finance.

By 2020, the instrument had planted over 6 million trees and partnered with 25,000 farmers across Kenya. Funding was raised from investors including Novastar Ventures, Novastar LPs AXA Investment Managers (through the AXA Impact Fund: Climate & Biodiversity), FMO and Mirova's Land Degradation Neutrality Fund.

A range of actors participate in the initiative. Community leaders confirm that farmers have the right to use the land for the purposes planned. Farmers provide land, labor, and security and manage the planting and harvesting of the wood, which is then sold to a company (Komaza). Komaza receives funding from numerous impact investors including Conservation International to fund (via concessional debt) their initial lending activities and carry out the proof of concept. Komaza receives grant funding from philanthropies including Ashoka and Kiva for technical assistance to develop a software platform and develop a system for tracking impact.

The concept and structure of the instrument may be transferable to settings where SLM and dryland conservation/restoration are needed.

Source: Richmond et al. 2021.

Increasingly, thematic loans are emerging from private sector lenders – such as green loans – which can support SDM. Such thematic loans, from public or private lending institutions must meet certain eligibility criteria to ensure that the financing will lead to positive "green" outcomes. Box 40 introduces green loans with potential applicability for drylands.

Box 40 – Green loans

The global green financing market was valued at USD 4.18 trillion in 2023 and is expected to grow at over 20% in the next decade. A green loan is a type of loan that exclusively funds projects that are environmentally friendly and contribute to the green transition (green projects). For instance, a green loan may be used for projects that help reduce greenhouse gas (GHG) emissions or recover ecosystem function. Green loans, like other loans, may have specific conditions and are offered by financial institutes like banks or credit unions and can be taken advantage of by individuals and businesses.

According to the Green Loan Principles (GLP) of the International Capital Market Association (ICMA), green loans can finance or refinance new and existing green projects in part or fully. The exact requirements vary by loan type/category and lender. Some green loans may be available to specific sectors, such as agriculture, however, many loans have flexible requirements and can fund various green projects.

A green loan is not to be confused with green bonds (see Section on debt instruments). Loans are similar to bonds, but differ in how the funding is raised. With bonds, funds come from the investor market, while funds for loans come from a bank (private operation). Like bonds, loans can be classified under the green, social or sustainability label. A consortium of international financial associations developed the Green Loan Principles, which provide a consistent methodology for use across the green loan markets.

Source: Sustainalytics, Commundo, Nordico websites.

Microloans

Microfinance may comprise soft loans or microcredit schemes. Microfinance comprises financial services typically offered to individuals and/or small businesses who lack access to traditional financial services. Today, the microlending industry serves more than 210 million customers and the market is expected to reach USD304 billion by 2026[133].

Microfinance typically provides financial services to low-income communities who may not be provided service via the formal (traditional) financial system[134]. In some countries, commercial banks may serve less than one-quarter of the population, a figure that is even more pronounced in many dryland agricultural and pastoral communities. Such communities thereby access semi-formal and informal financial service alternatives. Microfinance may fit into this category and may provide a broad range of financial services including loans, savings, money transfers, insurance, mobile banking, and other financial services.

Innovations in microfinance include "green" microfinance and advancements in technology. Green microfinance may achieve dual objectives of (i) improving access to financial services for un- and under-served communities; and (ii) incentivize "green" practices and investments at the local level. Given the potential public good component of the latter objective of green microfinance, this may warrant external support from

Government or other public and private sector actors. Box 41 outlines networks of organizations coming together to support smallholder farmers via microlending for climate resiliency. The advent of mobile phones has enabled mobile money and improved access to finance for households and communities. For example, in Kenya, M-Pesa is a widespread mobile money service which has assisted rural women to to scale up their enterprises and to move from farming into business and retail occupations[135]. Microfinance may be supported by social investors such as NGOs, bilateral and multilateral donors, philanthropists. Box 42 explores green Islamic microfinance.

Box 41 – Networking for microlending to assist small scale farmers build climate resiliency

Adapta Sertão is a network of organizations that aims to assist small scale farmers in adapting to climate change in the semi-arid community of Pintadas, Bahia, Brazil. In addition to supporting farmer households in accessing water infrastructure, farming technologies, technical assistance, processing plants and markets for agricultural products, Adapta Sertão established a local micro-credit bank with loan services tailored for smallscale family farmers. Through Adapta Sertão, small farmers could buy productive irrigation equipment, making them more resilient in the face of a fast-changing climate. The incomes of local farmers increased from less than USD 250 per month to over USD 500 per month, and crop losses decreased from 70 percent to 20 percent.

Source: World Bank 2018

Box 42 – Green Islamic microfinance

Togo is exploring the concept of Green Islamic Microfinance to support rural development and the agriculture sector. Supported by the Government of Togo, the Islamic Development Bank, and the UNDP, the project aims to enhance access to finance, particularly for households, smallholder farmers, and micro, small and medium enterprises (MSMEs) to support sustainable agriculture practices and to promote green rural activities. The goal of the project is to support local resilience building whilst increasing food security and minimizing environmental impacts. In particular, the offering of a Sharia compliant form of financing is strongly demanded by communities in the project area.

Source: IsDB

The origin of microloans was to support gender-responsive financing, which may provide an avenue to empower women in drylands. Originally microfinance emerged in Bangladesh to support women entrepreneurs overcome lack of access to credit, traditional patriarchal policies and high interest rates. Today, an estimated one billion women globally remain outside the financial system[136] and well-designed, gender-sensitive microlending structures offer opportunities for both providers and clients, including in dryland settings (see Box 43).

Box 43 – Supporting gender empowerment through access to finance

The Grameen Foundation designs holistic solutions to help remove gender bias in financial and agriculture systems. Key elements of this approach include: (i) Engaging and training men to change gender-biased mindsets; (ii) Creating lower-cost loan funds to catalyze greater lending to women entrepreneurs; (iii) Helping women create financial identities, including through technical assistance in digitalization; and (iv) Training female entrepreneurs on why and how to grow their businesses, and providing integrated financial, digital, and health services.

One such program in northern Ghana, called WE GAIN, is coordinated by the Grameen Foundation, in partnership with three civil society organizations and the telecommunications company MTN Ghana. The program trained 90 women to become digital financial service agents plus (DFS+), comprising training in business and financial skills and services to support victims of gender-based violence (affecting about one-third of regional women). This approach benefited both agents and clients. DFS+ agents increased their incomes up to fourfold (rising to 37% above average) and many agents have initiated their own businesses. The increased client base has also benefited markedly from the gender-sensitive services.

Such gender nuance could benefit many women entrepreneurs in dryland settings.

Source: Bai & Gatti, 2024.

Credits

Credit mechanisms may offer flexible opportunities for borrowers to finance investments. Green agricultural credit lines may help to channel investments into SDM. Credit, as distinct from loans, provide the borrower an amount of money for use as required, either the entire amount, part of it, or none. There may be opportunity to support green lines of credit in domestic and international commercial banks to encourage SDM. Incentives such as lower interest rates for SDM could be supported by DFIs or national governments. Such initiatives could influence local level investments, behaviors and practices.

Whilst carbon markets and credits may support future SDM financing, significant steps remain to advance the international architecture and to ensure sustainable impacts on the ground. Further, there is a need to enhance understandings and quantitative potentials for carbon sequestration in drylands, particularly for pastoral systems. Drylands do not receive adequate attention for their carbon sequestration compared to other ecosystems, such as tropical forests. However, research confirms pastoralism's positive impacts on biodiversity and sustainable grassland management, which are key carbon sinks. Pastoralists manage over 5000 million hectares of rangelands, holding about 30% of the world's soil carbon stocks. Improved rangeland management could sequester up to 2000 Mt of CO2 equivalent by 2030[137]. Enhancing tree cover and rehabilitating land can boost soil carbon stocks, aiding national climate goals and financial resource leverage[138].

There may be benefit in aggregating carbon assets in drylands and developing and demonstrating improved SDM techniques[139]. This will require support and guidance from international carbon markets, recognizing the potential of carbon sequestration in pasturelands, croplands and rangelands and improving data and information on the carbon sequestration impacts of different land management techniques[140]. For example, grasslands store significant global stock of terrestrial CO2, yet early global valuation studies assigned very low values for their carbon sequestration services[141]. Box 44, 45 and 46 outline carbon credit opportunities in new markets with relevance for dryland applications.

Box 44 – Agroforestry Carbon Removal Units (CRUs) for the Organic Restoration of Nature (ACORN)

Acorn, or Agroforestry Carbon removal units for Organic Restoration of Nature, aims to unlock the voluntary carbon market in support of smallholder farmers switching to agroforestry practices. In doing so, Acorn seeks to connect smallholder farmers, who are often adversely affected by land degradation and climate change, and carbon finance markets where networks of clients value carbon generation. On-farm trees may strengthen resilience and diversification options for smallholder farmers, improve soil quality, and sequester carbon for value generation for investors.

The initiative, created by Radobank, integrates remote sensing technology to measure biomass remotely and helps smallholder farmers to overcome certification and monitoring costs associated with voluntary carbon markets. As such, Acorn offers high-quality, transparent (measurable and traceable) nature-based credits, which are certified and verified by an independent external standard. As outlined in the figure below, Acorn works with local partners (including smallholder farmers and data collectors) and links them with credit purchasers.

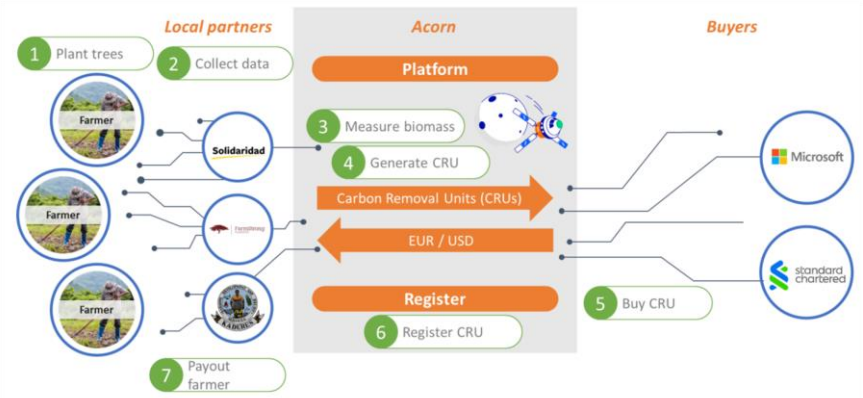


Photo: Acorn Platform

Certified carbon removal units are sold to the voluntary carbon market for a minimum price of 20 euros per credit, of which Acorn keeps 10% to cover the cost of monitoring certification marketing. Acorn pays up to 90 per cent to the local partners, who keep 10 per cent, but the bulk, 80 per cent of this, goes to the farmers.

Acorn only finances investments for switching to agroforestry, however it is exploring a possible financial facility, called Cooperative Carbon Finance, whereby carbon proceeds are the source of repayment.

Source: Regreening Africa 2023

Box 45 – Carbon credits and grassland restoration

Beyond the creation of markets for tree planting for restoration and on-farm diversification, there is an increasing need to recognize the importance of improving productivity of grasslands and pasturelands.

In Kenya, sustainable pastureland restoration is helping to improve livelihoods and local food security, whilst also reducing conflicts. The approach facilitates restoration in response to community requests on a cost-sharing basis by providing training and advice. Stakeholders are consulted and involved at every stage, with special attention paid to youth, women and cultural norms. The methods are being replicated by the Government and non-governmental organizations, and pastoralists themselves. The restoration of 2,400 hectares of grasslands has increased local incomes in productivity improvements. Additionally, there may be opportunity to access carbon finance given that organic carbon in the top meter of soils worldwide is more than all that is held in the atmosphere and vegetation combined, and research shows that within a 20-30 year period, restored grasslands contain 50% soil carbon more than degraded areas did.

Source: Reij et al. 2021. FAO 2017.

Box 46 – Results-based debt capital, eco-tourism, sustainable agriculture, and carbon credits

The African Conservancies Fund (ACF), established by Conservation International, aims to align economic and conservation objectives in the communities in and around the Maasai Mara, Kenya. The ACF provides debt capital to the Maasai Wilderness Conservation Trust (formed to protect the culture heritage and economic interests of the Maasai people, which includes habitat protection and restoration) to develop sustainable revenue generating activities, including eco-tourism, sustainable agriculture, and carbon credit generation, which are used to repay the debt (loan). Other collaborators include the Big Life Foundation and Apple.

Initially, USD500,000 was provided in loan capital to the Trust, with an aim to increase this to USD5 million over two years. A goal of USD100 million is targeted as the initial capital post-proof of concept. Concessional capital may be the likely source of funding for this model initially, as the full commercial viability is more broadly demonstrated. Additionally, where restoration occurs, carbon credits may be generated and sold to governments or private companies.

If this model proves successful, it may be expanded to other areas in Africa where potential for eco-tourism or other sustainable revenue generating activities are available.

Source: Richmond et al. 2021

Further to carbon markets, biodiversity markets offer potential opportunities to mobilize private capital for nature positive interventions. Bundling climate and nature credits may help to crowd-in greater volumes of finance and to achieve scale of impact. In addition to carbon, biodiversity maintenance is an additional environmental service which may be enhanced by SDM practices, for example to stimulate pasture growth, suppress invasive weeds and improve mulching and mineral and water cycling. Further, there may be potential for integrated projects to monetize multiple environmental services from single

interventions[142]. For example, pricing carbon and biodiversity or other environmental services/stewardship could help stimulate finance for project development and reach accreditation and help to scale up finance. Box 47 outlines credits from REDD+ and Box 48 introduces habitat banking credits.

Box 47 – REDD+ carbon credit mechanism

'REDD' stands for 'Reducing emissions from deforestation and forest degradation in developing countries. The '+' stands for additional forest-related activities that protect the climate, namely sustainable management of forests and the conservation and enhancement of forest carbon stocks.

REDD+ primarily aims at the implementation of activities by national governments to reduce human pressure on forests that result in greenhouse gas emissions. It is divided into three phases, which are roughly associated with readiness, implementation, and payment for results. Phase 1 of REDD+ includes developing national strategies or action plans, policies and measures, and other capacity building activities. Phase 2 includes implementing national policies and measures, and national strategies or action plans. Phase 3 consists of results-based payments following the verification of emission reductions.

Through REDD+, buyers and financial partners drive resources directly to the ground level by purchasing Verified Emissions Reductions (VERs), otherwise known as carbon credits, from REDD+ projects that have been 3rd party verified to high-quality environmental and social standards, and which have verifiably reduced deforestation in accordance with those standards. Voluntary REDD+ projects are multi-decadal initiatives implemented by specialized project developers (NGOs, private companies), governments, and communities in different configurations depending on the country and landscape.

Sources: UNFCCC website. https://everland.earth/.

Box 48 – Habitat credits for drylands

Habitat banking is a market-based solution to deliver ecosystem service benefits and address historical ecosystem service loss. It ensures development offsets its impacts on ecosystem services by restoring or enhancing degraded land. Developers purchase credits to fund habitat creation, restoration, or enhancement. This approach consolidates credits from smaller schemes to add value to large initiatives, creating economic incentives for habitat restoration and conservation while allowing responsible development

A habitat bank refers to land managed for its natural resource value and the entity that brokers arrangements between developers and landowners to ensure no-net-loss of ecosystem services. The bank sells habitat credits to developers for mitigating environmental impacts. It consolidates small mitigation projects into larger conservation efforts, offering economic incentives to landowners and streamlining the mitigation process for developers. This approach provides long-term habitat protection and management.

To date, habitat banking has been pioneered in Europe but could be applied and/or adapted to dryland settings.

Source: Environment Bank Ltd.

Thematic debt issuance (Bonds)

Where fiscal space is limited, thematic debt instruments may mobilize resources for SDM priorities whilst maintaining fiscal space for essential and immediate needs (e.g. health, welfare, disaster relief)[143]. The two primary forms of debt instruments for country consideration are (i) debt swaps (see Section 5.3), in cases where debt distress is high, and (ii) debt issuance, for example via bonds, where debt can be sustainably extended. Bonds can crowd-in private and public sector investors, such as institutional investors, commercial banks, impact funds, and Governments.

For countries experiencing lower levels of debt, and with reasonable access to market, the issuance of debt (or rolling over of existing debt) may be achieved via bonds, which can be thematically focused. Countries in stronger debt sustainability positions may take advantage of voluntary refinancing, by raising new loans or performance bonds, using those to prepay existing debt, and then channeling the remaining funds towards SDM objectives. The use of proceeds from thematic bonds, for example green bonds or restoration bonds, ensure that all funds raised by the bond is directed for purposes aligned with the bond theme. For example, global sustainable bond issuance exceeded USD1 trillion in 2023, bolstered by record levels of green bond sales[144]. An additional option is a 'general purpose' performance bond, under which some funds are available for general fiscal goals and other sectoral priorities, on condition that agreed climate and nature key performance indicators are achieved through appropriate investments[145]. KPIs may be identified based on existing national strategies, budgets and plans such as NDCs, national biodiversity strategy and action plans (NBSAPs), National Drought Plans, or LDN.

Bonds may constitute attractive longer-term financing modalities for some countries and thematic bonds are increasingly being issued for conservation and sustainable development purposes. Recent global thematic bond issuances are numerous. For example, Benin issued Africa's first SDG-linked performance bond for €500 million (see Box 49) and Ghana launched a USD2 billion social and environmental performance bond[146]. Many of these issuances may support SDM goals.

Box 49 – SDG-linked bonds

In 2021, after realizing that more than 60 percent of Benin's finance to achieve the SDGs would need to be mobilized beyond the national budget (i.e. from private and/or multilateral sources), the Government issued its first Sustainable Development Goal Bond (SDG bond), with a value of €500 million. The bond was primarily allocated to investors supporting environmental, social and governance (ESG) criteria.

The Government identified priority SDG investment areas, focused on current financing gaps and ability to impact gaps in priority social spending towards SDG achievements. Benin also limited eligibility of operating and personnel expenses to specific sectors (ie health and education) and costs to ensure prioritization of these areas. They prioritized 12 overarching eligible categories with rationale clarifying the context of intervention and reasoning behind the criteria and expense perimeter. For example, focal areas included sustainable and productive agriculture; and conserving biodiversity, restoration and reasonable exploitation of the forest cover, and fighting desertification, among multiple other priorities. Granular target populations were also identified. A particular focus on conservation of biodiversity was embedded.

Benin's experience shows that even within a broad category of SDG financing, zooming in to specific interventions related to drylands is possible.

Source: Patel et al. 2021

Furthermore, there are opportunities to both extend the scope of already-issued thematic bonds (e.g. climate bonds, sustainability bonds, green bonds) to SDM and to issue SDM-specific bonds. There is scope for green bonds to be reoriented towards greater SDM focus. Box 50, Box 51 and Box 52 draw on learnings from the structuring of thematic bonds outside of SDM, including an innovative vaccine model and a Sharia-compliant model, both of which may have transferable learnings.

Additionally, there is scope for explicit focus on restoration

Box 50 – Transferrable long-term financing lessons from Vaccine Bonds

Gavi is an international organisation formed in 2000 to improve access to new and underused vaccines for children living in the world's poorest countries. To date, Gavi has helped to vaccinate more than 1.1 billion children across 78 countries, averting almost 19 million future deaths.

Whilst not directly linked to dryland systems, Gavi provides an example of innovative long-term funding model, which may have replicability for sectors beyond the health sector. In particular, Gavi's Advance Market Commitment (ACM), launched in 2007, was designed to fund research and development of new vaccines by private pharmaceutical companies. The funds provide a guarantee against market failure and act as an incentive to produce new vaccines for pneumococcal disease by compensating companies for the absence of a proven market demand in poorer countries. Additionally, the International Finance Facility for Immunisation (IFFIm), launched in 2006, is a mechanism that also helps to guarantee long-term financial support for GAVI by front-loading assistance and providing longer-term financial security. IFFIm issues "vaccine bonds" on global capital markets, which are backed by guarantees from participating governments to maintain future aid flows that can be used to buy back the bonds on maturity. Within less than eight years, the mechanism had attracted multiple billions of dollars on support from investors.

Source: FutureUN 2015; GAVI website

bonds, landscape bonds, wildlife bonds, resilience bonds, and other specific SDM-related topics.

Box 51 – Learnings from forest resilience bonds

A Forest Resilience Bond (FRB) was launched by the United States Department for Agriculture (in conjunction with the World Resources Institute and Blue Forest Conservation) as an innovative public-private partnership model offering a scalable financing option to help take on the costs of this critical work to protect people, communities and resources. The FRB seeks to strength landscape resilience by enhancing investment in forest management and restoration, and indirectly supporting other interacting ecosystems (beyond forest boundaries).

The FRB structure encourages private capital to cover the upfront costs of forest health treatments. The model brings together stakeholders that benefit from restoration to share the cost of reimbursing investors at a moderate rate of return as the environmental and social benefits of project activities are realized. By covering upfront project costs, the FRB accelerates the pace and scale of restoration work, including minimization of fire risk and avoidance of potential greater costs of inaction for fire damage in the future.

In terms of financial roles of various stakeholders, all parties make a shared commitment to landscape-scale restoration goals. Upfront capital from private investors is used to finance ecological restoration treatments. The state Government and a municipal water and hydroelectric utility repay investors at contracted rates as restoration work is completed. In-kind support and funding for project planning, development and execution is provided by the national Government. Evolution and expansion of this model also occurred to enhance forest restoration areas and interventions. This initiative provides an example of how large-scale ecosystem management and restoration goals may be achieved by bringing together public and private partners to leverage financial resources, with all parties adequately incentivized, clear responsibilities, and sustainable interventions.

Source: USDA.

Box 52 – Sharia-compliant bonds

Green Sukuk are Sharia-compliant financial products, regarded as the Islamic equivalent of green bonds. The Islamic Development Bank (IsDB) has issued more than USD5 billion in Green and Sustainability Sukuk, since 2019, under its Sustainable Finance Framework. Whilst much Green Sukuk to date has been focused on clean energy and transportation infrastructure, there is scope to increase the focus on SLM-based infrastructure and other investments. Green and sustainability Sukuk are being trialed at micro-level, which could have relevance for dryland communities.

Source: Islamic Development Bank

5.1.3.3 Savings

Savings typically constitute money set aside for future use and not spent immediately. Savings are a preferred form of financial capital because they do not have liabilities nor rely upon others. In drylands, savings can be held in several forms: cash, bank deposits, or

as livestock. For some demographics, such as pastoralists, livestock represent their main form of savings[147]. In some cases, livestock may be traded for other goods or services.

In cases where traditional commercial banks and their products are not serving dryland communities, alternatives such as community banks, microcredit schemes, and digital providers may provide important savings alternatives. Commercial banks may integrate microcredit schemes to support communities manage their incomes, business development, and employment opportunities. However, where branches are inaccessible, village community banks – which may be mobile and community-based – may offer an alternative opportunity for communities (see Box 53). In Kenya, the m-PESA scheme, operated by a mobile-phone service provider, affords mobile money services, such as money transfers and other banking services, with purportedly strong utilization by pastoralist communities[148]. Such mobile money services may continue to become important vehicles for savings, credit, insurance and other services in drylands.

Box 53 – Community-based savings schemes

Many dryland pastoral communities have low access to finance and may not be supported by traditional commercial banks, nor offered financial products (because of their often highly liquid assets/collateral). In response, in Turkana County, Kenya, some pastoral communities have formed various Village Savings and Loans Associations (VSLAs) to mobilize their savings and utilize "safe boxes" as banks. Ultimately, there may be possibility to link such VSLAs to financial products of commercial banks.

Source: Ouma 2017

5.1.3.4 Guarantees

Guarantees can help mitigate risks for investors and encourage them into new sectors. By lowering risk, guarantees may encourage investors to engage into sectors that they have little experience initially and/or high-risk perception.

Risk reduction help to attract a broader suite of investors. Partial risk guarantee programs may support large-scale interventions. Partial risk guarantees can be designed for large-scale restoration projects, and insurance/reinsurance companies are called on to design adapted schemes for securing FLR investment patterns in the face of climate change, extreme weather events or other contingency[149].

There is an opportunity for commercial banks to provide guarantees for product differentiation and to tailor products to better cater to large potential customer-bases, such as pastoralists. For example, commercial banks could consider guarantor-ship and livestock value as security, as microfinance institutions do[150]. Significant awareness raising of banking products and relevant product differentiation are both needed, where it

doesn't already exist. Government support may be needed to help serve marginal areas, build financial literacy, and to help commercial banks to manage risk and improve access.

Whilst commodity value chain approaches are already demonstrating strong potential, there may be scope to integrate guarantees in the form of buy-back agreements and out-grower schemes. Binding contracts from forest, agroforestry, or agriculture companies can ensure viable markets for products. By guaranteeing sales to small producers and cooperatives, these contracts encourage organization and active participation in broader landscape visions. This also enhances interactions within value chains and stimulates investment from private companies, governments, and various investors[151]. Box 54 provides an example of guarantees for a debt fund facility supporting food security.

Box 54 – Credit guarantee for financing a debt fund facility for food security

A debt fund, called the Food Securities Fund, aims to provide working capital loans to agricultural aggregators (cooperatives, processors, traders) operating in developing and emerging markets. Developed by Clarmondial, with input from leading institutional investors, agribusinesses, and conservation organizations, the Fund aims to provide an additional source of timely and affordable credit to support the transition to sustainable agriculture notably on climate mitigation, sustainable land management, rural livelihoods and gender.

The risk blending of the fund comes from a USAID credit guarantee commitment of USD 37.5 million, and uniquely, also from value chain partners including large corporations. The fund's open-ended structure is designed to appeal to institutional investors, providing potential opportunity to deliver impact at scale. Inputs into the fund included non-governmental organizations (e.g. Conservation International, WWF), USAID, GEF, and other organizations including Vistra, Convergence, Good Energies Foundation and Climate KIC. Grant funding fills a critical gap in structuring financial instruments that have significant potential to draw in private investment but where private investors may not have risk appetite to enter the instrument at the earliest stage.

The fund targets local SMEs operating in established value chain relationships and will thus be most successful in markets where there are relevant agri-SMEs and where access to working capital is scarce. The fund will also appeal to investors primarily in areas where institutional investors have an interest in SDG-aligned fixed income and private credit investments. The Fund is primarily targeting European and US institutional investors (banks, pension funds, insurance companies).

While the scope of the Fund is global, its first investment, in 2021, focused on coffee production in East Africa, reaching nearly 4,000 smallholder farmers operating agroforestry systems and using organic and regenerative practices. The fund intends to have a diverse portfolio of investments, spanning different commodities and countries.

Source: Richmond et al. 2021

5.1.3.5 Equity

Equity finance raises capital by selling shares of a company to public, institutional investors, or financial institutions. Shareholders receive ownership interest in the company and may receive dividends.

Private equity is ownership or interest in entities that aren't publicly listed or traded. **Private equity impact funds may support productivity improvements and, increasingly, structures are emerging in nature and dryland spaces**. Private equity impact funds may invest in companies in value chain approaches in agriculture, agroforestry, or livestock. Such funds have proven records and a history of traditional investor appetite at scale[152]. Some innovations include issuance of junior shares for non-traditional equity stakeholders. Box 55 explores impact investment in nature and drylands from private equity finance in Latin America and Box 56 explores private equity allocated specifically for regenerative purposes.

Box 55 – Impact investment via private equity finance for Initiative 20x20 in Latin America & Caribbean

Coordinated by the World Resources Institute (WRI), Initiative 20x20 is a country-led effort seeking to change the dynamics of land degradation in Latin America and the Caribbean by beginning to protect and restore 50 million hectares of forests, farms, pasture, and other landscapes by 2030. Initiative 20x20 partners have created more than 100 land restoration and forest conservation projects in Latin America and the Caribbean.

Launched in 2014, 20x20 supports the Bonn Challenge and the New York Declaration on Forests. To date, 18 Latin American and Caribbean countries and three regional programs have committed to improve more than 52 million hectares of land (or about 124 million acres, an area roughly the size of Paraguay and Nicaragua combined) through Initiative 20x20. The initiative is supported by more than 85 technical organizations and institutions and a coalition of impact investors and funds deploying USD3.09 billion in private investment.

20x20 promotes private and public sector investment in restoration projects and entrepreneurs. Financial partners include impact investors and private companies, who act as agents of change in the region by supporting innovative projects that offer social and environmental improvements with financial returns. This group is supporting the expansion of restoration across Latin America and the Caribbean by tapping into the market value of restoration products.

In summary, 20x20 aims to create an enabling environment for successful conservation and restoration. It aims to achieve this via capacity development and information sharing. It attracts private funds for implementation. Looking forward, 20x20 aims to continue sharing information and good practices, intensifying implementation, continued fund mobilization to support the enabling environment, supporting private impact funds in communicating success stories, and attracting more traditional investors.

Source: 20x20 Initiative. FAO & GLM 2015.

Box 56 – Private equity impact fund for regenerative agriculture

Mekong Capital, a Vietnam-focused private equity firm, and the Dutch Fund for Climate and Development (DFCD) will launch a new fund focused on regenerative agriculture. The firm will target USD200 million for its Earth Regeneration Fund, initially targeting the lower Mekong region, which is largely used for agriculture and is home to more than 15 million smallholder farmers. The fund's objective will include making investments in companies with business models that can help the world mitigate and adapt to climate change through the regeneration of forests and soil.

The Fund aims to secure funding from development finance institutions (DFIs), foundations and commercial limited partnerships. The Fund will likely include investments in both adaptation and mitigation projects in the agriculture and forestry sectors and aims to help overcome lack of knowledge and action on regenerative agriculture. The Fund focuses on increasing investor interest in environmental, social and governance (ESG) issues. The Fund aims to nurture and export innovations globally, where applicable. For example, a preliminary investment could include a biochar fertilizer company reusing waste rice husks.

The structure may include up to 25 million of junior shares (first lost capital) to leverage USD 200 million of private sector investment.

Source: Agri-Investor.

Blended finance structures

Blended finance structures are also being launched by the private sector, with purported success. Box 57, 58 and 59 outline initiatives from the private sector, with sustainable business models and blended finance structures to support technical assistance components for reducing private sector investor risk. Such structures appear to have potential to operate at scale for SDM.

Box 57 – Drought Resilience Investment Fund

The UNCCD, working with partners at Bankers without Boundaries, is exploring the establishment and supporting the design of a blended public-private Global Drought Fund mechanism. This private sector-led funding mechanism would be a tool to support integrated drought risk reduction strategic objectives that enable firms to leverage financial resources and mobilize investments for effective and private investment in sustainable drought resilience measures. The aim is to create a return-generating fund that invests in a range of drought resilience-related projects and/or companies capable of significant positive contributions to drought resilience. The fund will utilize both concessional and commercial capital in a blended structure. The goal is to demonstrate the feasibility of a two-pronged approach to investment that can generate impact and financial returns simultaneously.

Source: UNCCD, September 2024

Box 58 – A 2nd-generation fund dedicated to Sustainable Land Use

Mirova Sustainable Land Fund 2 (MSLF2) is a proposed impact investment fund designed to invest in commercially viable projects in sustainable agriculture and sustainable forestry. The MSLF2 project would provide long-term financing (debt/equity) for sustainable land use projects and companies that will support certified production of food & fiber, especially through regenerative agriculture and agroforestry.

MSLF2 targets a fund size of EUR 350 million, using a blended finance structure according to which public money partially de-risks private investors. An MSLF2 Technical Assistance Facility will support the Fund. Co-financing for MSLF2 may come from a variety of sources, including public agencies, DFIs, MDBs, impact investors and private investors.

The MSLF2 will contribute to climate action by investing in sustainable agriculture and sustainable forestry – involving both primary producers and in their value chains. MSLF2 will help overcome barriers that these sectors face in shifting to low-carbon and climate-resilient methods. A possible structure for an investment vehicle and technical assistance facility program is contained below.

Figure – Investment vehicle and technical assistance facility

Geographic focus of the fund will be on developing and emerging countries across Latin America, Africa and Asia. Targeted countries will be identified to manage the risk/return perspective and the understating of the markets and to strengthen local origination networks to identify the best projects.

MSLF2 will leverage the expertise of Mirova's natural capital platform – combining unique experience in carbon finance, project finance, agronomy and impact investing – and Mirova's track record in managing the Land Degradation Neutrality (LDN) Fund.

Source: Mirova.

Box 59 – Mekong Earth Regeneration Fund

The Mekong Earth Regeneration Fund (MERF) aims to cultivate, by 2030, a thriving, biodiverse ecosystem in the Mekong region (Cambodia, Laos, Viet Nam) via sustainable land use and regenerative farming practices where farmers experience secured and fulfilled lives. MERF aims to change mindsets and mobilize capital for people and climate by (i) protecting and regenerating forests and soil; (ii) inclusion and improve livelihoods; and (iii) sustainable production. It aims to regenerate 200,000 hectares of land; improve the livelihoods of 1 million people; sequester 10 million tons of CO2e; and mobilize USD1.4 billion capital.

MERF proposes a blended finance structure. The blended finance structure (Junior Equity Tranche with first-loss absorption) mitigates downside risk for senior investors, thereby mobilizing private capital into the Fund. The Fund would be supported by a Technical Assistance Facility, to help mitigate risk and leverage public and private sector funding. For the Technical Assistance Facility, the Fund would partner with an international non-profit organization. Pipeline examples for the Fund include concepts such as Coffee agroforestry; Sustainable mangrove shrimp farming; Agroforestry spices plantation; Biochar organic fertilizer; Natural rubber materials; and Bamboo plantation.

This concept and approach for the Mekong region, where private and public stakeholders come together around sustainable land use and regenerative farming practices, could also be applied to drylands.

Source: Mekong Capital.

5.1.3.6 Trading schemes

Trading is a market-based approach which can be applied to control pollution by providing economic incentives for achieving reduction targets. Trading has been most recently used for greenhouse gas (GHG) emissions and previously applied to industrial discharges. There may be potential for land restoration to sequester carbon and for these gains to be traded in exchange for flows of finance into drylands. Box 60 overviews climate-focused market-based trading schemes.

Box 60 – Drawing lessons from climate-focused market-based trading schemes

In the climate sector, greenhouse gas emissions trading schemes have been recently proposed to control pollution. Such market-based approaches provide economic incentives to actors to reduce the volumes of GHG emissions released. Under such a scheme, a regulatory authority sets a limit or cap on the amount of GHG that can be emitted by covered entities. Sometimes, called a cap-and-trade system, such approaches can reduce the cap of emissions over time to achieve reductions. Actors can trade permits for the rights to emit GHGs.

Such market-based mechanisms could be applied to SDM "bads" to limit negative behaviors.

Source: Author.

5.1.3.7 Direct investment

For-profit (corporate) investment

Private sector engagement in SDM may range from sustainable business investment, where direct financial returns are expected in the short- and/or long-term, through to corporate social responsibility (CSR), where no direct immediate financial returns are expected[153]. Such a variety of approaches permit private sector engagement via multiple actors and avenues for SDM. Among private sector actors seeking direct financial returns, pension funds may be more patient capital (longer-term), whilst venture capitalists seek short-term returns. CSR investments may be conducted for multiple social and/or environmental reasons, brand value-alignment, brand reputation (public relations), or other motivations.

For-profit private investors manage multiple forms of risk, from production- and market-through to price- or climate hazard-related risk[154]. To date, many private sector stakeholders may not be adequately supported (or independently experienced) to accurately assess risks associated with SDM investments. Addressing market imperfections and compensating for risks are two potential approaches to crowd-in greater private sector finance for SDM[155].

Where conventional business opportunities exist, private companies and social enterprises can allocate capital to support for-profit enterprise activities and local economic development opportunities. Where conditions are conducive, private sector led restoration can emerge, as outlined in Box 61.

Box 61 – Private sector led dryland restoration

To date, private sector-led dryland restoration examples have been the exception rather than the rule, but emerging examples exist. Based on the success of farmer managed natural regeneration in Niger, a social enterprise called Sahara Sahel Foods was established in 2014 to improve local livelihoods by processing and marketing products from indigenous trees. Fruits, nuts and leaves are collected from over 20 indigenous species, all of which have different production cycles, providing production year-round. The social enterprise, which, to date, is operating as a sustainable business, purchases over 80 tons of produce annually, paying 1,500 collectors – most of whom are women from 70 different villages – employing over 20 permanent staff and up to 400 women as temporary workers. Six of its products have been recognized by receiving awards, including the Prime Minister's Award, bringing profile and demand to foods once considered as "only for the poor".

Source: Reij et al. 2021.

Recognizing longer-term value generation opportunities, private sector stakeholders may come together to aggregate market information and to promote best practices to build investment opportunities. Box 62 outlines a collaborative investor network, which aims to

build capacities and knowledge to achieve market efficiencies and move forward on environmental, social and governance issues.

Box 62 – Linking sustainable livestock investment with value chain approaches

The FAIRR Initiative (FAIRR) is a collaborative investor network that raises awareness of the environmental, social and governance (ESG) risks and opportunities in the global food sector. FAIRR aims to build a global network of investors who are aware of the issues linked to intensive animal production and seek to minimize the risks within the broader food system. With over 400 members globally, representing over USD75 trillion in combined assets, FAIRR is the world's fastest-growing ESG network including investment managers and asset owners, pension funds and insurance companies globally.

FAIRR was established in response to gaps in the agricultural sector ESG market and aims to fill that gap to ensure investors are better equipped to understand the ESG risks and opportunities in the food sector, with a strong focus on the most interconnected issues associated with intensive animal production. FAIRR achieves this by focusing on high quality research, facilitating collaborative engagements and coordinating policy action for its members.

Landscape restoration along value chains may represent an opportunity to create nature-positive business models that have great potential to reduce ESG risks posed by livestock production, while also unlocking significant business opportunities. Networks such as FAIRR could help facilitate a shift to sustainable livestock value chains where SLM and landscape restoration are prioritized.

Source: FAIRR website. Raes et al. 2023.

CSR-related private sector engagement presents opportunities to support SDM, either independently at a smaller scale or amalgamating with partners for larger impacts. SDM may be supported via corporate philanthropy and sponsorship, insetting and impact marketing. Impact marketing and insetting strategies may directly promote core business and give rise to financial as well as environmental and social improvements along the business value chain and in the operations of related stakeholders, with positive focus on maximizing SDM in resource mobilization.

Private sector commitments, such as zero net deforestation, no net loss and net positive impact (e.g for biodiversity) may serve as important signaling for SDM. No net loss aims to balance impacts (e.g. on biodiversity) by measures taken to avoid and minimize impacts and to offset significant residual impacts, if any. More recent positive framings focus on net gain or net positive impact. Some private sector companies have committed to these framings as part of their core business, which could support greater SDM.

Increasingly, independent initiatives and alliances, which support SDM (including ecosystem and/or social development aspects), selectively partner with innovative private sector investors. For example, Box 63 illustrates a case where an alliance supporting

smallholder farmers is partnering with an asset management group and a commercial bank.

Box 63 – An alliance to green smallholder farming systems

Formed in 2012, the Global Evergreening Alliance brings together leading research, technical, and development organizations to restore degraded agricultural, pastoral, and forest lands globally, and to improve the sustainability, profitability and reliability of smallholder farming systems. The Alliance promotes nature-based approaches – such as evergreening and regenerative agriculture – engaging local communities. The Alliance supports productive and resilient landscapes and agricultural systems, providing small-scale farmer, pastoralist, and forest-dependent communities (both women and men) with improved and diversified livelihoods. The Alliance aims to foster 'green' rural economic growth, by creating an agriculture sector that produces zero net greenhouse gas emissions.

The Alliance provides a collaborative platform to support and facilitate large-scale environmental restoration and sustainable agricultural intensification projects – increasing biodiversity, and both mitigating and adapting to the impacts of climate change on a globally significant scale. They aim to support member organizations, interested governments and donors, and vulnerable small-scale farming, pastoralist and forest-dependent communities in developing countries to restore degraded landscapes and improve agricultural systems; and to foster development of EverGreening The Earth campaign, which aims to facilitate grassroots movements around the world to spontaneously adopt agroforestry practices.

One of the Alliance's flagship programs is Restore Africa, which is the world's largest community-led land restoration program. The program spans six African countries, namely Ethiopia, Kenya, Malawi, Tanzania, Uganda, and Zambia. An initial investment of USD150 million, from Climate Asset Management, and with more investors coming onboard, implementation and acceleration of climate-smart activities in support of vulnerable farming families is already occurring across the six countries. The program aims to restore over 1.8 million hectares of land and support over 1.5 million farming families.

Source: Global EverGreening Alliance; Reij et al. 2021.

Private sector companies, including agrifood, commodity and food and beverage companies may support green value chain approaches, both as part of a long-term business strategy and also to support local and regional economies. Greening of supply chains through deforestation-free procurement will also be vital. Box 64 and Box 65 illustrate local value chain approaches with direct private sector investments.

Box 64 – Developing sustainable charcoal value chains

Arguably, the cessation or sustainable management of existing practices is as important as the introduction of new, sustainable practices in drylands. For example, in the absence of modern, clean and affordable energy sources, many communities in drylands still rely on charcoal for cooking. Whilst charcoal production and sales can be a major source of income for local people, traditional authorities and local and national government, it can also be a major driver of dryland deforestation and degradation. Therefore, the introduction of sustainable initiatives is an urgent priority in some areas. In the drylands of Cameroon, sustainable wood fuel value chains are an important component of restoration, and an initiative in the northern regions is defining and testing options to manage trade-offs between social and ecological impacts and transboundary trade. In Ghana, effective new policies at the national and regional level need to be developed, with the participation of all stakeholders, to reduce environmental impacts and promote dryland restoration. Sustainable value chain approaches may offer hope in this regard.

Source: Reij et al. 2021.

Box 65 – Adapting traditional livelihoods and connecting to modern markets

Camels are important companion animals in many global regions, traditionally used for transportation and agricultural work. For many decades, in the Thar Desert, on the India-Pakistan border, camels were supported those purposes, and their populations were maintained at levels in-step with local sustainable resource management. However, in recent years their populations fell due to reduced demand for labor and pressure on their grazing areas. In response, local communities started diversifying to new products, such as camel milk – which contains anti-bacterial and anti-viral properties and can support healthy blood sugar levels – as a health food and beauty product. Market development, including awareness-raising and education of consumers, has increased demand for the products. This adaptation has helped to improve pastoralist livelihood opportunities whilst supporting their traditional way of life.

Source: Pek & Salman 2023.

Social enterprise

Social enterprises are typically mission-driven businesses utilizing market-driven approaches to support an environmental or social cause. They may fill critical service gaps. Where traditional financial services don't provide services for smallholder farmers and pastoralists, social enterprises can fill this gap. By combining financial and non-financial services, social enterprises build trust and reduce repayment risks. Government support can help these enterprises scale faster and lower interest rates, benefiting dryland customers. Box 66 outlines the potential of social enterprise to scale support via a rotating pool of finance, whilst Box 67 identifies examples of social enterprises filling gaps where traditional finance providers are absent or not adequately addressing local needs.

Box 66 – Scaling smallholder support via social enterprise services & rotating pool of finance

One Acre Fund is an agricultural service provider that supports Africa's smallholder farmers to build resilient communities. One Acre Fund is a social enterprise that aims to supply smallholder farmers with goods and services to increase farm productivity and incomes. Their support offerings include trainings on planting, crop and soil health; products, including seeds and fertilizers, trees and livestock; and services including cred, crop insurance, and cash crop purchase. One Acre Fund's bundle of good and services includes market-rate financing for high-quality farm inputs. This market-rate model helps the Fund to remain financially sustainable and expand to reach more and more farmers every year.

One Acre Fund employs business principles to deliver cost-effective services to millions of people. It began One Acre Fund began in Kenya in 2006 and now serves almost 5 million farmers both directly and indirectly. In 2022, the farmers served directly purportedly produced USD3.20 in new farm profits for every USD1 donated. One Acre Fund serves farmers as customers and emphasizes local representation, with most of their on-the-ground support based in the rural areas they serve.

One Acre Fund applies a market-based strategy to establish a rotating pool of finance. It will act as a reinsurer that focuses on the needs of smallholder farmers and where profits are used to increase impact and decrease climate risk. The Fund also generates income by providing asset-based loans, where farmers receive high-quality seeds and fertilizer on credit, and we offer a flexible repayment system that allows them to pay back their loans in any amount throughout the loan term. Utilizing this overarching model, the Fund aims to serve 10 million farmers by 2030.

Source: One Acre Fund website

Box 67 – Non-bank finance providers for smallholders: Social enterprises

Social enterprises may fill gaps where traditional financing institutions are not adequately present for dryland stakeholders. A 2018 World Bank study catalogued innovative social enterprise approaches, including services for dryland customers:

- Rural Resilience Initiative (R4), Ethiopia – R4 provides credit to farmers and farmers work on natural resource conservation to reduce the risk of disasters in order to protect assets and improve productivity
- Doreo Partners (Babban Gona), Nigeria – Babban Gona franchises Farmer Groups and provides tailored and cost effective end-to-end professional training, input, credit and marketing services to these groups. Members get access to Babban Gona market services that assure good warehousing practices, access to good markets and increased profits.
- Agrofinanzas, Mexico – Agrofinanzas is a non-bank financial institution specialized in lending to Agri-SMEs.

facilitates direct financial transactions among them instead of burdening the farmer.

- DrumNet, Kenya – Drumnet is a Kenyan NGO, partners with banks, input suppliers and agri-buyers and
- Juhudi Kilimo, Kenya – Juhudi Kilimo provides microloans that allow Kenyan smallholder farmers to access high-quality agricultural assets that enhance the productivity of their farms.

Source: World Bank 2018.

Households / individuals & MSMEs

The largest group of private sector investors are individual households and micro, small and medium enterprises (MSMEs). Activating these investors, through conducive governance and market conditions may achieve large-scale impacts. Where landholders are prepared to invest their time, finance and inputs into SDM practices, such incentives could extend positive impacts beyond local levels to landscape-scale change.

There are opportunities to build upon existing and emerging grassroots movements for SDM. Examples of community-level successes are emerging, which could be supported to scale in-situ and/or have transferable applications elsewhere, if appropriate financing is available. Box 68 highlights community-driven success across large scales in Niger and Box 69 illustrates emerging local level initiatives in Senegal.

Box 68 – Scaling a community-driven initiative in Niger

In response to increasingly degraded landscapes, in the mid-1980s, hundreds of thousands of smallholder farmers in Niger significantly increased the number of trees on the land that they managed. This was achieved, not by planting them but by protecting and managing those that regenerated naturally from tree stumps, rootstocks, sprouts or seeds. This practice, replicated across millions of hectares – estimated at over 5 million hectares – of densely populated parts of southern Niger, achieved rapid landscape restoration and is regarded as one of the most successful community-led dryland transformations. As described by Reij et al. (2021) , smallholders literally built "great green productive landscapes". This approach is often now referred to as "Farmer Managed Natural Regeneration" (FMNR).

By investing in on-farm trees, smallholder farmers were able to increase household incomes by selling tree clippings for firewood and fodder, and to protect their arable land for increased crop yields. Increasingly, in the face of more frequent and severe shock events, such as droughts, farms are also more resilient.

The Government of Niger played an important role to implement FMNR on a larger scale. The Government put farmers first, providing them resources and education but not prescribing FMNR, which encouraged farmer engagement. They promoted collaboration, instead of competition, between relevant Government agencies and prioritized pricing mechanism and markets instead of mandates to encourage on-farm FMNR. Given the low-cost of the on-farm interventions, they emphasized knowledge exchanges, demonstrations and trainings to promote farmer adoption.

Niger's success illustrates how small-scale sustainable changes in practices, multiplied by many times, can have large-scale and sustainable impact, and all with little capital investment. In the case of Niger, incentives at the local level were prioritized and achieved large-scale change that acts as a leading example within drylands in Africa and globally.

Sources: Reij et al. 2021 ; NDC Partnership.

Box 69 – Supporting low-cost climate-smart villages and pastoral restoration

A climate-smart village approach is being explored in Senegal, based on strengthening local governance of natural resources, in combination with promotion of agroforestry, planting fruit and fodder species, farmer managed natural regeneration, and management of inter-village pastoral areas, among other practices. Such models, strongly engaging local communities, and constituting low-cost solutions, show potential to restore communal pastoral areas.

Source: Reij et al. 2021.

Other important local level private investors include producer organisations, micro-credit institutions, banks, and others[156]. Access to such local financiers can play a significant role in determining whether individuals and MSMEs are able to invest in SDM.

Civil society

Civil society organizations (CSOs) include non-governmental organizations (NGOs), foundations (public and private), professional associations, unions, and cooperatives. Their mission is often to carry out social action and maintain a dialogue with both citizens and public authorities[157]. CSOs may be local, national, or international and can collaborate to mobilize finance and implement actions. Whilst international CSOs may have advantages for outreach and fundraising, national and local CSO strengths are often in local level context and implementation.

CSOs increasingly engage with for-profit private sector partners to leverage respective structural strengths. For example, international CSOs increasingly partner with private sector actors, on topics such as water and nature, to leverage the finance and value chains of the private sector. Box 70 outlines public and private sector financing for youth-led landscape-focused initiatives.

Box 70 – Mobilizing finance for youth-led civil society initiatives

The Restoration Stewards Program is a community-led movement for ecosystem conservation and restoration, with a particular focus on youth. The program emphasizes intergenerational learning by connecting youth practitioners with leading scientists/researchers and a network of more than 60,000 members (the Youth and Landscape Initiative Network).

The program comprises four main pillars, funding, mentorship, spotlight, and learning. By connecting the youth leaders – the emerging stewards of the land – with potential partners, international or domestic, the program can support emerging leadership and innovation. By drawing attention of broader networks to locally led initiatives can help to channel financing to on-the-ground efforts. Hosted by the Global Landscapes Forum, the program is supported by multiple private and public financing partners.

Source: Regreening Africa 2023. Global Landscapes Forum.

5.1.3.8 Crowdfunding

Crowdfunding mobilizes private finance, often from individuals, communities and companies, either in a donation or lending model. Crowdfunding platforms are increasingly popular and may often be referred to as citizen-to-citizen financing models. They may typically finance small-scale initiatives or support readiness phases of potentially larger investments[158]. Where lack of access to finance remains an impediment for local stakeholders, and/or where activities may have high risk or low-levels of financial return, crowdfunding may offer an alternative approach. Box 71 outlines a crowdfunding platform supporting individuals and MSMEs in developing and emerging economies, including for SDM-aligned activities.

Box 71 – Kiva crowdfunding platform

In 2005, Kiva became the first crowdfunding platform to support the world's poorest communities. The platform focuses on improving financial access as a right, not a privilege. It does this by utilizing crowdfunded microloans, creating a space where people can have one-to-one impact, and together, expand financial access for all. Kiva applies the concept of relending, and via this mechanism, it has crowd funded over USD2 billion in loans. To date, the platform has provided access to loans for more than 5 million people across more than 70 countries on 5 continents. Kiva operates via an extensive network of lending partners and trustees who connect them with borrowers.

Kiva lending categories include agriculture, women, water and sanitation, eco-friendly, food, livestock, social enterprises, and others related to SLM.

Source: Kiva website.

5.1.4 Alternative financing

5.1.4.1 In-kind contributions or work-for-fee

Domestic or international in-kind contributions may come from a variety of stakeholders. In-kind contributions may include labor, equipment, or other forms of support for SDM. Support could be on-the-ground activities coordinated by national or subnational Government, or internationally donated equipment to support SDM.

In some cases where community engagement and/or labor contributions are requested for SDM interventions, this may be in-kind or compensated work for fee/food. Communal contributions may contribute to improved SDM and hard and soft infrastructure. Compensation may take different forms (e.g. monetary, tradable goods (e.g. livestock), food, assets, etc.), depending on local context and national circumstances.

Beyond direct compensation (monetary or food), communities may benefit directly or indirectly from improved infrastructure, assets, productivity and access to markets related to SDM interventions. Communities may benefit more broadly beyond payments received

for their direct contributions. Where new/improved assets and infrastructure are owned or partially owned by communities, they may generate ongoing income. Additionally, in-kind or fee/food-based payments may help both small-scale and large-scale interventions achieve transformative impacts. Such labor engagements must meet international standards for human rights. Box 72 highlights in-kind contributions to a large-scale intervention which transformed a river basin and the livelihoods of many communities.

Box 72 – Integrating in-kind community support in large-scale restoration programs

The Loess Plateau Watershed Rehabilitation projects covered 15,600 square km of land in watersheds of the Yellow River, China. Prior to the project, much of the Loess Plateau watershed comprised severely degraded and barren land and low productivity sloped land. Droughts were common in the region and per capita incomes were mostly below the poverty line.

The project, led by the Government of China and the World Bank Group, aimed to help achieve sustainable development by increasing agricultural production and incomes, and improving ecological conditions in tributary watersheds, through: (a) introduction of more efficient and sustainable uses of land and water resources; and (b) reducing erosion and sediment flow into the Yellow River.

The project financed the integrated planning and treatment of small watersheds and sought to create high-yielding, level farmland for production of field crops and orchards and thereby replace areas devoted to crops on erodible slope lands, and planted slope lands to a range of trees, shrubs and grasses to produce fuel, timber and fodder. The project built 72,346 hectares of terraces, resulting in immediate and substantial benefits for project farmers, doubling grain yields. Higher and more stable grain production on terraces allowed farmers to take steep sloped land out of grain production and transition to uses such as tree plantations. The new terraces, and access roads to the terraces, gave farmers the opportunity to grow a wider range of crops with higher yields. The project: (i) planted 270,000 hectares of trees, shrubs and grasses on degraded agricultural lands. This promoted soil and water conservation and produced much-needed fuel, timber and fodder; and (ii) constructed several thousand sediment control dams, which has improved soil conservation and created valuable farmland.

In-kind community contributions, though paid labor and labor for food programs, contributed significantly to the success of the landscape-scale transformations.

Source: World Bank Group.

5.2 Phase 2 – Bracing for Shock

Globally, dryland communities have adapted to heightened ecological variability, prevailing uncertainties and working in volatile conditions in a dynamic manner to establish reliability[159]. Communities are typically well-adapted and often rely on deeply rooted local knowledge systems[160]. Traditionally, institutionalized shock management, including financing arrangements, have tended to be reactive rather than proactive and not tailored to localized needs of dryland communities.

The underlying assumption for Phase 2 is not if but when shock events will occur and how best to "brace" for such events to minimize their impacts. As such, there is an emphasis on proactive knowledge and actions, preparations for increased resiliency, and avoiding losses. Proactive management for shocks may avoid irreversible losses and damages. As such, Phase 2 creates conditions to help guarantee the availability of rapid and predictable funds to deliver early action to protect vulnerable areas, communities and households at risk when shock events occur. This Phase focuses on anticipatory actions, minimizing disruptions, and avoiding losses.

Shock events need not always cause humanitarian and economic disasters. Phase 2 aims to integrate mitigation measures and focuses on social safety net programs and financial protection programs in key sectors. Mitigating shock effects on vulnerable communities and ecosystems involves preparedness across various sectors. Phase 2 mitigation measures could include early information for agricultural stakeholders, livestock destocking, low-interest microcredit and crop insurance for farmers, loss and damage estimation, and identifying priority interventions. Key mechanisms in dryland sectors may include agriculture and livestock insurance, safety nets, and financial protection schemes[161].

Despite multiple benefits and a strong economic case for investing in shock resilience, finance remains largely inadequate, and Phase 2 may help to draw attention to an ex-ante reframing. The benefits associated with enhanced resilience are often undervalued and there is a common perception that investing in disaster resilience will only provide returns once disaster strikes[162]. UNCCD (2023) analysis shows that resilience plus safety net plus early response leads to more humanitarian assistance savings and avoided losses compared to any elements alone or in lesser combinations. For example, it is estimated that for every USD 1 spent building resilience, up to USD 3 in benefits may be realized from reduced humanitarian aid and avoided losses[163].

Phase 2 includes both risk management and risk absorption components of "risk layering" (see Figure 8) for a range of shock events, based on their probability of occurrence and their potential for broader economic losses and response costs. For example, low frequency and high impact events may require risk transfer via instruments such as insurance and catastrophe bonds. Medium frequency and moderate to high impact events may require contingent credit via debt instruments. Medium frequency and low impact events may require risk retention via budgetary instruments such as budget reserves and contingency funds[164]. Phase 2 financing instruments can be tailored to different "risk-holders" who require different timing, purpose, scales and levels of support[165].

Phase 2 requires a strong emphasis on data for evidence-based decision making. For example, early warning systems, parametric payment modalities, contingent financing. Many actions, allocations and financial disbursements will be triggered by data limits being exceeded. Anticipatory elements provide thresholds above which response activities and mechanisms are triggered to help manage impacts[166]. The effectiveness of many index-based financial products will largely depend on data availability and accuracy[167].

Ideally, Phase 2 instruments should be integrated into Phase 1.

5.2.1 Public finance

5.2.1.1 Grants

Grants can play an important role in bracing for shock events, particularly at national or regional scales where systematic approaches are required, and public and private financing is limited. As climate shocks increase, improved forecasting and shock preparations may be an important use of public finance. Box 73 outlines a grant financing and TA facility to help systematically improve weather forecasts, early warning systems and climate information services, particularly in developing and emerging contexts.

Box 73 – Systematic Observation Finance Facility (SOFF)

The Systematic Observations Financing Facility (SOFF), established by the United Nations, aims to help strengthen climate adaptation and promote resilient development through improved weather forecasts, early warning systems and climate information services that save lives and livelihoods and protect property. SOFF provides grant financing and technical assistance for the sustained collection and international exchange of surface-based weather and climate observations according to the Global Basic Observing Network regulations. SOFF focuses on countries with the most severe shortfalls in observations, prioritising the Least Developed Countries and Small Island Developing States.

The United Nations Multi-Partner Trust Fund (MPTF) Office is the trustee of SOFF. Alliance members of the SOFF include vertical funds, multilateral development banks (MDBs), and United Nations agencies.

Source: Systematic Observations Financing Facility website.

5.2.1.2 Government spending, taxes, subsidies and tariffs

The establishment of specific national drought management authorities may help to provide strategic coordination ex-ante, during, and ex-post drought measures and actions. Such authorities may develop nationally relevant approaches and act as financing conduits for communities in need. Box 74 outlines the finance mobilization capacities of a national drought management authority.

Box 74 – National drought management authority coordinating strategy and channeling financing

The National Drought Management Authority (NDMA) in Kenya, established in 2016, systematically prepares for, responds to, and recovers from droughts. This involves identifying risks, assessing impacts, and developing mitigation measures. NDMA's mandate includes: (i) Early warning systems: Providing timely drought information; (ii) Drought contingency planning: Guiding emergency responses; (iii) Risk reduction measures: Enhancing resilience through water harvesting, reforestation, and soil conservation; and (iv) Coordination and collaboration: Working with government agencies, NGOs, and communities on drought management interventions.

Examples of NDMA projects include:
- Dryland Climate Action for Community Drought Resilience Programme (DCADR): A 4-year project co-funded by the EU and Kenya, focusing on technical innovation and resource mobilization to improve drought recovery and resilience in arid and semi-arid counties. It aims to enhance community resilience and promote greener, inclusive rural development by partnering with various stakeholders and broadening funding sources.

The Hunger Safety Net Programme (HSNP): An unconditional cash transfer initiative in Kenya's poorest counties, part of the Inua Jamii program. It provides regular and emergency cash transfers, with Equity Bank Kenya Limited as the payment service provider. An evaluation showed significant improvements in household income, food expenditure, and education.

TWENDE: A project to reduce the economic impact of climate change-induced drought by increasing resilience in livestock and land use sectors. It aims to benefit 620,000 people, protect or restore 500,000 hectares of rangelands, and address challenges like weak landscape planning and low market access.

Source: NDMA website.

Contingent Financing & Contingency Funds

Increasingly, the embedding of contingent financing into financial modalities helps to ensure access to capital in response to shocks. Contingent disaster financing permits loan processing completion before a natural hazard occurs, with disbursements made upon satisfaction of pre-agreed disbursement conditions. Such an arrangement enables up-front dialogue on disaster preparedness with Government and accelerated provision of budgetary resources as post-disaster response[168]. Box 75 outlines an example of a community contingency fund in a dryland setting.

Box 75 – Community Contingency Funds in the Dry Corridor of Central America

Central America's "Corredor Seco" or Dry Corridor, spanning parts of Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama, faces severe droughts and irregular rainfall. This impacts small farming families, with 62% of the population relying on staple grain production.

Community Contingency Funds (CCFs), supported by FAO and Belgian cooperation, are innovative risk protection and financial transferal mechanisms that provide farm insurance for those without conventional financial access. Managed by producers' associations, CCFs assist members during emergencies like droughts, hurricanes, and floods. They fund agricultural supplies, household expenses, and community projects. Members access CCFs at 3-5% interest, while non-members can apply during emergencies at higher rates.

CCFs are funded by member contributions, FAO projects, and income-generating activities. In Guatemala, CCFs are activated by the "Sitio Centinela" Early Warning System, while in Honduras, activation is by the national Permanent Commission for Contingencies (COPECO). Associations in both countries use rain gauges and thermometers to track rainfall and temperatures.

Source: Insight provided by: Bigi, A. & Georda, V. King 2021.

5.2.1.3 Loan instruments

Public loan instruments (combined with grant financing) can be structured to support both acute shock relief and longer-term resilience building and system transformation. Box 76 illustrates a program package comprising food insecurity relief components and broader system strengthening to increase resilience to future shocks.

Box 76 – Addressing acute and chronic food security

In 2022, amidst the polycrises of COVID-19, climate change and conflict, the Islamic Development Bank Group launched a USD10.54 billion Food Security Response Program (FSRP) to support Member Countries tackle both acute food insecurity challenges and to strengthen longer-term resilience to future food security shocks.

The FSRP comprises contributions from IsDB Group entities, including trade financing, private sector development operations, loans, grants, and capital resources, and political and credit insurance coverage, supported by critical data, analytics, and evidence-based support for effective and impactful decision-making.

The FSRP acute support comprised financing for emergency food and agricultural supplies and social protection and livelihood support to the most vulnerable populations. Further, the longer-term support focuses on developing innovative medium- and long-term interventions to address structural weaknesses and root causes of food insecurity in the member states, such as low productivity, rural poverty, climate change, and weak resilience of regional and national agricultural and food systems. FSRP support focuses on six key initiatives: (i) building agricultural resilience to climate change; (ii) food and input value-chains; (iii) smallholders' productivity and market access; (iv) rural livelihood support; (v) livestock and fisheries development; and (vi) building resilient food supply systems.

Source: Islamic Development Bank.

5.2.1.4 Extending social protection programs

Public works programs can serve as important safety nets in multiple countries. There is potential to integrate SDM and associated financing into such programs. Such broadening of scope could also increase access to climate and other international finance resources. Box 77 outlines a successful blended finance public works social protection program in Ethiopia, which supports smallholder subsistence farmers against climate change and shock events. This financing modality, which is largely concessional, may be relevant for countries with challenging underlying market and policy conditions, including low sovereign credit ratings, high sovereign debt, and limited capital markets[169]. Many other existing programs could be reoriented to support SDM[x].

Box 77 – Blended finance (grants and liquidity) for Ethiopia's Productive Safety Net Program (PSNP)

In 2005, in collaboration with international partners, the Government of Ethiopia launched the Productive Safety Net Program (PSNP) – a social protection program – to support smallholder subsistence farmers against climate change and shock events. Today, the program is in its 5th Phase and it supports 7 percent of the national population annually (more than 8 million households). PSRP is embedded into the Government's Climate Resilient Green Economy Strategy and is one of the largest such programs in Africa.

PSNP finances conditional and unconditional cash or food transfers in exchange for supporting public works and/or social infrastructure development. Examples of activities may include terracing sloped land or supporting vulnerable communities during acute drought events.

Multiple phases of PSNP have been conducted, with evolution of focus occurring along the journey. Phase 5 commenced in late 2020 with a focus to deliver PSNP original goals and effectively respond to disasters. Phase 5 is a multi-billion-dollar program, which receives financial support, including grants and credit from international agencies and the Government of Ethiopia.

Beyond multi-sector Ministry Government finance and execution, the PSNP has been supported by multiple United Nations agencies, multilateral and bilateral co-financers, DFIs support grant finance mobilization, technical assistance in resilience building, and guidance on components such as monitoring, evaluation, pilot-testing, and gender mainstreaming.

Source: Richmond et al. 2021

5.2.1.5 Insurance

Insurance is an arrangement by one party undertakes to provide a guarantee of compensation for specified loss or damage in return for payment of a specified premium. Insurance can play a potentially important role in the dryland sector, where insurers and risk pools can help to manage risks for smallholder farmers, pastoralists, and others[170].

[x] Examples of public works safety programs with potential for greater orientation towards SDM include Kenya's Hunger Safety Net Programme and the CT-OVC Cash Transfer, the Republic of Malawi's Dowa Emergency Cash Transfers and the Mchinji Food and Cash Transfer, the Republic of Ghana's Livelihood Empowerment Against Poverty and the Republic of Rwanda's Vision 2020 Umerenge Programme.

Pooling of insurance at national scales (sovereign risk pooling) may support commodity enterprises. Box 78 outlines an example from Ghana of a national-level collaboration on sovereign insurance risk pooling.

Box 78 – National agricultural insurance pool

The Ghana Agricultural Insurance Programme (GAIP) was launched in 2011. It has developed the first agricultural insurance for Ghana and thereby initiated a key adaptation measure to climate change. Multiple Ghanaian insurance companies form the GAIP and ensure a solid financial foundation.
The GAIP is a collaboration between the insurance companies, National Insurance Commission, Ghana Insurers Association, Ministry of Food and Agriculture, International Labor Organization, and GIZ.

GAIP serves as a platform for pooling risks and sharing knowledge among insurers, reinsurers, and stakeholders involved in Agriculture Insurance. GAIP may be a catalyst for scaling up Agriculture Insurance in Ghana. By leveraging the collective expertise and resources within GAIP, the industry can develop comprehensive and affordable insurance solutions tailored to the unique risks faced by farmers.

Whilst the product range initially comprised drought index insurance for maize and soya, targeted research promotes a constant broadening of the product range. GAIP has received positive engagement from farmers, input dealers and banks. Today, products and services offered by GAIP include drought index insurance, poultry insurance, forestry insurance, area yield index, and consultancy services.

Looking forward, the National Insurance Commission (NIC) is exploring the structuring and operationalizing an Agricultural Insurance Fund for the country.

Source: GAIP website. Forum for Agricultural Risk Management in Development.

Sovereign risk pooling can be combined with parametric insurance (see Section 5.2.3.1). Box 79 outlines an example of bringing sovereign risk pooling and early response mechanism together.

Box 79 – Combining parametric insurance and sovereign risk pooling

Established in 2014, the African Risk Capacity (ARC) is a sovereign risk pool and early response mechanism providing insurance to African Union countries during climate shocks. Its mission is to protect food security for vulnerable populations by leveraging the natural diversification of weather risk across Africa. Countries participating in ARC must customize the Africa RiskView (ARV) software, sign MOUs for capacity building, define contingency plans for payouts, and set risk transfer parameters. Payouts are triggered when rainfall deviations exceed predefined thresholds estimated by the ARV software.

Between 2014 and 2020, ARC Ltd collected over USD 100 million in premiums, provided USD 720 million of insurance coverage for the protection of 72 million people, and paid a total of USD 65 million in payouts, mainly related to drought relief in the agriculture sector. Financial support for the ARC includes interest-free capital from the UK FCDO and KfW, who have both been members since inception.

In addition to insurance, the ARC also seeks to strengthen member states' capacities around early warning, disaster risk management, and risk financing.

Source: Richmond et al. 2021

5.2.2 Public finance crowding in private finance

Public finance can help to crowd-in private finance to brace for shocks, often via blended finance instruments.

5.2.2.1 Blended financing

Proactive resilience measures for shock events can be established by public authorities, such as national governments, and create conditions for private sector support and benefit. Box 80 illustrates public finance support for private sector resilience building and innovation. Such significant public finance support may not be an option for all countries but does provide an example of public finance leveraging private sector investment.

Box 80 – Public finance for private resilience building and promoting innovation

Established in 2019, the Future Drought Fund (FDF) aims to enhance drought resilience for Australian farmers and communities. The FDF provides secure, continuous funding for drought resilience initiatives to help ensure that farmers and communities are better equipped to handle the impacts of drought, fostering long-term sustainability and resilience.

The FDF focuses on a mixture of technical support (e.g. drought resilience self-assessment tool, soil and landscape-scale support, long-term trials), grants for capacity building and innovation (e.g. scholarships, innovation grants, resilient landscape grants), networking (e.g. innovation hubs), extension and commercialization services, strategic (e.g. national enabling activities, regional community support).
In the period 2020-2024, key focus areas of the FDF included: (i) Better Climate Information by providing tools like climate services for agriculture and a drought resilience self-assessment tool to help understand climate risks and resilience; (ii) Better Planning to support farm business resilience and regional drought resilience planning; (iii) Better Practices in programs such as drought resilience adoption and innovation hubs, innovation grants, and various initiatives to promote drought-resilient farming practices and technologies; and (iv) Better Prepared Communities to build and support community resilience through initiatives like helping regional communities prepare for drought.

Initial FDF credit was AUD3.9 billion, with earnings to be reinvested until the balance reaches AUD5 billion (expected in 2028-29). From July 2020, AUD100 million will be made available each year from the Fund to support farmers and communities to prepare for and become more resilient to the effects of future drought, thereby making agriculture more productive and profitable; enhancing the wellbeing of our farming communities; and improving the sustainability and resilience of the natural resources on which agriculture depends. In May 2024, the FDF Phase 2 was announced, with AUD519 million over 8 years for delivery. An investment strategy (2024 to 2028) will support a detailed 4-year plan for drought resilience investments under the fund. Focal areas 2024-2028 include drought resilience hubs; farm business resilience; regional planning; long-term trials; resilient landscapes; scaling success; communities program; innovation challenges; climate services; First Nations activities; monitoring and learning; and management funding.

The FDF provides an example of public finance, comprising grants and technical assistance, with a innovation and commercialization focus where opportunities present.

Source: Future Drought Fund website

Resilience building initiatives can extend beyond national or subnational boundaries, where public finance is utilized to crowd-in private finance at a regional scale. Box 81 presents a blended finance structure for drought resilience, with ambitions for impact at scale.

Box 81 – Drought Resilience Investment Fund

The UNCCD, working with partners at Bankers without Boundaries is exploring the establishment of a blended public-private Global Drought Fund mechanism. This Fund would be a financing tool to attract private sector investment, support the integrated drought risk reduction strategic objectives and create an enabling environment to leverage financial resources and mobilize investments for effective and sustainable drought resilience measures.

This return-generating fund would invest in a range of drought resilience related projects and/or companies capable of significant positive contributions to drought resilience. The fund will utilise both concessional and commercial capital, in a blended structure. The goal is to demonstrate the feasibility of a two-pronged approach to investment, capable of generating impact and financial returns simultaneously.

Source: UNCCD

5.2.3 Private finance

Private sector financing for SDM, primarily through insurance, is a well-established approach, but access and deployment is challenging in many drylands.

5.2.3.1 Insurance

Where insurance is not present in drylands, stakeholders may manage risk via measures such as managing herd size and diversifying livelihood sources. For pastoralists, herd size is commensurate with risk profile – the greater the number of animals owned by a family the greater their chances of addressing risks and surviving adversity[171]. However, with increasing frequency and severity of shock events – particularly climate-related shocks – such strategies may be under threat.

Advances in climate information services have the potential to strengthen dryland stakeholder resilience. Whilst barriers remain to accessibility, affordability and utilization of modern information, advances in remote sensing and climate analysis have enabled development of products such as weather index insurance[172]. Initially NGO-sponsored, the private sector now actively participates (see Box 82). However, uptake by smallholder farmers often remains limited due to disconnection between forecasts, actual crop/livestock losses, and inability to pay premiums[173]. Weather index insurance may be

part of broader risk mitigation portfolios and strategic partnerships may help to develop better products and build capacity for smallholder farmers[174].

Box 82 – Integrating de-risking, financial inclusion and value addition for pastoral economies

An integrated project in the Horn of Africa, supported by the World Bank Group, aims to enhance de-risking, financial inclusion and value addition of pastoral economies.

The project component on de-risking and finance (USD125 million) aims to scale up financial protection for pastoralists via a cost-effective package of financial products and services, including insurance, savings, and (contingent) credit. This component includes clear and transparent triggers for how and when financial disbursements are made; securing financing at the lowest cost by creating an optimal mix of risk retention (savings and credit) and risk transfer (insurance); and effective and transparent disbursement systems to reach pastoralists in a timely manner. It also includes scaling of drought index insurance, which is enabled by satellite technology that monitors pasture conditions such that when the level of pasture falls below a certain level, the insurance payout is triggered automatically, and pastoralists receive payouts directly through mobile money. The interventions included in this project component aim to support the growth and development of local financial markets to develop the products and explore opportunities for targeting and embedding products as a complementary package. The component will target production groups/cooperatives – as opposed to individuals – to link the insurance and financial services with the improvement in productivity (such as existing Village Savings and Loan Associations - VSLAs).

Another key component of the project includes a focus on livestock value chains and trade facilitation (USD125 million), which aims to connect pastoralists better to markets and strengthen the livestock value chains. It aims to facilitate increased regional trade and to improve infrastructure, such as helping to increase traceability and food safety of livestock products along the value chain. The project would provide seed capital to derisk private investments into the livestock value chains, focusing on a few demonstration investments to show that sustainable business models can emerge to benefit pastoralists.

The project also aims to mobilize private capital, including capital covered by insurance and private investment mobilized.

Source: WBG 2021.

Private sector enterprise and insurance partnerships can be bundled to provide multi-country support. Box 83 outlines an initiative working across multiple countries and providing support at local insurer level.

Box 83 – Multi-country agriculture index insurance network

ACRE Africa, officially known as Agriculture and Climate Risk Enterprise Ltd. (ACRE), is an insurance intermediary supporting local insurers to offer smallholder-focused insurance across value chains. ACRE Africa has a physical presence in Kenya, Rwanda, Tanzania, Zambia and Nigeria with projects in Uganda, Ghana, Malawi, Senegal, Nigeria, Zimbabwe, Ethiopia and Somali. It is the largest input-linked, mobile-enabled index insurance program in Africa.

Smallholders buy agricultural inputs from agri-business business partners and are linked to the insurance program via a mobile application (by scanning a code). The premium is 50% subsidised for the smallholder farmers who pay only half the premium; and the other half is paid by ACRE Africa's agribusiness partners. During a climate crisis, compensation for yield loss is triggered immediately via a mobile money transfer service. Solar-powered local weather stations which regularly update the weather conditions are installed near individual farms to calculate the impact of the event and respective pay-outs.

To date, ACRE Africa has helped over 3.1 million farmers access climate insurance across Africa; provided over USD100 million in payouts to farmers following weather shocks; and empowered farmers to invest in their farms, improve yields, and build resilience. Crops insured include maize, sorghum, coffee, sunflower, wheat, cashew nuts, and potato, with coverage against drought, excess rain, and storms. ACRE Africa aims to mitigate risks for farmers by offering end-to-end solutions across all stages, including agri profiling, access to credit and input, capacity building and advisory dissemination, insured risks, and access to markets, while also fostering collaboration among stakeholders in the agricultural value chain to enhance farmers' resilience and boost production.

In addition to farmers, ACRE Africa engages insurance companies, mobile money platform/s, subsidy providers (such as donors, governments, or agribusiness partners who partially subsidize insurance premiums), and certified distributors of crop seeds. Farmer organizations remain an effective channel to both increase demand – for instance through buying group insurance on behalf of farmers – and raise awareness of index insurance within their cooperative.

ACRE Africa provides innovative insurance solutions tailored to the specific needs of smallholder farmers, including designing and implementing index-based insurance products; leveraging technology; and working with local partners. ACRE Africa collaborates with local insurance companies, NGOs, and other stakeholders to ensure their products are accessible and relevant to farmers in different regions. Some governments offer subsidy schemes to support the agricultural insurance sector and the most supportive schemes in Kenya and Senegal are offering a 50% subsidy on the premium.

Source: ACRE Africa, Richmond et al. 2021

Parametric / Index-based insurance

Parametric, or index-based, solutions are a type of insurance that covers the probability (or likelihood) of a loss-causing event happening (like an earthquake or storm) instead of indemnifying the actual loss incurred from the event[175]. Parametric insurance utilizes different parameters or indices to trigger insurance payouts. For example, drought, flood, or pasture cover parameters may be monitored to activate payments to policy holders. Unlike traditional insurance models where payouts are based on observed loss adjustments, monitored parameters may automatically trigger payouts once pre-determined thresholds are exceeded. Such approaches may deliver more efficient, affordable and viable insurance solutions for vulnerable communities.

Data availability and reliability is essential for parametric insurance. Additionally, capacities for monitoring conditions, often in real-time, is required. Increasingly, technologies such as satellite monitoring are integrated into index-based insurance, where conditions, such as pasture cover are tracked and when levels fall below a certain level, payouts are triggered automatically and provided to customers (e.g. pastoralists). Such systems may provide rapid payments based on real-time conditions and typically can be faster than humanitarian assistance timeframes. In the Horn of Africa, for example, a 2021 study found that drought index insurance would be suitable for 53 percent of the regional territory based on rangeland and weather conditions, where 60 percent of livestock are located[176]. Box 84 outlines such an insurance approach integrating soil moisture conditions.

Box 84 – Soil moisture deficit index

International insurance company Swiss Re have developed a Soil Moisture Deficit Index Insurance using remotely sensed information on soil moisture to trigger compensation payouts for farmers whose crops are affected by droughts. … In contrast to a traditional crop insurance where the insurance pay-out must be based on loss adjustment observed in the field, the remotely sensed soil moisture information can be combined with block-chain technology to automatically trigger a pay-out at a pre-defined level of soil moisture deficit.

Source: King-Okumu 2021.

"Forecast-based financing" releases humanitarian funding based on information for planned activities which reduce risks, enhance preparedness and response, and make disaster risk management overall more effective[177]. Humanitarian agencies, meteorological services, and at-risk communities may jointly plan and budget for specific actions to be taken when a forecast reaches a certain probability threshold. This allows for early preparedness actions before an extreme weather event occurs. Organizations such as the German Red Cross and World Food Programme have tested this approach in several high-risk countries (see Box 85). Forecast-based approaches, which include cash

transfers to vulnerable households at drought onset, are being integrated into some national social protection systems. Kenya's Hunger Safety Net Programme (HSNP) and Ethiopia's Productive Safety Net Programme (PSNP) have integrated forecast-based approaches, which enable the provision of cash transfer to poor households at the onset of drought[178]. Additionally, the African Risk Capacity is exploring possibilities for the private sector to play a greater role in forecast-based and index-based social insurance systems[179]. Box 86 outlines the integration of existing safety net programs with index insurance.

Box 85 – Soil moisture deficit index

The Forecast-based Financing Programme by the Red Cross uses forecasting models and early warning indicators to predict extreme weather events and allocate resources for humanitarian assistance. When a hazard's probability reaches an agreed threshold, resources are deployed for early actions like establishing shelters and stocking food and water. This program is effective for both slow and rapid onset events, ranging from droughts to floods or cyclones, protecting lives and health. It may be considered both a monetary and non-monetary instrument, serving multiple purposes, including health protection, social security stabilization, and agricultural production. The German Red Cross and WFP have tested this approach in Bangladesh, Dominican Republic, Haiti, Mozambique, Nepal, Peru, and the Philippines.

Source: Heinrich and Bailey, 2020. Pek & Salman 2023. King-Okumu 2021.

Box 86 – Index Insurance: R4 Rural Resilience Initiative

The R4 Rural Resilience Initiative (R4) was launched in 2011 by the World Food Program (WFP) and Oxfam America (OA) to improve food and income security while adapting to increased climate risks. The R4 initiative combines risk reduction (natural resource management through asset creation and agricultural best practices), risk transfer (microinsurance), prudent risk-taking (livelihoods diversification, investments, and microcredit), and risk reserves (savings and deposits).

By 2020, R4 had supported almost 180,000 farmers to access index insurance products and a range of complementary risk management services in ten countries. Training was conducted in Ethiopia, Senegal, Malawi, Zambia, Kenya, Zimbabwe, Burkina Faso, and Mozambique. R4 uses existing government safety net programs or other development programs run by NGOs to provide a replicable and scalable model by creating an enabling environment for pro-poor market growth through increased insurance penetration, financial inclusion.

R4 leverages multiple stakeholders. Governments provide policy, regulation, research, and strategic oversight and farmers help develop and monitor insurance products, building trust and awareness.

Source: Richmond et al. 2021.

Index-based livestock insurance may support pastoralists and build upon current schemes. Insurance products for pastoralists can utilize satellite data to monitor forage conditions, which when falls beyond a threshold triggers payouts for keeping livestock

alive and coping against drought. Such modern advancements can build upon existing livestock insurance programs (see Box 87).

Box 87 – Evolving livestock insurance schemes

Starting in 2010, micro-retail livestock insurance was offered in Kenya. This advanced to a livelihood protection livestock insurance in 2015. In 2012, Ethiopia offered the micro-retail livestock insurance and then the livelihood protection livestock insurance in 2018. In both countries, livestock insurance is evolving.

More than 100,000 livelihood protection and livestock insurance policies have been solid in Kenya and Ethiopia, covering more than 300,000 people. This coverage has resulted in a 36% reduction in likelihood of distress livestock sales. Major payouts were made between 2011 and 2023 (more than USD 11 million), used mostly for food, pay debt, and forage/fodder and water for livestock. Importantly, women account for 43% of the policy holders with 25% reduction in likelihood of reducing meals as a coping strategy. Partners such World Vision, AGFUND, WBG, BOMA, and others have supported the schemes.

Looking forward, livestock insurance may become linked to broader value chains, sustainable land management, better product offerings, mobile insurance, and parametric insurance to help cope with drought.

Source: Banerjee 2024.

Finally, insurance may serve as an entry point for improved financial inclusion, such as savings or credit. Insurance access for dryland communities may act as a catalyst and enable access to other financial services.

Non-conventional insurance - Takaful

Takaful is a type of Islamic insurance that allows individuals to pool their money together to insure against losses or damages. Takaful offers Sharia compliant insurance services to communities who may not engage in conventional financial service offerings.

Takaful may help to build community resilience by collectively pooling resources to protect against shock events. For many dryland communities, particularly pastoralists, themes of reciprocity, permanent sharing, and collective decision-making are important foundations[180]. Pooling of dryland stakeholders with similar risk profiles may improve scalability and delivery mechanisms of insurance products[181].

Takaful product innovation for climate resilience includes index-based payments. Index-based Takaful products are promising for climate resilience, paying out based on weather indicators rather than actual losses. Examples include the R4 Rural Resilience Initiative and African Risk Capacity (ARC), which use satellite data and risk pooling. Product bundling, like ACRE in East Africa, combines Takaful with agricultural inputs, boosting uptake and productivity. Box 88 outlines index-based Takaful.

Box 88 – Index-based livestock Takaful

Index-based Livestock Takaful (IBLT) is the first Shari'ah-compliant index-based livestock insurance policy in Kenya and Ethiopia, using satellite imagery to measure pasture quality. When forage is impaired, TIA pays policy-holding pastoralists to manage their risk. Livestock insurance products include women-centric policies to shield women from drought impacts, providing for their families.

IBLT has reduced poverty and promotes asset retention among beneficiaries. It acts as a resilience measure and safety net during droughts, allowing pastoralists to buy substitute fodder and protect their livestock. Women beneficiaries gain better access to food, firewood, healthcare, and reduced exposure to gender-based violence.

IBLT has demonstrated how Takaful-compatible index insurance can not only protect pastoralists against drought-related livestock losses but also contribute to broader economic resilience by enabling continued investment in productive activities even in the face of climate uncertainty.

Source: Bishar, M. 2023.

To support the perceived demand for Takaful, and its potential benefits for un- and under-served communities, including those in drylands, a Global Takaful Alliance is proposed, with an ambitious goal to reach 100 million customers by 2030 (see Box 89).

Box 89 – The Global Takaful Alliance

Countries globally face increasing hazards and shocks, with financial burdens often falling on families, communities, and countries. In many developing countries, financial protection is insufficient, especially in Muslim-majority populations. Takaful, a Shariah-compliant insurance alternative, can enhance financial resilience in at-risk populations. Despite being underutilized, Takaful has significant potential to provide risk protection amid growing climate change hazards. It can diffuse risks and offer economic protection through inclusive, Islamic value-aligned risk transfer tools. Strategic collaborations can scale Takaful's impact where it's most needed.

The Takaful Alliance aims to enhance resilience by uniting public and private sectors, national and regional entities, and industry, development, and research actors. A management secretariat will oversee the program, provide technical assistance, and deliver research and evidence. Takaful and Retakaful companies will create tailored solutions for at-risk populations, while partner governments will support the growth of Takaful. Donors and philanthropies will finance the initiative, addressing financial vulnerability through innovative, Shariah-compliant risk protection.

The Global Takaful Alliance has an ambitious goal to reach 100 million customers by 2030. Led by the UNDP Insurance and Risk Finance Facility (IRFF), foundations members for the consultative phase of the Alliance include the Islamic Development Bank (IsDB), Kuwait Finance House (KFH), and Mohammed Bin Rashid Al Maktoum Global Initiatives (MBRGI).

Source: UNDP Insurance and Risk Finance Facility. IsDB. IsDB Institute.

5.2.3.2 Debt instruments

Resilience bonds, a type of green bond, raise capital for climate-resilient investments. These investments help assets and systems adapt to climate risks efficiently and fairly, unlocking broader development benefits. In 2019, the Climate Bonds Initiative (CBI) introduced the Resilience Bond Principles, paving the way for a new resilience bond market[182]. Box 90 outlines pioneering work being conducted on resilience bonds.

Box 90 – Resilience bonds

The European Bank for Reconstruction and Development (EBRD) launched the first ever dedicated resilience bond in 2019, which received a AAA rating and raised USD700 million. The capital was assembled from commercial banks, central banks, and insurance companies, with the purpose of increasing resilience of assets. One such project is Tajikistan's Qairokkum hydropower plant (QHPP). A USD196 million financing package organized by the EBRD is helping to complete the climate-resilient rehabilitation and modernization of QHPP, enabling the plant to cope with the expected impacts of climate change on Tajikistan's hydrological systems, and improving the country's electricity supply. Even though the EBRD experience is the first of its kind, others are taking note.

Even though the resilience bond evidence base is nascent, international institutions and national and regional governments are showing an increased appetite for investing in climate adaptation. The State of California is drawing up plans to launch a resilience bond for drought preparation and wildfire prevention.

Source: Global Center on Adaptation

Resilience bonds and catastrophe bonds (see Section 5.3.3.1) differ in their offerings. Both bonds use the same financial modeling, but resilience bonds model two scenarios: business-as-usual and a world with a protective infrastructure project, thereby estimating the difference in the expected losses when the catastrophe happens with and without the project. That difference is captured as a resilience rebate and this rebate can be used to fund the project itself[183].

The potential main advantages of a Resilience Bond include expansion of financial protections for communities vulnerable to catastrophic events and leveraging new project finance for resilient infrastructure that offers a measurable risk reduction. Resilience bonds are designed to fund proactive risk reduction projects and reactive disaster recovery actions[184]. As resilience bonds evolve and experiences and learnings improve, there could be strong applications for drylands, where enhanced resilience building is essential.

5.3 Phase 3 – Transitioning Back Better

Phase 3 includes financing modalities to support measures during and ex-post shock events. Phase 3 aims to support transition from coping to relief to recovery to restoration, to ultimately linking into Phase 1 (see Figure 6). Not all risks can be eliminated, so

emergency financing remains vital for protecting the vulnerable and in recovery. Phase 3 is geared toward recovering from shock events and restoring the basic functions of ecological, socioeconomic, and livelihood systems. For example, in Phase 3, landscapes may often be degraded, meaning that the risk of investment (and cost of restoration) may be high[185]. Over time, as the landscape, economy and livelihoods recover, different forms of financing can be introduced commensurate with the phase of transition development. Examples of thee range of measures for Phase 3, changing with time, include emergency food assistance and drinking water provision to affected populations, relief funds, subsidies for restoring livestock population, indemnity insurance compensations, tax reliefs, and rehabilitation/recovery programs[186].

Due to shock events and associated adverse impacts on people, economy and environment, Phase 3 will likely involve significant costs, which are, at least initially, borne by public finance and private finance at the household and community level. However, initial investments to address such issues can translate into latter benefits for local, subnational and national levels (see Figure 12).

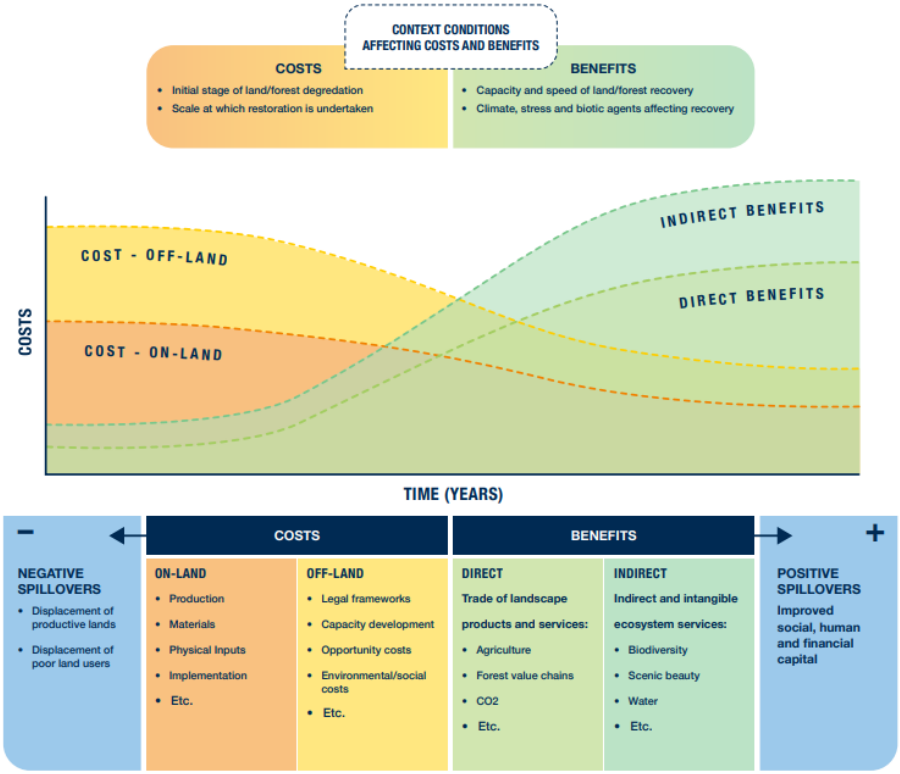


Figure 12 – Challenges of Phase 3 costs may lead to longer-term benefits (transitioning towards Phase 1) (Illustration sources: FAO & GLM 2015, Gromko et al. 2019, Balanza, P.)

Phase 3 may attract actors with a higher social return focus and lower financial return focus, at least initially. Private finance models are emerging. As such, the range of finance modalities below reflects that status.

5.3.1 Public finance modalities

Public finance currently plays a critical role in Phase 3. Humanitarian aid relief and recovery and grants and technical assistance.

5.3.1.1. Grants, Humanitarian Aid Relief & Recovery

Publicly funded emergency and humanitarian agencies are often some of the first stakeholders on the ground during a shock event and they may remain supporting communities for extended periods and ex-post. Many such agencies are publicly funded and their mandate is to provide humanitarian relief and recovery. They play a critical role in minimizing adverse impacts and supporting impacted communities. Box 91 outlines an example of humanitarian grant support from a bilateral donor agency.

Box 91 – Humanitarian Grant Support for Drought Relief in Southern Africa

Bilateral donor agencies, such as the United States Agency for International Development (USAID) provides emergency food assistance to vulnerable populations affected by natural disasters such as droughts and floods, and in response to conflict. In doing so, it works collaboratively with local and international partners.

Examples of recent humanitarian grant support include a response to an El Nino driven regional drought event in Southern Africa in mid-2024. In June and July 2024 alone, USAID support included:

- Almost USD5 million in humanitarian support for drought-affected populations in Namibia. Drought has caused high levels of acute food insecurity, requiring urgent food assistance. The grant financing supports UNICEF to enhance nutrition services such as early detection and treatment of wasting, the most severe form of malnutrition, and UN World Food Program to provide food and nutrition assistance to more than 56,600 vulnerable individuals.
- USD39 million in drought response assistance to Zimbabwe. The preceding rainfall season was below average across more than 80 percent of Zimbabwe, resulting in farmers losing approximately 70 percent of their crops, leading to an estimated six million people requiring food assistance during the coming lean season. USAID supports food assistance, agriculture supplies and livestock, and improved access to water for agriculture and consumption.
- USD66.8 million to Zambia to address acute drought, strengthen food security, and build resilience in the country across a variety of sectors. The drought has caused crop losses between 60 and 95 percent across vast swathes of the country, triggering an 83 percent surge in maize prices. USAID support includes USD20 million in urgent humanitarian assistance through implementing partners, USD9.5 million food security assistance to drive inclusive, long term agricultural-led economic growth, and USD5 million to strengthen agricultural productivity, improve nutrition, and help producers manage future shocks. Additionally, USAID supports resilience building efforts across various sectors and at policy leves in Zambia (including water, sanitation, and hygiene programming, policy support to respond to and recover from shocks and generating jobs and income-generating business, trade, and investment, and public financial management reform priorities and domestic revenue mobilization).

Source: United States Agency for International Development

Cash transfer programs can provide unconditional finance to poor and vulnerable households, particularly for resilience building and/or response to shock events. Households can utilize the cash in, what they deem, the most effective and efficient way to manage an external shock, such as a drought. Some research suggests that these programs have significant climate resilience benefits and that households receiving cash transfers may cope better during shocks, their food security increased, and poorest households saw the biggest gains. These programs are especially critical in countries with a high proportion of the labor force in the agriculture sector[187]. An example of cash transfer and vouchers in Mozambique drought is provided in Box 92.

Box 92 – Cash transfer and vouchers for drought resilience and response in Mozambique

During 2015-16, Mozambique experienced severe droughts, which adversely impacted agricultural yields. In 2019, cyclones exacerbated the challenges for farmers, resulting in almost 3 percent of the population at risk of food insecurity. In response, the Government, World Food Program and UK Government jointly devised a program to supply affected populations with either cash or food vouchers for food supply. The program reached over 24,000 households and a blueprint has been established for larger-scale future responses. The most vulnerable regions and communities were identified, which, in-turn, determined transfer amounts, followed by distribution of cash and vouchers. Bilateral donor financing supported the program.

Key components contributing to the program included: (i) information to identify and target the most vulnerable regions and populations (proxy data may suffice); (ii) a reliable mechanism for distributing funds, either through physical networks (such as local banks or community organizations), or mobile payments systems.

This modality could be relevant to shock resilience and response in multiple countries.

Source: Richmond et al. 2021

5.3.1.2 Structuring debt instruments

In recognition of the unpredictable and devastating nature of climate- and non-climate shock events, MDBs are introducing debt clauses and deferred payments contingent on disasters (see Box 93). Such clauses can defer both principal and interest payment whilst countries re-prioritize support for shock relief and recovery. Such clauses may help countries to focus on minimizing disaster impacts whilst keeping longer-term sustainable development goals in place post-disaster.

Box 93 – Cash transfer and vouchers for drought resilience and response in Mozambique

Around the time of the global COVID-19 pandemic, which adversely affected socioeconomic activity at local, national and global scales, many multilateral development banks (MDBs) introduced clauses in project investments contingent on emergency events. Whilst these were primarily aimed at COVID-19 related shocks, they may extend to other pandemics or disasters (including climate and non-climate related shocks).

At the Islamic Development Bank (IsDB), these project components are referred to as "Contingency Emergency Response Component", which are zero-value standalone components which allow rapid redeployment of resources committed under the project for emergency response in case of disasters or pandemics. The component permits the use of project resources from other components to be used for emergency response activities, supporting the Government's rapid emergency response efforts. Whilst reliant on nationally coordinated emergency personnel, equipment, and other resources, the component diverts finance to ensure an immediately financed response capacity. Such immediate financial support may then be accompanied by more structured MDB emergency responses and recovery programs.

The World Bank has introduced Climate Resilient Debt Clauses (CRDCs) for some countries, which is a clause to defer principal and interest payments, and other loan charges in case of certain natural disasters.

By deferring principal and/or interest payments of the loan for up to 2 years, following the occurrence of a pre-specified natural disaster, can instead free up government resources to finance disaster response and recovery efforts. CRDCs can be triggered by tropical cyclones/hurricanes and earthquakes above pre-determined event criteria. The CRDC is offered to eligible borrowers at no cost to them. There may be opportunity to extend such offerings to dryland countries and for the impacts of drought events.

Source: World Bank Group. IsDB.

5.3.1.3 Loans

The recent COVID-19 pandemic disrupted the global economy, resulting in large-scale recovery efforts and including some green recovery components. The economic stimulation to recover from the COVID-19 pandemic was unprecedented. Many recovery packages focused on health and infrastructure, with green recovery components included in some packages to support longer-term resilience building and sustainable development goals. Box 94 presents two COVID-19 green recovery efforts from a vertical fund and an MDB.

Box 94 – Integrating drylands into green and other recovery efforts

The COVID-19 pandemic severely disrupted the global economy and was most severe on the already vulnerable. However, new financing opened in the COVID-19 recovery period, including a focus on green recovery. Two examples of green recovery, supported by a vertical fund and an MDB are outlined.

The Green Climate Fund helped to establish a post COVID-19 green recovery program to support eight Latin American countries strengthen national and regional food, health, and water security, supported by financial and technological innovations. The program aimed to help overcome institutional, technical, and financial barriers in the agricultural sector, specifically to medium and smallholder farmers, through public institutions in environmental, agriculture, and national finances and economics sector, to encourage the adoption of advanced technologies, which accelerate economic recovery and employment creation, and improve farmers' livelihoods while reducing GHG emissions in the face of the global pandemic.

The World Bank Group established the Green Recovery Initiative (GRI) as a strategic program to assist developing countries in rebuilding better from the COVID-19 pandemic and achieving a green economic recovery. The World Bank Group deployed over USD157 billion from the onset of the pandemic through mid-2021 to support responses to the public health and socio-economic repercussions of the pandemic. Activities supported by the GRI leveraged existing World Bank dialogue with countries to advance reforms and investments required to promote a sustainable recovery. The GRI integrated green recovery via four funding windows: (i) Project Design and Implementation Support; (ii) Economic Advisors Initiative; (iii) Analytical Tools and Methodologies; and (iv) Whole-of-Economy Country Support.

Much of the focus of the COVID-19 green recovery support was focused on climate action. Current and future green recovery could include a greater focus on SDM.

Source: Green Climate Fund website & World Bank Group website

There may be opportunity for SDM to be included more explicitly in current and future green recovery programming.

5.3.2 Public finance crowding in private finance

Public finance can help to crowd-in private finance for relief and restoration, often resulting in blended finance instruments and leveraging relief support.

5.3.2.1 Blended finance instruments

Blended financing models are emerging to support vulnerable communities who are recovering from or frequently exposed to shock events. By mixing concessional forms of financing (e.g. grants, loans) may extend or deepen support for poor countries and communities. For example, blending concessional MDB finance with private philanthropic finance is one such model (Box 95).

Box 95 – Blended finance via the Lives & Livelihood Fund (LLF)

The Lives and Livelihoods Fund (LLF) aims to lift the poorest out of poverty across 33 countries via investments in smallholder farming and agriculture, basic infrastructure, and primary healthcare and infectious disease management. The majority of the 33 countries are in dryland contexts.

The LLF is a USD 2.5 billion fund which combines concessional lending from a multilateral development bank (Islamic Development Bank) with philanthropic grant financing (Abu Dhabi Fund for Development, the Bill and Melinda Gates Foundation, the Islamic Solidarity Fund for Development, the King Salman Humanitarian Aid and Relief Center, and the Qatar Fund for Development). This blended finance model optimizes lending and grant resources to go further.

By collaborating with leading developmental entities and governments, the fund's mission is to break down the barriers that prevent individuals, organizations, and governments in the lowest income countries from obtaining the resources that empower them to lift themselves out of poverty.

A 2nd tranche of the LLF has recently been approved (LLF 2.0), which will continue to support smallholder farmers and agricultural communities and to support the provision of basic infrastructure, all in a climate-resilient context. LLF 2.0 has been referred to as 'the Fund of Tomorrow', an innovative model which can have transformational impacts in drylands.

Source: Lives & Livelihood Fund ; IsDB.

A new facility, called the Community Recovery and Resilience Facility (CRRF), is proposed to align with the framework proposed in this study. It builds strongly from a public finance base but may ultimately crowd-in private sector contributions. The CRRF centers around recovering from shock events and longer-term resilience building (see Box 96).

Box 96 – A facility to support both recovery and resilience building

The 2023/24 El Nino Southern Oscillation (ENSO) episodes affected more than 60 million people in East and Southern Africa, with disproportionate impacts on vulnerable groups such as women, children, slum dwellers, and persons with disabilities.

The Community Recovery and Resilience Facility (CRRF) is being established by the UNDP and development partners to address the multifaceted and recurring crises impacting African communities. The CRRF focuses, primarily, on strengthening recovery from the El Nino Southern Oscillation (ENSO) episodes and building resilience against the recurrent devastating impacts of shocks in Eastern and Southern African regions. The CRRF proposes components such as water smart irrigation infrastructure, climate smart agriculture, multi-hazard early warning systems, enhancing social safety nets, rehabilitation and construction of housing for affected communities, and jobs for vulnerable populations.

The CRRF is a five-year initiative (2024-2029), with an estimated total project cost of almost USD 200 million, including an inception and recovery phase followed by a scale up phase. The CRRF proposes to utilize public financing – both international (including concessional) and domestic – particularly in the initial phases, and to ultimately crowd-in private sector finance.

Whilst the CRRF initially focuses on addressing the immediate needs arising from ENSO events, its goal is to build long-term resilience to future shocks and stresses. This represents a renewed approach to couple recovery and resilience, aligned with the Framework proposed in this study.

Source: UNDP.

Large-scale interventions to transition economies

Strategic large-scale transitions may ultimately help countries or regions move from Phase 3 to Phase 1 development trajectories. **Such large-scale approaches are often initiated using public finance and seek to crowd-in private sector finance as they expand**.

Large-scale initiatives may offer an umbrella framework, with strong political, governance, technical and finance support. Such large-scale initiatives may help overcome scattered, short-term projects and can support development of sustainable and resilient value chains for landscape products and ecosystem services[188]. They may present opportunity to bring diverse stakeholders together and to scale up locally successful efforts. Such aggregation vehicles can achieve economies of scale for finance and impact, can help spread risk, and help to overcome initial barriers. Additionally, large-scale programs such as MGI can provide overarching framework and attract finance at scale.

Several large-scale initiatives are emerging globally in dryland hotspots, and which propose different approaches for regional transition. Large-scale greening initiatives are multi-sectoral in their focus and seek to transition dryland economies and communities away from vulnerability towards greater resilience and prosperity. Other emerging large-scale initiatives focus on life-giving natural resources, such as groundwater, as the basis for development transition. Two recent or ongoing interventions are outlined in Box 97 (in Pakistan) and Box 98 (across the Sahel region in Africa).

Box 97 – Pakistan's Ten Billion Tree Tsunami

In 2014, a regional initiative in northwestern Pakistan (Khyber Pakhtunkhwa) set out to restore local landscapes and plant 1 billion trees. The successful demonstration of that program inspired the Prime Minister at the time to launch a nationwide tree-planting drive in 2019. A program called the Ten Billion Tree Tsunami Programme aimed to address challenges such as climate change, stabilization of slopes (to prevent landslides), biodiversity improvement, and unemployment. The Program aimed at reviving forest and wildlife resources, improving conservation, promoting eco-tourism, and creating jobs.

During COVID-19, the program became a lifeline for almost 85,000 people when the central government diverted idle workers to tree planting daily wages. Significant finance was allocated to forest and habitat improvements. Whilst Government changed, significant numbers of trees were planted. The Program was implemented using domestic public finance and strong engagement of community workers.

As with all interventions, ongoing maintenance and financing support is warranted to support ongoing vegetation growth and ecosystem restoration. However, the progress achieved in such a short period became an inspiration both nationally and internationally.

Source: Pakistan Government website.

Box 98 – Financing Africa's Great Green Wall

Launched in 2007 by African Union member countries, the Great Green Wall initiative (GGW) was originally envisaged to create a 15 km vegetation barrier across the Sahel. However, it has evolved into a large-scale, multi-sectoral landscape project spanning 8,000 km across the continent to restore 100 million hectares of the continent's degraded landscapes, combat desertification, and address the need for tackling the development and climate challenges at local, national and regional scales. It aims to create up to 10 million green jobs.

As of early 2020, 17.8 million hectares (Mha) of land have been restored or rehabilitated under the GGW Initiative. To reach 100 Mha by 2030, the pace of restoration needs to increase from 1.9 Mha/year to 8.2 Mha/year. Land restoration in Africa costs an average of USD440-530/ha, requiring USD36-43 billion by 2030.

Until recently, GGW had largely been driven and funded by the 20 member countries (plus EU and WBG), with total contributions estimated at around USD 1 billion out of an estimated USD 33 billion required. In January 2021, a consortium of donors announced a USD 14 billion commitment to the initiative. Vertical funds, such as the Green Climate Fund (GCF) and Global Environment Facility (GEF) provide readiness support, funding support, . As an example, by mid-2023, GCF support totaled USD 12.3 billion (including USD 3.1 billion of GCF finance, and USD 9.7 billion in co-finance) in the eleven GGW countries. On the readiness side, GCF has supported 35 million.

Some authors contend that scaling up the implementation of restoration techniques may become more streamlined and cost-effective if a focus shifts to proven, locally adapted, relatively simple, low-cost and easily replicable restoration techniques with the best potential for scaling. These may include farmer managed and assisted natural regeneration, area exclosures and simple water harvesting techniques such as improved planting pits and contour stone bunds, complemented by tree planting and other restoration techniques where they are likely to succeed.

Such a large initiative with high ambition and relatively high cost per unit area of restoration requires significant public finance support long-term and large-scale transboundary projects. This project will ultimately seek to crowd-in private financing.

Source: UNCCD 2020; Reij et al. 2021 ; Richmond et al. 2021. Green Climate Fund.

Additionally, two upcoming large-scale interventions, with public financing being promoted to ultimately blend with private finance, are outlined in Box 99 (Horn of Africa region) and Box 100 (Middle East and extending beyond). See overleaf.

Box 99 – Groundwater financing facility for regional drought resilience

In response to recurrent droughts in the Horn of Africa, which adversely impact millions of people, the Africa Groundwater Access Facility (GaFa) was launched in May 2024 to address regional water scarcity. The GaFa is supported by the governments of Kenya, Ethiopia, Djibouti, South Sudan and Uganda, and partners including the World Bank, IFC, UNICEF, UNESCO, FAO, OCHA, UNDP, and IGAD. three United Nations agencies. The GaFa aims to develop deep groundwater resources and bring countries together to collaborate on groundwater mapping and data sharing. It could also look at ways to use new and advanced renewable energy and water treatment technologies and how to secure climate finance to invest in the project.

A >USD2 billion pipeline of investment is planned from 2025, recognizing the central role of water in the lives and livelihoods of the Horn of Africa. Given the preliminary demand and uptake for support in the Horn of Africa, a similarly structured project is being explored in the Sahel region.

Source: African Borderlands Centre, Hiller, 2024

Box 100 – Saudi Green Initiative & Middle East Green Initiative

The Saudi Green Initiative (SGI), launched in 2021, aims to combat climate change, improve quality of life, and protect the environment. It supports Saudi Arabia's goal of net zero emissions by 2060 through a circular carbon economy approach and accelerates the transition to a green economy. SGI focuses on three targets: (i) emissions reduction, (ii) afforestation, and (iii) land and sea protection. Since its launch, 77 initiatives have been activated, with over USD186 billion invested. By uniting government and private sector efforts, SGI drives sustainable growth and supports global goals. SGI utilizes sovereign public financing to stimulate private and other finance.

Further, the Middle East Green Initiative (MGI), also led by Saudi Arabia and building upon SGI, aims to mitigate climate change impacts and collaborate on global climate targets. By enhancing regional cooperation and infrastructure, MGI seeks to reduce emissions, protect the environment, and create economic opportunities. It includes an ambition to grow at least 50 billion trees. In November 2022, the establishment of the MGI Secretariat was announced and USD2.5 billion to support MGI projects and governance. The MGI aims to operate across Middle East and North Africa, Sub-Saharan Africa, and Central Asia. The initial financing will be used to leverage and scale up public and private financing, including for sector-focused investments in dryland areas, such as water source and supply, climate-smart agriculture, vegetation restoration, and other drought resilient and sustainable land management related infrastructure.

Source: SGI and MGI websites.

Such large-scale interventions seek to transition from often-highly degraded states, where communities and livelihoods are vulnerable to shock events, towards more resilient and sustainable ways of living.

5.3.2.2. Relief support

Communities, individuals and private businesses may contribute to relief appeals coordinated by public sector actors, such as Governments or relief and humanitarian agencies. These may be considered a form of remittance, helping to channel funds into institutional support or directly to communities experiencing or recovering from shock events. See Section 5.3.3 on remittances and crowd-funding.

5.3.3 Private finance modalities

To date, private finance has not played a significant role in shock event support. However, there are roles and instruments emerging.

5.3.3.1 Debt instruments

Debt-related finance will not always be appropriate for countries facing or recovering from a shock event. However, options such as debt swaps or thematic bonds may be considered for financial relief and to help facilitate recovery, where debt levels are sustainable.

Debt relief / swaps

A debt swap is a debt relief technique that alters the original value or nature of loan instruments. Thematic debt swaps or conversions are an emerging option for some countries experiencing severe debt distress. Countries may reduce debt either by conversion to local currency and/or repayment at a lower interest rate, via a debt write-off in agreement with creditors, or by changing instrument by refinancing. Refinancing or conversion, such as a debt swap, occurs when an agreement is made with the creditors to redirect debt service payments or principal back into the debtor's balance sheet. In such cases, debt swaps, for example, may allow countries to free up fiscal resources to take action to protect nature[189]. For example, a debt for nature swap could have key performance indicators based on the Land Degradation Neutrality (LDN) benchmark, or other recognized metrics.

In some regions, stakeholders are collaborating to explore special-purpose vehicles for debt swaps in multiple countries to support climate and nature goals. For example, UNECA, the African Union and a group of African finance ministers are designing a special-purpose vehicle for a debt swap to support economies across the continent benefit from carbon sinks and biodiversity. Inclusive climate and nature-linked debt management approaches could enable Governments to increase fiscal space and reduce debt distress; increase pro-poor growth through inclusive climate and nature investments, which will improve debt sustainability; increase existing investor interest; and provide access to new sustainable finance markets[190].

Individual countries are also exploring debt-for-climate/nature swaps. Following the inaugural debt for climate swap by the Seychelles in 2015 (for USD28 million) (see Box 101), several countries are now exploring larger programmatic debt-for-climate swaps [191]. Expressions of interest have been recorded from Namibia, Cabo Verde, and Gabon as potential mechanisms for carbon sinks and biodiversity preservation[192]. Vertical funds, such as the GCF, are working with developing countries to expand adaptation investments that boost vulnerable people's livelihood protection, as part of green stimulus measures, via debt-for-climate swaps[193].

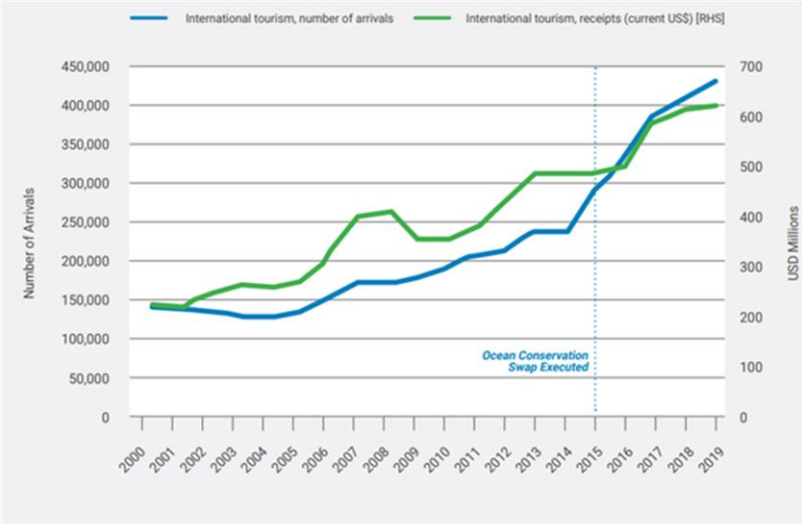
Organizations, such as the Inter-American Development Bank (IDB) are pioneering debt-for-nature swaps, particularly in Central and South America. In 2023, Ecuador completed the world's largest debt-for-nature conversion, with support from IDB and the United States Development Finance Corporation (DFC). The transaction, which supported the

Box 101 – Debt-for-climate-and-nature swap

During the 2008 global financial crisis, Seychelles had one of the highest debt-to-GDP ratios (175%). Post-crisis, the economy rebounded due to strong tourism, but limited fiscal space hindered investment in nature conservation. Recognizing the importance of a healthy ecosystem for tourism, Seychelles proposed a debt swap in 2015 to fund marine protected areas and biodiversity hotspots.

A debt buy-back was arranged with a $15 million loan from The Nature Conservancy and $5 million in grants from various foundations. The Seychelles Conservation and Climate Adaptation Trust Fund was established to manage these funds, ensuring accountability and transparency.

Achievements included lower interest rates, improved balance of payments, $5.7 million for ocean conservation, $11 million redirected to local investments, and the creation of 400,000 km² of marine protected areas. Despite challenges, the initiative significantly impacted conservation funding and laid the groundwork for Seychelles' first blue bond in 2018. Tourism has since increased, benefiting both the economy and the environment.



Sources: Source: World Bank WDI

Figure – Seychelles international tourism following the swap agreement (Source World Bank WDI)

The successful debt-swap transaction, while small, marked a significant example of the opportunity for debt swaps to raise additional liquidity for investment in climate resilience and beyond. It also led to subsequent finance innovation (blue bond). There may be opportunity to mainstream debt operations by linking them to budget support-type operations and simplify the establishment of such transactions.

Source: Adam, J. Patel et al. 2021. UNCCD 2022. World Bank WDI.

creation of the Reserva Marina Hermandad in the Galápagos Islands area, marked the first

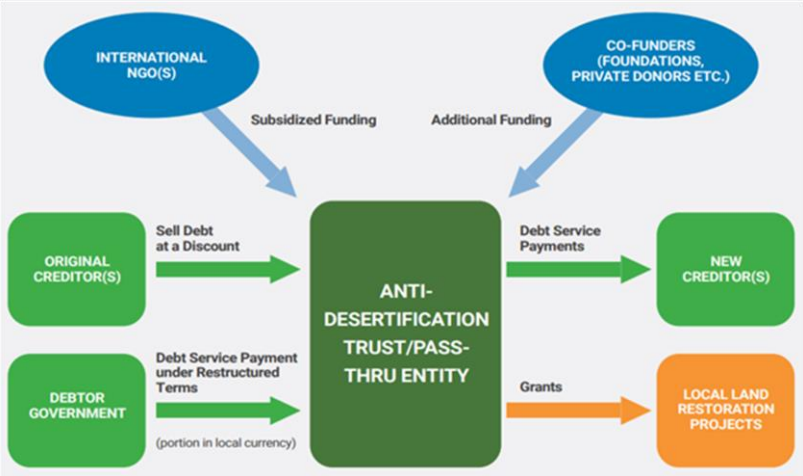
time a multilateral institution combined the provision of guarantees (USD85 million) with political-risk insurance (USD656 million) to improve sustainability[194].

The UNCCD has introduced the concept of debt-for-land restoration swaps as a variation on thematic debt swap arrangements (see Box 102). Such mechanisms may have potential to support SDM at scale in countries where it supports multiple economic, social and environmental benefits.

Box 102 – Debt for land restoration swap mechanism

Depending on a country's debt and land degradation status, a range of debt-based instruments may help to mobilize finance for SDM. Effectively planned and implemented, such mechanisms may be applied in a range of scenarios and contribute to meaningful interventions.

The UNCCD (2022) introduced a debt-for-land-restoration swap mechanism, which may be suitable for sovereign parties seeking a treatment of their existing debt portfolios, with additional benefit of an impactful land restoration project in the country and positive public relations outcomes. The use of proceeds are typically restricted but there are growing possibilities for more flexible arrangements with some general-purpose funding. Discounts may be determined by project funding requirements and terms of the swap; discount is reflective of willingness of creditors to provide debt relief, or the discount captured in the market through a buyback with support of a third party.



Flowchart of a structure for a multi-party debt-for-land restoration swap

Source: Global Mechanism UNCCD 2022.

Thematic bonds for catastrophes

Thematic bonds, ranging from catastrophe bonds, disaster bonds, or resilience bonds, are increasingly being explored for shock mitigation.

Catastrophe bonds are fixed income instruments that pay out to countries in the event of a natural disaster. They are typically used by insurers and reinsurers to transfer risks on

their balance sheets, associated with high-risk policies, such as those covering shock events, to investors[195]. Catastrophe bonds will pay out to an issuer if a pre-determined catastrophic event in a specified geography takes place, for instance if a storm in a given country causes damage above an agreed financial value, or if wind speeds in a certain location pass an agreed threshold[196]. By enabling this risk transfer to happen, catastrophe bonds can increase the likelihood of insurers and reinsurers providing coverage to consumers and businesses that need it, including for emerging climate-related risks.

To date, catastrophe bonds have focused on earthquakes and hurricanes, with some other risks included in "multi-risk" catastrophe bonds. There is a scope (and increasing need) for drought and other forms of catastrophe bonds to be introduced. Risks such as wildfires, floods and droughts are increasingly being explored for catastrophe bonds, potentially boosting insurance coverage for catastrophic events that have previously been largely uninsurable. In California, for example, multiple catastrophe bonds associated with wildfires have been issued since 2018. Some stand-alone flood catastrophe bonds have also been issued in the United States[197]. Development organizations, such as the World Bank Group, are exploring drought catastrophe bonds (Box 103).

Box 103 – Exploring drought catastrophe bonds

The World Bank Group is aiming to broader its offering of catastrophe bonds to include a drought-related catastrophe bond by 2025.

The WBG has a strong record of more than a decade of issuing catastrophe bonds to support emerging countries mitigate the fallout from storms and earthquakes. Close to USD600 million of insurance payouts have been made using these instruments, predominantly focused in Central American, Pacific, and Caribbean and regions. There is a growing and outstanding need to support recurrent catastrophes caused by other shock events, such as drought. For example, in recent years, the Horn of Africa suffered its worst drought in almost half a century and its sixth failed rainfall season in a row – so the demand for financial support is strong.

One challenge for drought-related catastrophe bonds, according to the WBG, is that modelling drought events (a similar challenge exists for wildfire and flood events) is more difficult than earthquakes or storms for a parametric catastrophe bond, which is triggered by physical parameters of an event. Historical and real-time data is required for accurate modelling.

However, drought-related catastrophe bonds provide hope that much-needed relief may be provided to regions increasingly struck by severe drought, wildfire and flood events.

Source: Strohecker, K. & Jones, M., 2024, Reuters News, 2024.

Diaspora bonds are covered in Section 5.3.3.2.

5.3.3.2 Remittances

Remittances are monies sent between parties, usually between countries or between urban and rural settings in the same country. They may be gifts or payments, and, in many cases, the sender is a foreign worker and the recipient is a relative in the recipient's home country. Remittances can serve as important cashflows for many communities and provide a financial lifeline to millions of households globally.

According to the World Bank, remittance flows to developing countries have surpassed the sum of FDI and ODA in recent years, and the gap is increasing[198] (see Figure 13). Remittances to low- and middle-income countries (LMICs) are one of the few sources of private external finance that are expected to continue to grow in the coming decade.

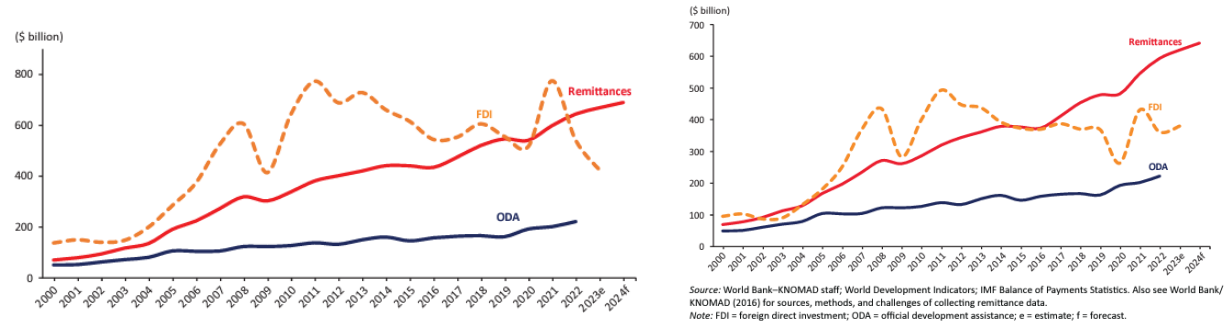


Figure 13 – Remittances versus foreign direct investment and official development assistance to low- and middle-income countries, 2000-2024 (with and without People's Republic of China) (reproduced from Ratha et al. 2023[199]

There may be opportunity to leverage remittances for private capital mobilization, such as diaspora bonds, to support development finance, including via innovative debt instruments. Remittance volumes can be large relative to other sources of foreign exchange. For example, in 2023, remittance flows to Sub-Saharan Africa were expected to be USD54 billion, USD189 billion to South Asia, and USD61 billion in Middle East and North Africa[200]. Given that they also indirectly contribute to public finances, remittances could potentially be structured as debt instruments (see Box 104).

Due to their counter-cyclical nature, remittances may provide rapid and significant support during and after shock events. During and after localized shock events,

Box 104 – Disapora bonds

A 2023, World Bank report on migration and development describes how diaspora finances can be mobilized for development and strengthening a country's debt position. So called, "diaspora bonds" can be structured to directly tap diaspora savings held in foreign destinations. Many countries provide for non-resident deposits to attract diaspora savings. However, unlike diaspora bonds, such savings tend to be short-term and volatile. Future inflows of remittances can be used as collateral to lower the costs of international borrowings by developing countries. Due to their large size relative to other sources of foreign exchange, counter-cyclical nature and indirect contribution to public finances, remittances can also help improve a country's sovereign ratings and its ability to repay debt.

Source: Ratha, D., Chandra, V., Kim, E., Plaza, S. & Shaw, W. 2023. World Bank.

family members working abroad can quickly transfer money to help affected relatives. This, along with international aid, forms a crucial coping mechanism for impacted communities. Studies show remittances increase after natural disasters, especially in countries with many migrants. Households receiving remittances rely more on cash reserves and less on selling assets during disasters. They also tend to have more resilient housing and better access to communication equipment, making them better prepared for natural disasters[201].

However, remittance costs are high and generally increasing. Reducing transaction costs could enhance support for dryland communities during shock events. The World Bank's Remittances Prices Worldwide Database show that, in 2023, the cost to send USD200 cost over 6 percent. The cheapest channel for sending remittances was mobile operators (4.1%), money transfer operators (5.3%) and post offices (7%), whilst banks were highest (12.1%)[202]. Reducing transaction costs could enable greater volumes of remittance finance flows to vulnerable communities during shock events.

5.3.3.3 Relief appeals and crowdfunding

During or after a shock event, campaigns, either by NGOs, philanthropic organizations, and increasingly crowdfunding sites, aim to support impacted communities. Such platforms may help to connect remote citizens to disaster-affected communities and facilitate private finance flows. It is important that where crowdfunding for disaster relief is utilized that it is compatible with, and coordinated with, other more formalized on-the-ground relief efforts (see Box 105).

Box 105 – Crowdfunding and disaster relief

Shock events can adversely impact landscapes and displace communities. Crowdfunding for natural disasters has emerged as a powerful tool for raising money for recovery efforts. The crowdfunding industry has transformed how people give back, making it easier for donors to connect with meaningful causes.

Advantages of crowdfunding for disaster relief may include increasing access to immediate funding, overcoming administrative delays faced by other institutions, and helping to support deployment for response assistance. Crowdfunding also engages communities, within a country or internationally, in relief and recovery efforts. It provides a direct avenue for individuals to support relief efforts, potentially creating a sense of solidarity and empowering people to make tangible differences to those affected by the shock event. Crowdfunding may help to democratize philanthropy by illustrating to power of collective actions to create sizeable impact. However, crowdfunding has significant limitations in such contexts. It may complement other forms of support and should not be considered a structured safety net.

Source: GoFundMe & Hunter, W. 2024

6. Conclusions

In response to the large financing gap for SDM, enabling conditions and financing for drylands need to be strengthened at international and national levels. Enhanced financing support needs to be effective in reaching those on the ground, including the most vulnerable. To fill the annual financing gap of USD278 billion, there is an increasing and urgent role for both public and private finance actors to mobilize and leverage adequate financing support. This will require both scaling of impactful current approaches and the introduction of innovative approaches to leverage technical, technological, digital and other innovations. Supportive macro-level enabling conditions must be balanced with cost-effective and locally appropriate solutions (e.g. conservation and restoration interventions as well as low-cost, locally derived and sustainable solutions) to scale successful initiatives.

There is a broader case to be made for increasing finance mobilization across the 3 Rio Conventions. The proximity of the Conference of Parties of the 3 Rio Conventions in late 2024 has emphasized the need for synergies to be realized on biodiversity, climate change and desertification/SLM. There is an opportunity to leverage learnings and approaches, and to synergize and aggregate financing efforts. The UNCCD may achieve both catchup and leapfrogging actions by leveraging UNFCCC and CBD framings, vehicles, mechanisms, and modalities. There may be an opportunity to better understand UNCCD-aligned finance (nomenclature, tagging, tracking) for DLDD, as has been achieved with climate finance and nature finance.

For financing modalities to be activated and utilized at scale, continued strengthening of economic valuation of the benefits of DLDD sector interventions is needed. Increasingly clear economic cases for investment in sustainable dryland management may provide a more grounded case to crowd-in a wider range of investors and large finance volumes to support sustainable dryland management. Linkages to value creation for nature and climate benefits may support such progress.

Access to the right finance, for the right people, at the right time, is an important step for drylands. **Given the centrality of shock events in drylands, there is merit in integrating shock events into sustainable development framing in drylands**. The proposed Framework in this report is thus structured around 3-interconnected phases and the conclusions for each of those is outlined below.

6.1 Phase 1

Phase 1 represents the ambition for sustainable dryland development. Phase 1 includes a focus on securing and scaling dryland productivity across all sectors and integrates ex-ante preparedness and resilience building measures. Phase 1 promotes bankable projects,

with opportunities to engage a range of private and public financiers. Phase 1 is self-reinforcing subject to resilience building and management of shock events, ultimately by the integration of proactive Phase 2 measures. Ultimately, Phase 1 (may avoid Phase 3.

During Phase 1, there is a need to focus on both scale existing financing mechanisms, which are well-established and well-understood, as well as introducing new approaches. For example, international actors, such as bilateral and multilateral donors currently play an important role in the provision of grant finance and concessional lending to support many dryland countries. Conventional sector interventions, such as agriculture, water, energy, and others can mainstream DLDD and mobilize greater volumes of finance for SDM. Additionally, whilst encouraging examples of innovation are emerging, stronger business model innovations for SDM would help scale finance.

Given the continued evolution of business models appropriate for drylands, public finance plays an important role in improving knowledge, capacity building, technical assistance, and concessional lending. Government leadership, including explicit institutional support and establishment of bespoke dryland financing vehicles, exhibits great potential. Governments may establish bespoke funds, adjust fiscal policies to support sustainable dryland development, and promote integrated approaches, such as value chains built upon key commodities.

Concessional and non-concessional loans can support sustainable productivity and infrastructure. New approaches, such as value chain programs, may better link upstream and downstream infrastructure and commodity components, promote SDM practices at strategic and local levels, and provide greater opportunities for producers. Concessional and non-concessional lending may enable upfront infrastructure and productivity investments, whilst also creating space for sustainable and regenerative SDM practices. Value chain approaches may crowd-in much needed private sector finance and promote sustainable and resilient agrifood and livestock commodities at local, national and even regional scales. Value chain approaches could be extended to indigenous crops and products.

Given finite public financial resources, leveraging private sector engagement via blended financing offers great potential in drylands. Public finance can help to de-risk investments and create more attractive returns on investments for private sector actors to enter. For example, where Environmental and/or Impact funds are established by national governments, this may create important signaling and may crowd-in both international and domestic public and private finance. Public-private partnerships may seek to improve clarity for private sector actors via results-based or compensation-based systems.

Additionally, climate and nature finance modalities, which are more established than DLDD may offer lessons for blended dryland financing.

In alignment with a general shift away from output-based financing models towards outcome- and impact-based financing, results-based and compensation-based models may increase in prominence. In the development sector, there is a trend towards outcomes-based financing. Such increased transparency for results may enhance result-based approaches and help to engage and crowd-in new sources of finance.

Debt instruments, via thematic bonds or debt swaps, hold potential to support sustainable dryland development and crowd-in private sector finance. The global thematic bond market, including green, sustainability and climate bonds, has grown significantly. Whilst some of these bonds have supported drylands, there is greater potential to channel finance specifically for such purposes. In countries where debt sustainability is less conducive for bonds, debt swaps, which have been trialed at small scale could hold potential for drylands.

Increasingly, there are examples of the private sector leading on innovative financing vehicles which can channel finance into drylands. An emerging form of private finance with relevance for drylands is thematic private equity vehicles. Such vehicles, which may be linked to sustainable commodity investments (like value chain approaches) can aim to achieve increased economies of scale and returns on investment, as well as ecological and social outcomes.

Market-based instruments for SDM require ongoing development but may provide an option to crowd-in private finance. In the climate and nature space, carbon and biodiversity markets are being explored, with varying degrees of success. SDM may benefit directly from progress in those markets and may also develop separate markets.

Households may often be overlooked as critical private sector stakeholders but are arguably the most important actors for action on the ground and are, at once, both sources and recipients of finance. Dryland communities innovate and have strong resilience to their local conditions. Increasingly, low-cost and effective drought resilience and sustainable land management practices are emerging from communities. More nuanced financial services can be provided to dryland communities, reflecting their asset bases and ambitions, by both traditional financial institutions and social enterprises. Digital innovations may improve access to and transparency of financial resources.

6.2 Phase 2

Phase 2 recognizes that climate and non-climate shock events are periodically inevitable and that the potentially adverse impacts of such events may be proactively managed and reduced. Uncertainty and volatility are common in drylands. Proactive actions in Phase 2 mitigate potential costs of shocks and avoid highly disruptive impacts, which in turn, can improve the efficiency of recovery, rehabilitation, and reconstruction efforts. The explicit focus of the Framework for finance mobilization for Phase 2 may help to promote ex-ante and disaster preparedness measures. Ultimately, Phase 2 measures should be integrated as a subset into Phase 1 to reduce the probability of periodically descending into Phase 3.

Phase 2 is highly dependent on knowledge and information, hence there is a critical role for public finance to support shock preparedness and forecasting. Increased data collection, data sharing and modeling can help to predict shock events with improved accuracy (from droughts and storms to pest invasions and even some geophysical events). Such information enhances early warning systems, reduces information asymmetry, and enables more tailored financial service offerings. National and international initiatives, often supported by public financing are emerging – for example, the United Nations Systematic Observation Financing Facility (SOFF) supports climate and weather-related information.

Design of public finance instruments with built-in mechanisms contingent on shock events can help to divert critical financing quickly during crises. By integrating contingent financing and funds into the design of concessional loans and other instruments can quickly divert financing to address shocks when they occur. Additionally, sovereign risk pooling, via national insurance programs do provide resilience building opportunities.

There is scope for Government-funded public works social protection programs to extend to activities which build resilience in drylands. Public works safety net programs are being oriented towards DLDD and utilizing blended finance approaches to help stakeholders build resilience to shock events.

Where public authorities take proactive resilience building measures for shock events, conditions may be created for private sector support and benefit. Some examples are emerging of public finance support for resilience building initiatives extending beyond national or subnational boundaries and where private finance is being crowded in.

Insurance is both a traditional and an evolving private financing modality emerging to support resilience building for communities against shock events in drylands. Parametric or index-based insurance is emerging as a modality suitable for supporting ex-ante

resilience building to shock events. Other forms of insurance, such as Takaful, or Islamic insurance may help to reach more populations that remain uninsured to date.

The scope of thematic debt instruments extends to include resilience and catastrophe bonds. Such bonds may expand protections for communities vulnerable to catastrophic events and leverage new finance for resilience building that offers measurable risk reductions.

6.3 Phase 3

Phase 3 represents a during- and post-shock period focused on coping, relief, recovery and rebuilding back better. Due to shock events and associated adverse impacts on people, economy and environment, Phase 3 will likely involve significant costs, which are often borne by public finance and private finance (at the household and community level). Ultimately, with time, Phase 3 integrates back into Phase 1 via transition to resilient sustainable development.

Public finance, in the form of grants and humanitarian aid relief and recovery, currently plays a critical role in transitioning from shock events. The significant costs – humanitarian, socioeconomic, and financial – during shock events require significant public finance contributions, from both within and outside the shock zone. This may initially come in the form of humanitarian aid and relief, followed by recovery and rebuilding.

Increasingly, public finance debt instruments, such as concessional lending from multilateral donors, are embedding structured debt clauses and deferred payments contingent on disasters. Such clauses can defer payments whilst countries re-prioritize support for shock relief and recovery. However, there is a need to extend these provisions from hurricanes and earthquakes to shock events such as drought, extreme heat, and floods.

As evidenced in the recovery period following the global COVID-19 pandemic, there is opportunity for public finance to support green and resilient recovery. Whilst future recovery packages may justifiably focus on immediate health and infrastructure requirements, these can be integrated with green components to support longer-term resilience building and sustainable development goals, including SDM.

Blended financing instruments can support broader and/or deeper recovery, particularly for the most vulnerable communities. For example, blending concessional lending with philanthropic grant financing, such as the Lives and Livelihoods Fund, can support poor

communities at a scale and reach that may not be possible under other those or other financing modalities alone.

Landscape scale interventions aim to transition vast degraded areas, which often contain highly vulnerable populations, to new states of sustainable development. Such initiatives tend to blend public (and sometimes private) grant and debt finance. Landscape scale interventions, such as the Great Green Wall, the Middle East Green Initiative, and others tend to utilize blended public grant and debt finance to support upfront infrastructure and asst costs and to reach scale. Increasingly, they are seeking to integrate economic transformation and livelihood development components to encourage private sector support, as they scale.

In some instances, debt instruments, such as debt swaps or thematic (e.g. catastrophe) bonds, may help support a country transition out of shock event/s. In cases where countries find themselves in significant debt, which may be further exacerbated by a shock event, a thematic debt swap could be a mechanism for consideration, where available. Debt-for-nature swaps could apply to drylands. Similarly, thematic bonds, such as catastrophe bonds, disaster bonds, or resilience bonds, are increasingly being explored for shock mitigation and recovery.

Despite their significant volumes, remittance flows are often not captured as part of the formal economy but can play a significant role in disaster management and recovery. Due to their counter-cyclical nature, remittances may provide rapid and significant support during and after shock events. There is a strong need to reduce the costs of remittances (perhaps via the establishment of a publicly supported mechanism) and an opportunity to explore diaspora bonds for drylands. Potential platforms to support remittances and crowdfunding schemes could be established to support shock event relief and recovery.

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