Ethiopian National Drylands Restoration Strategy

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MINISTRY OF AGRICULTURE

Pastoral & Environmental Network in the Horn of Africa

PENHA
The Pastoral and Environmental Network in the Horn of Africa (PENHA), founded in 1989, is an African inspired and led regional NGO, registered in the UK and headquartered in London. PENHA operates across the IGAD region, with country offices in Ethiopia and Somaliland. PENHA combines project implementation with research and policy analysis, focusing on pastoralism, rangelands and dry forests, and addressing broader development issues, with an emphasis on participation and inclusion.

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Acronyms

AAU	Addis Ababa University
AE	Area Exclosure
ANR	Assisted Natural Regeneration
BoARD	Bureau of Agriculture and Natural Resources
BoLANRD	Bureau of Livestock, Agriculture and Natural Resources Development (Afar Region)
CBO	Community Based Organisation
CIFOR	Center for International Forestry Research
CRGE	Climate-Resilient Green Economy Strategy
EAPDA	The Ethiopian Agro Pastoralist Development Association
EEFRI	Ethiopian Environment and Forestry Research Institute
EFCCC	Environment, Forest, and Climate Change Commission [now EFD]
EFD	Ethiopian Forestry Development
EIAR	Ethiopian Institute of Agricultural Research
FLR	Forest Landscape Restoration
FMNR	Farmer Managed Natural Regeneration
FSTU	Forest Sector Transformation Unit
ICRAF	World Agroforestry (International Center for Research in Agroforestry)
IPM	Integrated Pest Management
MoA	Ministry of Agriculture
MoPD	Ministry of Planning and Development
NGO	Non-Governmental Organisation
NRM	Natural Resource Management
OLFP	Oromia Forested Landscapes Program
PACIDA	Pastoralist Community Initiative Development Assistance
PENHA	Pastoral and Environmental Network in the Horn of Africa
PES	Payments for Ecosystem Services
PESTELE	Political, Economic, Social, Technological, Environmental, and Legal (analysis)
PFM	Participatory Forest Management
REDD+	Reducing Emissions from Deforestation and Forest Degradation
SWC	Soil and Water Conservation
TARI	Tigray Agricultural Research Institute
TBI	Tropenbos International
USAID	U.S. Agency for International Development
WLRC	Water and Land Resource Center

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Message from H.E. Prof. Eyasu Elias

Ethiopia's drylands cover more than two-thirds of the country's land mass. About one third of the country's population lives in these areas, and this share is growing as people migrate out of highly degraded highland areas and settle in the drylands.

Both the highlands and the lowlands are affected by high rates of degradation of natural resources. We must recognize that the terms "drylands" and "lowlands" are not synonymous. With climate change, there are growing areas of "drylands in the highlands". The lowland drylands are also being affected by degradation, with the loss of tree cover and deteriorating conditions of the rangelands. But, the drylands are frontiers of development, presenting tremendous opportunities. If well managed, the drylands have great potential to contribute even more to food security and economic development of the country.

Livestock production remains central to livelihoods and economic development in the lowlands. The lowland drylands continue to contribute to meeting the nation's increasing demand for meat and to earning hard currency from exporting livestock and meat. The drylands also have under exploited and diverse agro-ecological resources, including economic tree species (gums and resins for example) and vast underground water resources, that could support the integration of crop production with livestock production. The country's major rivers flow through the dry lowlands, untapped. In Afar Region and also in Southern Ethiopia, more must be done to harness destructive flood waters for agriculture.

Despite all this potential, there are serious challenges. The drylands face inter-linked environmental and economic challenges. These include:

- Aridity and increasing water scarcity limiting agricultural production;
- Prolonged and more frequent drought affecting livestock in particular;
- Inadequate public services delivery;
- Underdeveloped social and physical infrastructure;
- Chronic food insecurity making millions of people food aid dependent; and
- Rapid population growth and high rate of youth unemployment that increase pressure on land and natural resources.

We must end the dependence of millions of Ethiopians on food aid, and the vulnerability of people in the drylands to drought, floods and other risks. And we have to reduce degradation of natural resources as it aggravates vulnerability of the socio-ecological systems to the impacts of climate variability and change.

Research must support innovation, linked to programs and enterprises. The universities and research institutions must do more to develop innovations and technologies that can reduce dependence on natural resources and increase crop and livestock productivity, water use efficiency, and sustainable environmental management in the drylands, while also strengthening livelihoods and resilience of communities.

Efforts across sectors must be part of a coherent, integrated strategy. It is vital to establish a framework for coordinated efforts at all levels, involving all stakeholders. And these efforts must be guided by a Strategy. The Ministry of Agriculture (MoA) supported this initiative that PENHA has undertaken, with the then EFCCC, now Ethiopian Forestry Development, to provide a platform for Ethiopian experts to develop a National Drylands Restoration Strategy. While there are a number of important initiatives on-going, there has been no comprehensive, coherent strategy for drylands restoration that would help integrate efforts to promote drylands development. This initiative contributes towards filling that gap.

This initiative is also timely. The Ministry of Agriculture is undertaking a review of natural resources management in Ethiopia in general and in the drylands in particular as these regions and communities living in these areas are likely to be affected most by the impacts of climate variability and change. The importance of the drylands, from an economic development and from building green economy perspective is becoming clearer. The REDD+ Program now emphasizes the important role of the drylands, which account for around 70% of the country's carbon sequestration potential. There is also a growing recognition that conservation and use of trees, forests and rangelands should also contribute to the livelihoods of communities in the drylands and to national economic development.

The government's 10 Year Development Plan introduces several "departures" and new emphases. I am happy to see that this Strategy addresses a number of these directly, including participation and coordination of sectors in the planning process, and focus on sectoral linkages and multi-sectoral development. The Strategy is also in line with the 10-Year Development Plan's emphasis on resilience building, innovation and entrepreneurship. In particular, the Strategy emphasizes the potential of the drylands as "frontiers of development", with the opening up of new opportunities for tree-based livelihoods and enterprises, for improved crop and livestock production based on efficient use of water resources and soil, while maintaining and building on the comparative advantage that the lowlands have in livestock production.

As it directly contributes to our ministry's on-going work, the Ministry endorsed this strategy, and decided to publish it jointly with PENHA, TBI, CIFOR and ICRAF. The MoA will take steps to guide and advise the regions in developing their own tailored regional strategies based on the national strategy to fit to their own contexts in the respective regions. Regions are encouraged to start this process as soon as possible. And PENHA will be appreciated if they could continue their technical and facilitation support.

Finally, I would like to acknowledge PENHA, its partner institutions CIFOR and ICRAF, TBI, and all experts who have directly and indirectly contributed to the development of this strategy.

H.E. Prof. Eyasu Elias
State Minister, Ministry of Agriculture
Federal Democratic Republic of Ethiopia

Foreword by H.E. Ato Kebede Yimam

The importance of Ethiopia's dryland areas in terms of socioeconomic and environmental values, and their contribution to the national economy is getting wider recognition. As they cover the largest forested area, they also play a very important role in carbon sequestration and biodiversity conservation. But the drylands are facing severe challenges, not just from the impacts of climate variability and change but also from rapid land use changes that are happening as a result of agricultural expansion and in some areas mining activities. Invasive species, excessive wood extraction, overgrazing, wildfires, and floods continue to have negative impacts on Ethiopia's drylands. These challenges are linked to the lack of a national land use policy and plan to govern land use changes, inadequate employment opportunities for the rapidly growing population, and the low level of productivity in agriculture that forces smallholders to expand farming into marginal lands and forests. All these indicate the urgent need to restore the drylands.

We must restore the drylands through an integrated approach, combining forests, trees, crops, water, soil, livestock, and wildlife with the objective of restoring and building the natural capital, while also improving livelihoods of communities and enhancing the contribution of these areas to the national and regional economy. To this end, we have to bridge intra-sectoral and cross-sectoral gaps and work in collaboration to achieve our national targets and goals, which are embedded in Ethiopia's 10-year Development Plan and the national strategy to build Climate Resilient Green Economy. This involves promoting economic development, while conserving biodiversity, and crucial native forests and tree species, and maintaining the environmental resource base. We can strengthen crop production with improved soil and water management practices and the use of appropriate species and varieties. Likewise, livestock productivity, with indigenous livestock breeds, can be enhanced through improved feeding and watering systems and by improving disease control and livestock marketing practices. Pastoral and agropastoral livestock production will continue to form the basis for livelihoods for most people in the drylands, while also providing milk, meat, hides and skin for domestic and export markets.

The scope and thematic areas of this strategy were proposed by participants in a national consultative workshop organized during the strategy development process. The strategy integrated comments and suggestions provided by participants of a national validation workshop held in Addis Ababa. It aims to integrate dryland restoration and environmental management – into broader drylands development – and focuses on four thematic areas, namely integrated natural resources management, land governance, livelihoods and markets, and policy alignment and coordination.

Various actors have made tremendous efforts over a number of years to promote the development of the drylands and to empower dryland communities. The Productive Safety Net Programme (PSNP) of the Ministry of Agriculture that mobilized and allocated significant resources is one of many key dryland programs. The Ethiopian Forestry Development has designed and implemented several projects to promote the sustainable

management of dry forests. NGOs have also been implementing various projects that aimed at conserving the natural resource base and improving the livelihoods of communities living in these areas. But interventions remain fragmented, and initiatives are yet to be well coordinated. Most suffer from weak technical and institutional capacity. Information across agencies and departments is hardly shared among actors. And we have lacked a comprehensive and inclusive strategy to inform, guide and monitor initiatives.

The initial discussions of EFD with PENHA to develop the strategy began in early 2021. The need to improve intra- and inter-sectoral coordination was emphasized. We talked about the floods in Afar Region, and the potential to harness these for agriculture, and the need to work towards value addition marketing of gums and resins from Tigray, Amhara, Benishangul-Gumuz, Oromia and Somali Regions. We agreed that PENHA could play a valuable role in supporting the government, particularly in improving the management of forests in the drylands and in developing a strategy for the restoration of Ethiopia's drylands at large. We also agreed on the need to take the concept of restoration of drylands beyond managing trees, forests and woodlands, and needs to include building livelihoods and the resilience of ecological systems. PENHA committed itself to supporting efforts of EFD in the development of a National Drylands Restoration Strategy, with the participation of relevant research institutions, GOs and NGOs, by also making use of PENHA's experience in the pastoral and agro-pastoral areas across the Horn of Africa. It committed itself to document the current status of drylands in Ethiopia and good practice in drylands restoration, and to analyze the challenges facing the drylands so as to provide input to policy development.

Accordingly, PENHA undertook wider consultations and initiated collaboration with key agencies, including national research and academic institutions as well as international research organizations, notably CIFOR and ICRAF. These consultations led to the production of two useful outputs:

- A volume for the European Tropical Forests Research Network on "Restoring African Drylands", with Tropenbos International (TBI), featuring contributions from Ethiopian experts, and
- The book on dryland restoration in Ethiopia ("Dryland restoration and dry forest management in Ethiopia: sharing knowledge to meet local needs and national commitments"), based on a national consultative workshop, with researchers, government and NGOs. The book compiled papers presented during the workshop and issues raised and discussed.

Workshop participants also produced a Joint Declaration, on agreed principles and approaches to dryland restoration. A series of workshops were organised over the past year by PENHA and its partners that brought together participants from six regions who were instrumental in producing a draft National Drylands Restoration Strategy. The draft strategy was presented and discussed at a national validation workshop that brought together key stakeholders and policy makers, including Parliamentarians. This Strategy

incorporated comments and suggestions provided by participants of the validation workshop. As the responsibilities of the Forestry Sector of the former EFCCC have been given over to the Ministry of Agriculture, and as the strategy focuses also on promoting integrated natural resources management in the drylands, it was found appropriate for MoA to take ownership of this Strategy, to adopt the same, and to see to its implementation by also coordinating the process of cascading the strategy to the regions, with the involvement of other sectoral ministries, institutions and agencies. It is my hope that other sectoral ministries will also take on their respective suggested roles and responsibilities and ensure that the Strategy is implemented in an integrated way.

On behalf of myself and Ethiopian Forestry Development (EFD), I would like to acknowledge PENHA and its partner TBI (Tropenbos International) for taking the lead and supporting this initiative, with funding from the Dutch Ministry of Foreign Affairs. We are also grateful to CIFOR and ICRAF for their significant contributions during the write up of the strategy. I also extend my thanks to the thematic task team coordinators and task team members for their active participation and contributions during the entire process of developing the strategy.

H.E. Ato Kebede Yimam
Director General, Ethiopian Forestry Development
Ministry of Agriculture

1. Introduction

This is a Strategy for the Restoration of Ethiopia's Drylands and presents a summary version of a larger source document of the strategy with a clear vision, mission, guiding principles, scope, rationale and the strategic issues, objectives, and actions under four key thematic areas. It also covers implementation arrangements, financing mechanisms, risks and assumptions, monitoring, evaluation, accountability, and learnings (MEAL) as well as knowledge management.

This Strategy was developed during a year-long process, overseen by the Ministry of Agriculture and Ethiopian Forestry Development and involving multiple actors at national and regional levels. It presents a set of agreed principles and policy directions, and it outlines some key actions, to be spelled out in more detailed action plans. Importantly, the Strategy also lays out a framework for policy coordination and harmonization, enabling the development of coherent actions at national, regional and local levels.

Vision and Mission

1.1. Vision

Properly conserved, adequately, and sustainably used, economically prosperous, ecologically stable, and climate resilient dryland socio-ecological systems.

1.2. Mission

Establish enabling conditions and undertake appropriate measures to restore, conserve, develop and sustainably use dryland ecosystems and enhance their economic, social, and environmental benefits for present and future generations of Ethiopians.

2. Guiding Principles

The design and implementation of the national restoration strategy for the drylands shall be guided by the following principles:

- Dryland restoration adopts a working landscapes approach that promotes enterprise development, job creation and the prosperity of communities and Regions managing those landscapes
- Restoration initiatives will be transformational and aim to simultaneously achieve conservation and development outcomes, with equitable benefit sharing arrangements
- Restoration programs shall ensure gender equity as well as promote the inclusion of marginalized segments of the community in the economy, decision-making, research and extension
- Planning, implementation, and evaluation of interventions shall be inclusive and participatory, adequately involving communities, civil society and the private sector
- Good governance (the rule of law, transparency and accountability of institutions, professional ethics among experts, non-discrimination, and meaningful participation of citizens, etc.) shall be an integral part of the restoration, conservation and the development of the drylands as well as the M&E schemes for related initiatives.
- Strengthened land and forest governance with emphasis on secure use and property rights provide the incentives for adopting sustainable resource management and for engaging in productivity-enhancing investment by communities and the private sector
- Policies should support customary rights of communities over natural resources in the drylands that are equitable, inclusive and in line with relevant national and regional laws, so that they become part of or the basis for restoration initiatives
- Policies and programs should reward sound management through payments for ecosystem services and discourage environmentally destructive land use practices through incentives and penalties as provided in the legal framework
- The role of the State in dryland restoration will focus on establishing a business-friendly framework and on playing strong regulatory and facilitatory roles to promote coordination among actors
- The actions of the State and other actors in restoration shall be informed by research, science and technology and by the experiences of local communities and by their accumulated indigenous technical knowledge
- To the extent possible the following cross cutting issues will be mainstreamed in the strategic objectives and actions of the strategy
    - o Reducing vulnerability to the impacts of climate variability and change
    - o Promoting job creation, enterprise development, economic growth and prosperity through market orientation and private sector engagement
    - o Promoting social inclusion, youth engagement and gender equity
    - o Enhancing food and nutritional security, and
    - o Building and maintaining the capacity of institutions and capability of experts to plan and implement restoration interventions that reduce trade-offs and increase synergy between conservation and development outcomes at landscape levels.

3. Scope

In this strategy the working definitions adopted for the key terms' "drylands" and "restoration" indicate the scope of this strategy.

Drylands are found in most of the world's biomes and climatic zones and constitute 41 percent of the global land area[1]. Drylands are characterized by a scarcity of water due to low precipitation and heat waves that constrain crop or livestock production. UNEP defines drylands according to an aridity index (AI), which is the ratio between average annual precipitation and potential evapotranspiration. Drylands are areas having an AI of less than 0.65. Dryland soils are also known to be of low fertility (due to the low content of organic matter in the topsoil) and hence are susceptible to wind and water erosion due to low vegetation cover in most of the dryland areas. In Ethiopia, drylands are the areas where most of the deforestation and degradation of natural resources is happening, hence urgently requiring appropriate restoration measures.

Ethiopian drylands represent fragile ecosystems despite having huge potential to contribute to the sustainable development of the nation, if managed and used wisely. Given their coverage, positive changes in these areas will have not only national but also global significance. Efforts to conserve, manage and sustainably develop these ecosystems need to be informed by a comprehensive strategy that has been developed with the involvement of key stakeholders. Such a strategy has been lacking in Ethiopia, even though strong sectoral policies and strategies have been developed. These strategies have failed to be comprehensive and complementary, and failed to consider the peculiarities of the socio-ecological systems of drylands. Most sectoral policies and strategies are designed with a focus on the highland and midland agro-ecologies and socioeconomic settings. The development of this strategy aims to fill this important gap.

In this strategy, the term "restoration" is understood as combining efforts to reverse degradation with the promotion of sustainable environmental management and development. The following definition is adopted as a working definition in formulating this strategy.

> *"The conservation of existing natural resources through sustainable management and use, and the improvement of degraded ones on a large scale, in ways that rebuild ecological integrity and enhance people's lives."*

In terms of scope, the strategy is designed:

- to make it inclusive in its planning, implementation, and evaluation and as comprehensive and cross-sectoral as possible
- to enable stakeholders and actors to see their roles negotiated and properly articulated, and
- to allow the active participation of key actors, notably communities in decision making.

1. For more information on drylands, please visit the following sites:
https://knowledge.unccd.int/sites/default/files/2018-06/GLO%20English_Ch12.pdf
https://www.fao.org/dryland-forestry/background/what-are-drylands/en/

This National Drylands Restoration Strategy is built on four pillars organised 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, combined into a consolidated strategy to guide development and conservation efforts in the drylands of Ethiopia. Therefore, the scope of the strategy goes beyond one sector – agriculture (land, crop, livestock, forest management) and covers other sectors, notably water and mines. In addition, through the promotion of value addition and marketing of products, it aims to diversify livelihood options and non-farm income generating activities for the rapidly growing population in the drylands.

With its special emphasis on the agricultural sector that is the main source of livelihood for most people living in the dryland areas, the strategy proposes further integration of trees, crops and fodder production with livestock keeping. The restoration strategy is generally based on a modern pastoralism and agropastoralism as well as mixed farming systems in the dry mid and highland areas that will be supported to adopt climate-smart agriculture and to be increasingly connected with markets and urban centres. The development of urban centres in the drylands is seen as complementing these, with enhanced service provision, while also promoting broader economic diversification. There is great scope to increase productivity and production, with more efficient and effective water management, intensified and climate-smart crop production and the development of inclusive value chains, including crop, tree-based and forest products value chains, serving domestic and international markets. Irrigated agriculture can expand, without compromising the vital biodiversity and economic potential of dryland forests and woodlands, rich in forest products such as gums and resins. Water resources can be utilized more efficiently, in ways that support dryland farming as well as livestock keeping, the mainstay of dryland livelihoods and a major contributor to the national economy. Climate-smart agriculture, alongside a modern and mobile pastoralism and transhumance can enhance food security, with expanded production based on increased efficiency and productivity, rather than the expansion of low-productivity agriculture onto marginal lands.

Moreover, the strategy aims to integrate the management of dry forests and woodlands, on the basis of strengthened community rights and engagement, with livelihoods diversification and prosperity-enhancing economic expansion. It recognizes that there are both trade-offs and potential synergies between sectors and different kinds of economic activity. The tremendous potential of the drylands for mining and geothermal energy, and for commercial farming, must be tapped in ways that minimize the negative impacts on traditional livelihoods and environmental outcomes, while seeking to develop synergies and complementarities and to enhance overall economic and social wellbeing.

Dryland restoration initiatives cannot succeed without the coordination and alignment of policies and strategies across sectors. If the great potential of Ethiopia's drylands is to be realized, policies and strategies that address agriculture, livestock, water, environmental management and tree planting, mining, and urban development, *inter alia,* must complement one another, rather than work against each other. While Ethiopia

has developed strong policies in the various sectors, the task of policy coordination and alignment is critical to success in implementation. And we must put in place structures and incentives that foster collaboration across sectors and institutions, and between all stakeholders, in pursuit of national goals. This makes the tasks of policy coordination and harmonization central to the strategy. It also requires effective and coordinated implementation of policies across sectors – *inter alia*, providing secure tenure for smallholders and delivering participatory extension services.

The strategy provides a basis for wide stakeholder collaboration in implementing a coherent set of actions, which will involve the elaboration of regional strategies and context-specific action plans. The strategy establishes a structure for multi-stakeholder collaboration in this, coordinated by a national steering committee. 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.

4. Rationale

In Ethiopia, 75% of the landmass is categorized as dryland (Conijn et al, 2019). In dryland areas water is the most limiting factor for the production of crops and forage (Figure 1). Drylands include the dry lowland areas (pastoral and agropastoral areas) as well as the dry mid- and high-land areas, where traditionally mixed farming is practiced. The drylands host the largest area under forest and woodland in the country, as well as other protected areas, notably national parks. Semi-arid conditions, with low and erratic rainfall, make mobile livestock keeping the best and most efficient way of exploiting the pastoral drylands. And livestock contribute significantly to livelihoods in the dry highlands.

Drylands are *unique* and are inhabited by a wide variety of animals and plants, providing many foods, fiber and medicinal plant species. They are the centers of origin for, and a source of diversity in, many cultivated crops, including sorghum, finger millet, field peas, chickpea, cowpea, perennial cotton, safflower, castor bean, and sesame. (Giorgis, 2014). In addition, the drylands are known to contain minerals, significant water resources, forests and woodlands, and wildlife resources, as well as cultural and anthropological sites that could attract tourism.

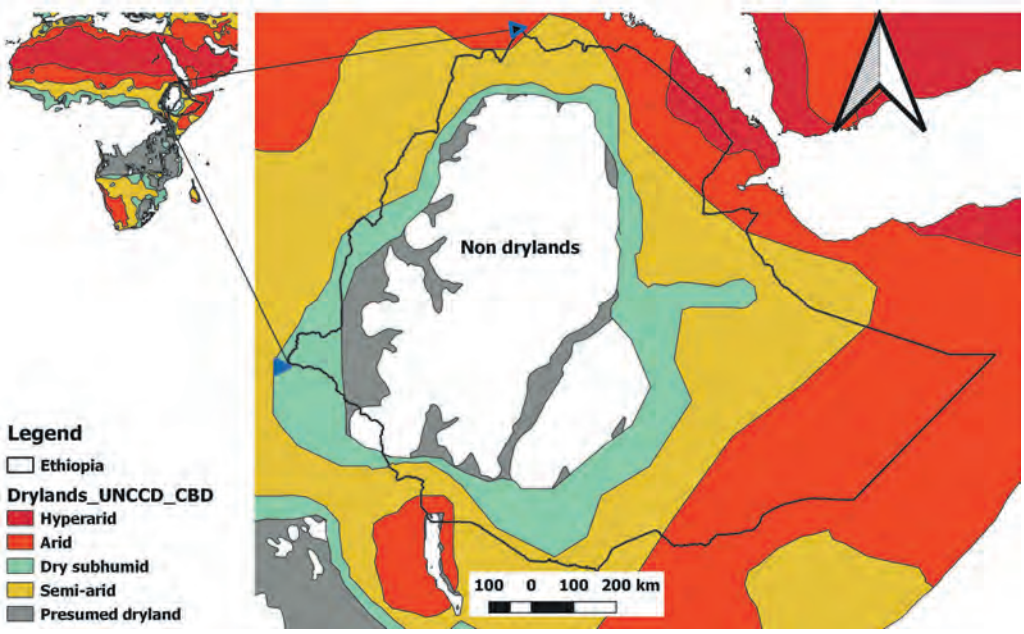


Figure 1. Delineation of dryland areas in Ethiopia (UNEP-WCMC, 2007).

Water resources and the potential for irrigated agriculture: The drylands are rich in largely untapped or poorly managed surface (Figure 2 left) and underground water resources (Figure 2 right), with significant potential for the expansion of irrigated agriculture.

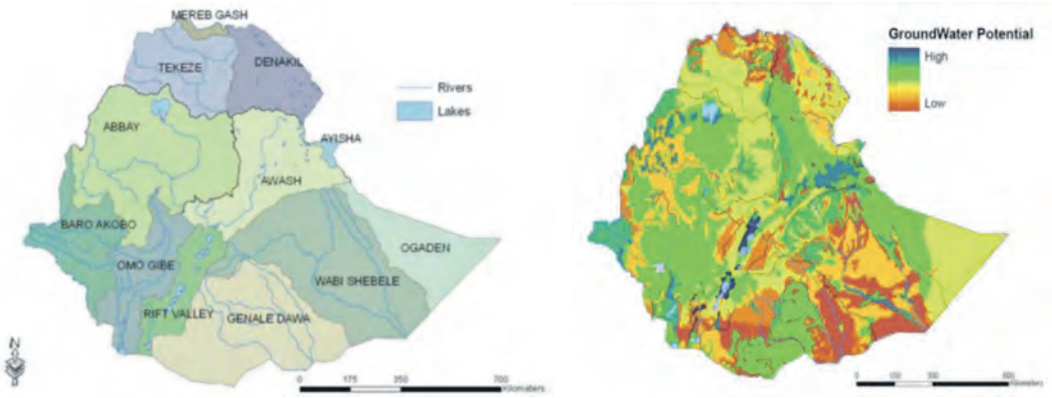


Figure 2. Map of River Basins of Ethiopia (Awlachew et al, 2007, left) and ground water potential of Ethiopia (Awlachew 2010, right)

Dry lowland areas are rich in underground water resources, including those in the Afar, Somali and Oromia Regions where currently (in early 2022) drought is creating great human suffering and economic (livestock) losses. Their potentials for irrigation are high, enabling expanded commercial and smallholder farming. Though rich in rivers and underground water potentials, Ethiopia's drylands are vulnerable to desertification and salinity, and agricultural expansion in the drylands must be very carefully managed, especially with the use of water for irrigation. Great care must be taken to avoid increasing salinity in irrigated fields. Salinization, rendering productive areas barren, can have disastrous impacts over time that are difficult to reverse.

Mineral resources: The drylands are also rich in mineral resources. Southern Ethiopia, in particular Borana area, western Ethiopia, especially Benishangul Gumuz Region, as well as Norther Ethiopia, particularly Tigray Region, are known to hold most of the metallic mineral deposits of Ethiopia, notably precious metals, iron and ferroalloy metals and base metals (Tadesse et al, 2003[2]).

Livestock production and regional livestock trade: Notwithstanding poor arrangements for managing the regular and predictable impacts of drought in terms of livestock losses, the drylands are tremendously productive, supplying meat and milk to the nation and generating very significant exports of live animals. As domestic markets for livestock and

2. For more information, please refer to Solomon Tadesse, Jean-Pierre Milesi and Yves Deschamps, 2003. Geology and mineral potential map of Ethiopia: a note on geology and mineral map of Ethiopia. *Journal of African Earth Sciences 36 (2003)*: 273-313.

Figure 3. Livestock flows in Eastern Africa (source: Lind et al, 2016, p 14.)

livestock products have not developed well, cross border trade is significant in the Eastern African Region (Figure 3).

Cross-border trade is vitally important in the livestock-based pastoral dryland economies. This trade needs to be well managed, with a view to enhancing the benefits to communities and to the nation. It is also important to take steps to avert as well as to prepare for and mitigate the impacts of livestock import bans by importing (Gulf) countries.

Forests, parks, and protected areas: As Figures 4 and 5 show, most of Ethiopia's forest and national parks are found in the dry lowland areas. The forest cover shown in Figure 4 is based on the currently used official definition of forest as proposed by the then MEFCC, now the Ethiopian Forestry Development (EFD). Forest is defined as land occupied with trees (natural or planted and including bamboo) attaining a height of not less than 2 meters at maturity and having a canopy cover of > 20%, covering an area of not less than 0.5 ha and with a minimum width of 20 meters (MEFCC, 2018, p 22).

As Figure 4 shows, most of Ethiopia's forest cover is found in the dry lands. The dry forests cover 12.3 million ha and emit 9.2 million tCO2e, about 55% emissions of the overall forest sector (MEFCC, 2017). Deforestation and forest degradation of dry forests, in particular, has become severe during recent years. Dry forests in Ethiopia face high rates

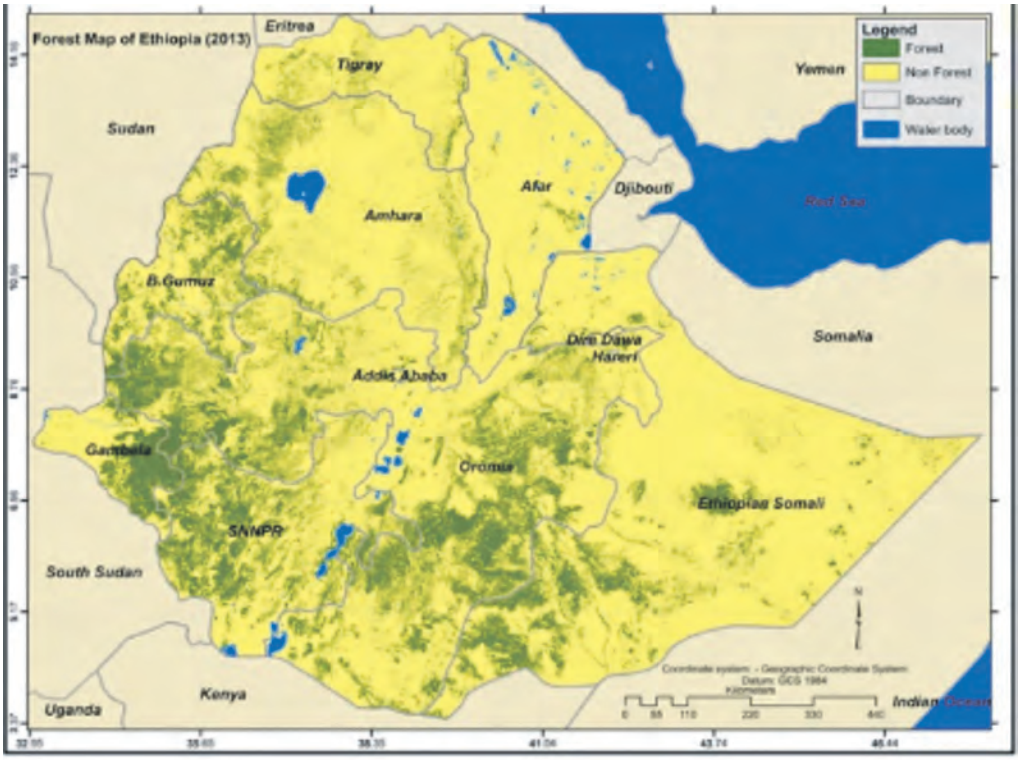


Figure 4. Forest cover map of Ethiopia (MEFCC, 2017)

of deforestation and degradation caused by the expansion of commercial and subsistence farming, increased wood extraction for fuelwood and construction, overgrazing, and increased frequency and intensity of forest fires, being driven by underlying drivers of poverty and population expansion as well as institutional failures and poor law enforcement (Lemenih and Kassa, 2011). According to the Forest Emission Reference Level, Ethiopia loses 92,000 ha forests every year (FAO, 2018), and the forestry sector contributes 37% of Ethiopia's GHG emissions (MEFCC, 2017), making the sector the second-largest contributor of GHG emission after agriculture. High rates of D&D in the dry forests will significantly increase the rate of emissions from these biomes, and this will undermine Ethiopia's ambition to build a carbon neutral economy by 2030.

As with forest cover, most of Ethiopia's national parks are found in the drylands (Figure 5), and they take up significantly large areas of Ethiopia's dry lowland areas.

We need to manage people-park relationships in a win-win manner, such that the considerable economic and societal benefits of national parks do not come at the expense of local people. Likewise, existing parks and protected areas should not be encroached

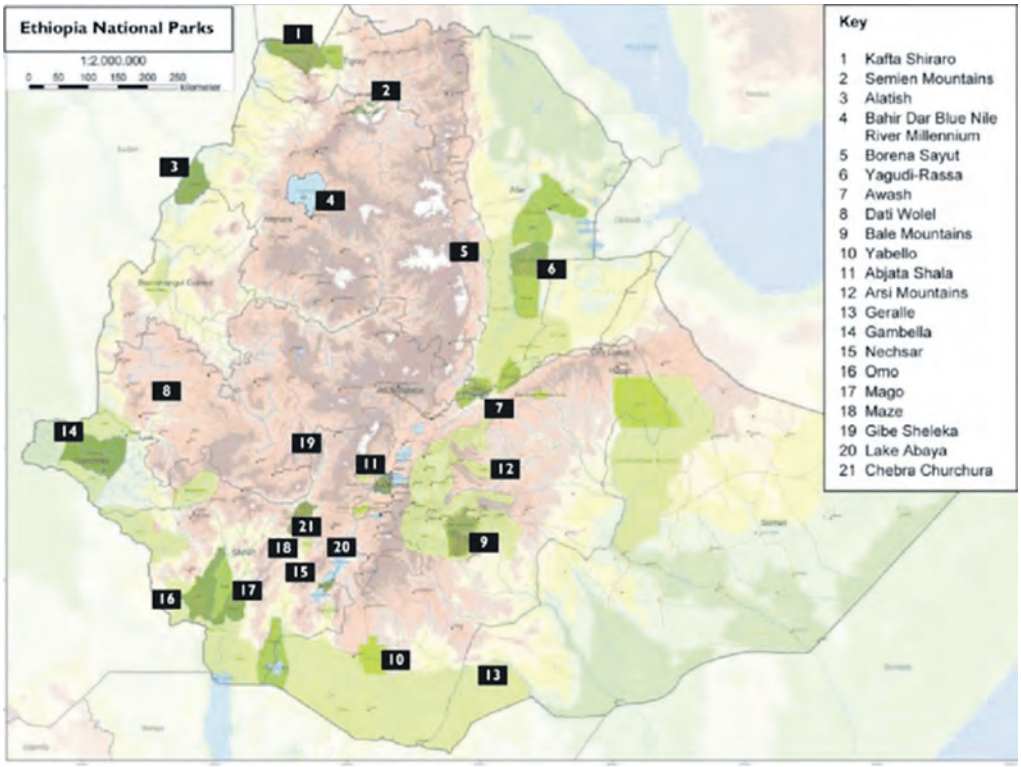


Figure 5. Location of Ethiopia's national parks (Source: Namaga et al, 2020).

upon by smallholder or commercial farmers aiming to expanding production of food and export crops. There have also been cases where both artisanal and largescale mining operations have been initiated in previously protected areas or on grazing areas. More broadly, there is an urgent need to establish a national land use policy and plan. We need to establish clear procedures governing how and when land uses will change – for example, from pastoralism to mining or to farming. It is important to note that most of the forest cover as well as most of the forest conversion is in the dry lowland areas. As the figure below indicates, farming is pushing into forests and woodlands.

The expansion of agricultural lands onto the remaining forests and protected areas is notable. Rather than increasing production through the intensification of crop and livestock production, increased output is coming mainly through the expansion of low-productivity farming onto marginal lands, forests, woodlands, and areas under shrubs. Thus, more needs to be done to bring about productivity growth on existing farmland in ways that increase net economic output and social welfare. Unless significant measures are taken along this line, deforestation is expected to move further into forests and woodlands in the dryland areas as in projections by Franks et al (2017).

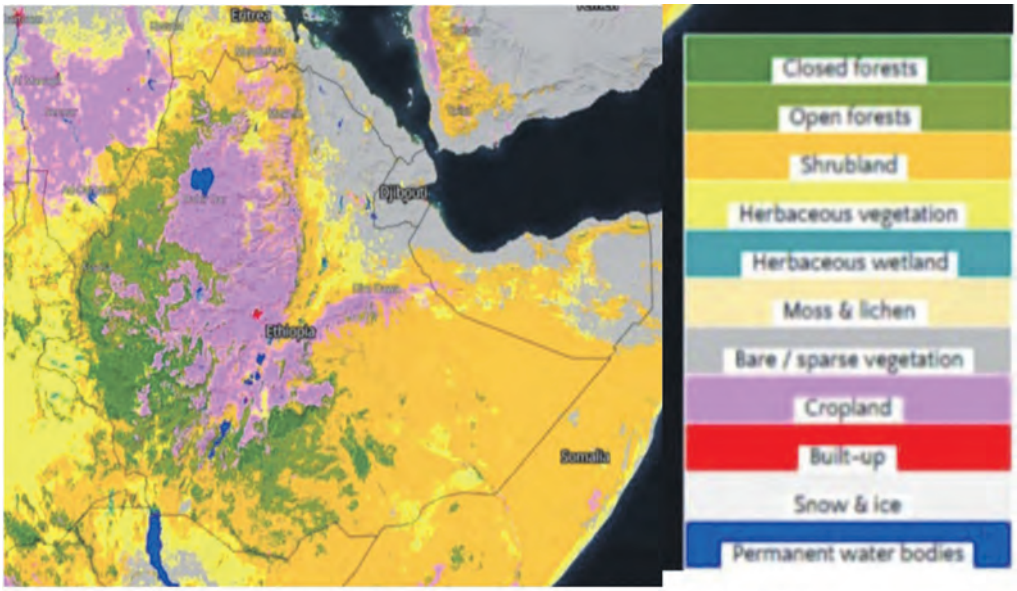


Figure 6. Land cover in Ethiopia in 2019. (Source: Berkhout et al, 2021)

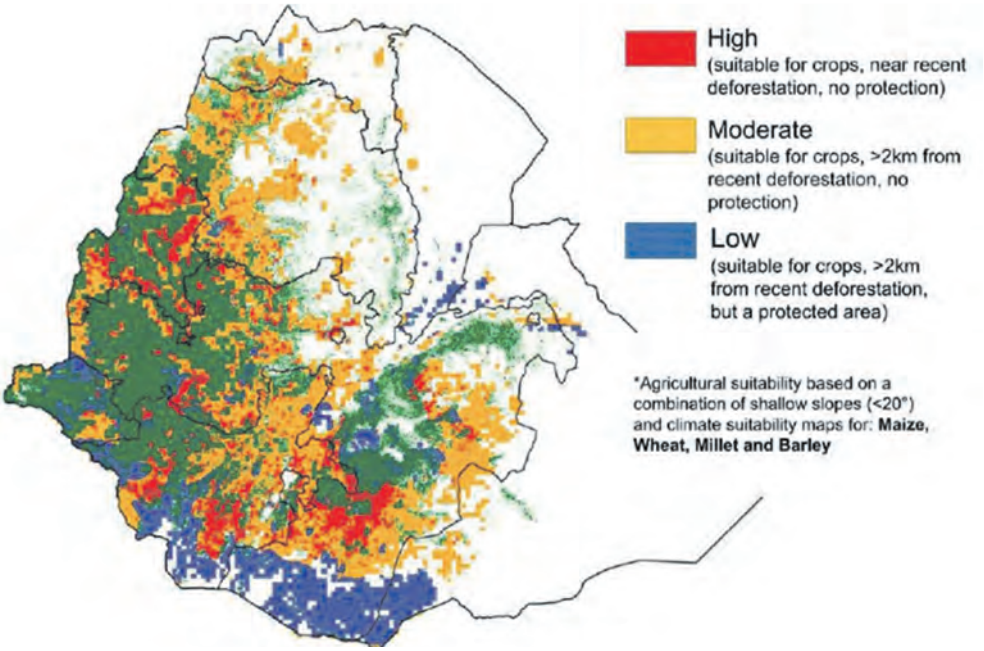


Figure 7. The projected likelihood of areas and locations to be deforested for agricultural expansion (Source: Franks et al. 2017, p. 28)

Franks et al. (2017) concluded that agriculture and forest policies in Ethiopia are on a collision course. Agriculture and forest policies contradict one another, and steps must be taken to align them. Such misaligned policies and the absence of a national land use plan have contributed to the expansion of poorly governed land use changes on landscapes and subsequently aggravated deforestation and the level of land degradation in Ethiopia. A report issued in 2018 by EFCCC and WRI found that 54 m ha of land in Ethiopia requires tree-based landscape restoration, of which 11 m ha requires immediate attention[3]. Most of the land degradation is happening in the highlands where farm sizes have been shrinking and soil fertility is declining. This has resulted in the migration of smallholder farmers with many settling in the dry lowland areas – officially through government settlement programs in the 1980s and 1990s, and by farmers' own initiatives since then. Thus, agricultural expansion towards the dry lowland areas has continued. This trend will further compound the vulnerability of communities and production systems in the drylands that are vulnerable to climate change variability and change as well as to socio-economic challenges such as conflicts and market shocks.

Given their already high level of vulnerability dryland communities continue to be most affected by the challenges of food and nutritional security as the figure below (illustrating the current level of food insecurity in Ethiopia) shows. Food insecurity is extremely alarming in the dryland areas – both the lowlands and highland drylands. These poor communities continue to face frequent droughts and floods, and the expansion of invasive weeds and woody species that take over productive farms and rangelands, further aggravating food insecurity challenges (UNDP, 2014). Ethiopia's National Adaptation Plan (FDRE, 2019) recognized that climate change will continue undermining the adaptive capacity of vulnerable communities in the drylands of Ethiopia and highlighted the urgent need to implement well thought out and integrated interventions.

For decades, attempts to address food insecurity in the drylands focused mainly on providing food aid. Some associate its persistence over decades with a growing dependence on humanitarian assistance. A critical assessment of food aid is in order. For Ethiopians at large, this situation poses a serious question. Given the current level of food insecurity and vulnerability of dryland communities, while most of the country's water and forest resources are in the drylands, what would happen to the rest of the country should resource degradation expand with the level of intensity that we see in the humid highlands? Ethiopian livelihoods are overwhelmingly dependent on the environment, notwithstanding the gradual structural transformation of the economy and expansion of manufacturing and services. Resource degradation and climate variability pose very immediate threats to livelihoods. These threats must be addressed. Ethiopia cannot afford a deepening of dependency and continued degradation of its natural resources.

These trends make an integrated landscape restoration imperative and an indispensable element of efforts to meaningfully address the vulnerability of social and ecological system in the drylands (Gray et al, 2016). A national restoration strategy is needed to

3. For more information, visit https://eth.restorationatlas.org/downloads

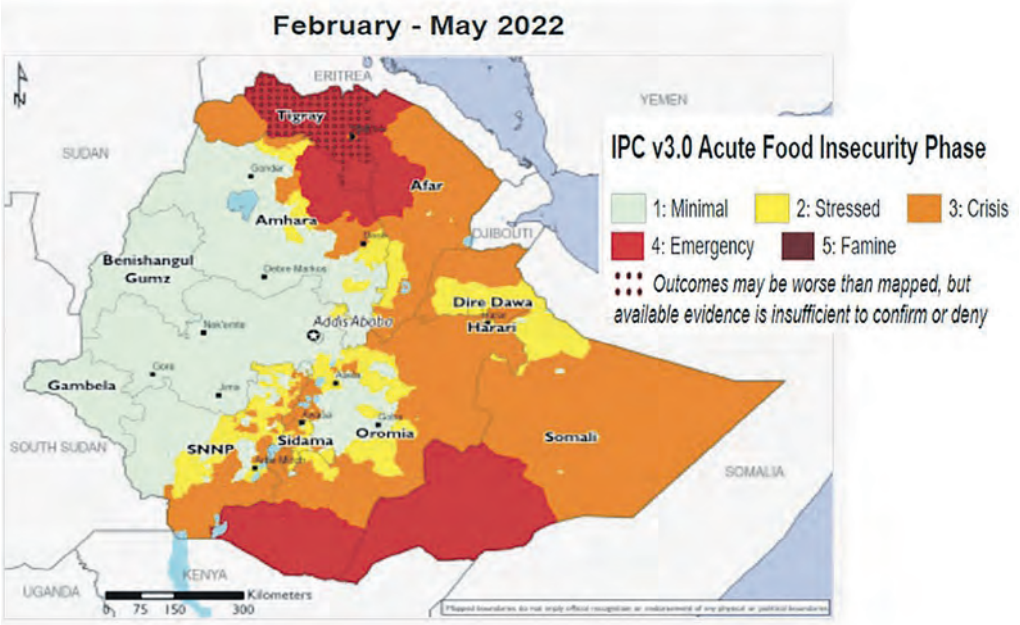


Figure 8. Food insecurity situation in Ethiopia. (Source: https://fews.net/east-africa/ethiopia)

restore and conserve natural resources and ensure the sustainable use of the same. This strategy must be based on the engagement of all stakeholders and with their active participation in the planning and implementation of interventions, in networking and coordination, as well as in M&E, and with efforts to facilitate co-learning.

In this regard, the main challenges to be addressed with a view to improving conservation outcomes while building livelihoods are:

(i) *The vulnerability of socio-ecological systems:* The drylands are most likely to be highly affected by the impacts of climate variability and change that have increased the incidence and severity of risks – droughts, floods, conflicts, and diseases. Human and livestock population growth has increased pressure on resources. Invasive species and forest fires continue to negatively affect ecosystems. Poorly governed and rapid land use changes (associated with agricultural and other investments) often aggravate the degradation of natural resources

(ii) *Weak governance of resources, notably land, and poorly clarified roles of key actors:* The roles and responsibilities of traditional institutions in NRM are not legally clarified, and oftentimes there exists a duality of tenure, with a failure to reconcile customary and modern institutions in a consistent manner or to develop hybrid institutions.

(iii) *Under development of products and markets and shortages in job opportunities:* Value chains and markets for dryland products are underdeveloped, alternative livelihoods and employment opportunities are limited, and local economic development is hampered by a whole set of constraints.

(iv) *Weak capacity of government and community-based institutions and capability of experts:* The capacity of government institutions, as well as those of civil society organisations and CBOs, is weak. Deficient logistical and financial capacity of institutions and technical, managerial knowledge and skill levels of experts call for sustained efforts to build and maintain capacity of institutions and the capability of experts to plan, implement and evaluate restoration initiatives.

(v) *Lack of up-to-date socio-economic and biophysical data on Ethiopia's drylands to inform planning and monitoring.* This continues to hamper program design and makes it difficult to track progress, indicating the urgent need to build a database and knowledge management systems on drylands. Research on drylands needs to be strengthened in order to generate evidence and fill prevailing knowledge gaps that hamper the design of both programs and policies *in sectoral offices*. There are important knowledge gaps on a range of issues, including on the tenure regimes that work best for pastoral and agro pastoral settings, on the role traditional institutions could play on options to better manage the conservation-development trade-offs in the drylands and on basic technical/scientific issues, such as the site-specific identification of suitable tree species for dryland afforestation.

(vi) *Sub-optimal participation of key actors in decision making:* Most interventions in conservation and development in dryland areas have reportedly failed to adequately engage communities in key aspects of decision making such as identifying options that fit the contexts of sites and needs of communities. As a result, initiatives aiming to build livelihoods and sustainably manage landscapes have not been as successful as expected. Also, there has been failure to develop suitable modalities for private sector participation and to promote inclusive business models. Sub-optimal engagement of communities and the private sector and the failure to make interventions market oriented have undermined performance and outcomes.

(vii) *Poor coordination across sectors and actors and failure to build accountability:* Poor coordination and harmonization of activities across sectors (water, agriculture, forestry, mining, etc.) and actors (GOs and NGOs, Federal-and regional offices), as well as communities and the private sector prevail. Thus, duplication of efforts has not been avoided to the extent possible. This also limits the opportunity to increase efficiency by building on the efforts of others and to learn from each other. The failure to develop systems that clarify accountability within sectoral agencies and incentivize collaboration across sectors continues to fail to reward coordination.

With a view to addressing these major challenges, this National Drylands Restoration Strategy has been formulated on the basis of four pillars (i) Integrated Natural Resources Management, (ii) Land governance, (iii) Livelihoods, value chains and markets, and (iv) Policy alignment and sectoral coordination. It is hoped that this strategy will guide and inform development and conservation efforts in the drylands of Ethiopia. The approach involves building and maintaining capacity and capability at all levels, accelerating delivery; empowering communities; promoting intersectoral planning and coordination; and putting in place effective monitoring and evaluation and knowledge management systems for the drylands in order to facilitate learning.

5. Integrated Natural Resources Management

5.1 Introduction

The Ethiopian drylands are fragile ecosystems, yet they have great potential to contribute to sustainable development and the national economy, if managed and used wisely. As they cover over 70% of the nation's land area (Figure 9), positive changes in the drylands will have not only national but also global significance.

Efforts to conserve, manage and sustainably develop these ecosystems need to be informed by a comprehensive strategy that has been developed with the involvement of key stakeholders. But such a strategy has been lacking in Ethiopia, though there are sectoral policies and strategies. These strategies have failed to be comprehensive and complementary, and failed to consider the peculiarities of the socio-ecological systems of drylands. Most sectoral policies and strategies are designed focusing mainly on the highland and midland agro-ecologies and socioeconomic settings. A strategy for the

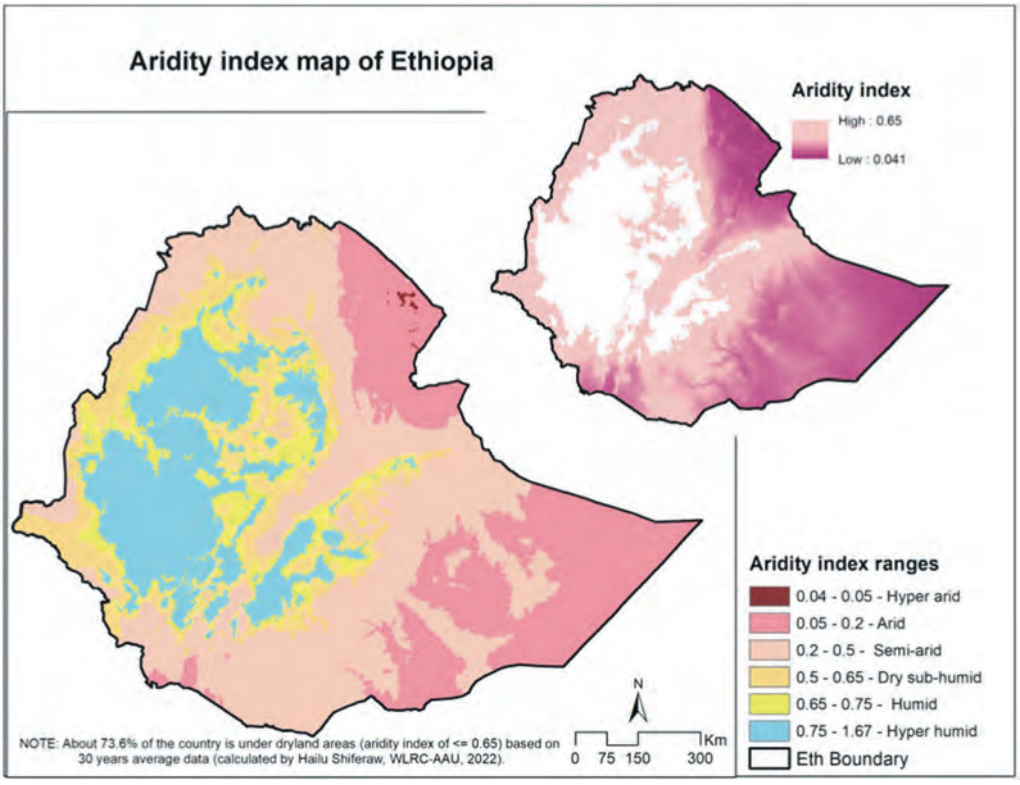


Figure 9: Aridity index of Ethiopia based on 30 years of average data (Shiferaw, 2022).

sustainable development and use of natural resources is one of the four thematic elements of an overall strategy to guide development and conservation efforts in the drylands of Ethiopia. This thematic component on integrated natural resources management (INRM) begins by identifying gaps and challenges in managing the natural resources, and subsequently prioritizes key issues, before articulating strategic objectives and actions for integrated natural resources management to build resilient ecosystems, and societies, in the drylands of Ethiopia, in the face of climatic and socio-economic changes.

5.2 Gaps and Challenges

The main gaps and challenges in promoting INRM in the drylands of Ethiopia include *human and livestock population pressure* that increases the need for food and feed, which in turn leads to over exploitation and subsequent degradation of natural resources – including forests, woodlands, rangelands, soil, water – and loss of biodiversity; *climate variability and change* that aggravate moisture stress and the frequency and severity of droughts and floods; the application of *blanket recommendations and strategies across the country* that fail to adequately consider the peculiarities of the drylands; *inadequate and poorly developed irrigation and soil management practices*; *excessive reliance on biomass energy*; the introduction of *measures that may undermine pastoral mobility*, in both pastoral and agropastoral communities; *limited capacity to manage conflicts and tradeoffs between development and conservation at landscape level*; drylands institutions' *limited capacity to identify and promote crop and livestock production technologies appropriate for the drylands* and promote and take good practices to scale.

There is a high degree of *inconsistency and incoherence across programs and sectors*. Plans and programs in forests and woodlands management, in biodiversity and wildlife conservation, in controlling and managing forest fire and invasive species, in soil and water conservation and crop production; in rangeland management and livestock production, in water resources harvesting, conservation, allocation and use, in applying climate smart practices, in energy and mining continue to be sectoral, and hardly consider impacts on other sectors, and so fail to complement one another in order to maximize both conservation and developmental objectives. Nor do most sectoral strategies pave the way for regions to adapt (sectoral) national strategies to different regional socio-ecological contexts as well as to consider and give special emphasis to gender equity, social inclusion, youth employment, food and nutritional security, and climate variability and change in natural resources management interventions. Moreover, a number of fundamental priorities and cross-cutting issues have received insufficient attention in drylands development efforts. These include:

a) Developing flagship restoration programs in an inclusive and participatory manner in the drylands;
b) Building the capacity of implementing stakeholders on integrated and sustainable NRM in the drylands;

c) Taking steps to increase productivity and production in the drylands (with participatory extension and agricultural information systems), in order to ensure food and nutritional security, at the same time as promoting incomes and employment opportunities for women and youth;

d) Providing the kinds of support needed to enhance the contribution of dryland natural resources to national economic development;

e) Giving due attention to social-ecological factors in infrastructure development;

f) Promoting efficient water management and water security in the drylands;

g) Adapting to and mitigating climate variability and change; and

h) Building and maintaining the capacity of research institutions, in order to promote productivity-enhancing innovation and climate-smart practices.

The necessary investments may be substantial, but the potential pay-offs and returns may be high, as suggested by experience in the drylands of Israel, Australia and the United States.

With a view to addressing these gaps and challenges, and considering the opportunities that the drylands present, key issues, strategic objectives, and actions are described below, as part of a coherent national dryland restoration strategy, which will subsequently involve taking specific steps to assist Regional States to contextualize the national strategy to regional specificities and needs.

5.3 Key Issues

The high-level key issues for integrated and sustainable natural resource management and development in the drylands of Ethiopia are:

1. Deforestation, over-exploitation of key resources, forest fires, poorly governed land use changes and inadequate soil and water conservation (SWC) and landscape restoration measures, resulting in the rapid loss of forests and woodlands, bush encroachment and the spread of invasive species that negatively affect ecosystems and aggravate land degradation
2. The allocation of large areas of land to protected areas and parks, negatively impacting environmental management and pastoral systems in surrounding areas and aggravating conflicts with/among surrounding communities
3. Increasing aridity and water shortages aggravating the vulnerability of people and production systems to drought
4. Poorly managed rangelands and a low level of productivity of livestock production systems (notably milk processing), as well as alternative or supplementary livelihoods such as beekeeping and fisheries
5. Low level of crop production due to poorly developed irrigation systems, poor flood management; poor water allocation and use systems and poor agronomic practices

6. Excessive dependence on biomass for energy and low level of access to cost effective renewable energy technologies
7. Poorly governed expansion of mining, unsophisticated mining practices and limited experience in rehabilitating former mining sites
8. Underdevelopment of infrastructure and limited capacity of institutions (GOs and CBOs) to plan and implement cross-sectoral plans at landscape level and take good practices in INRM to scale

With a view to addressing these issues, the following high-level strategic objectives with their respective strategic actions have been identified.

5.4 Strategic Objectives and Actions

Strategic objectives and recommended actions are presented below. The approach involves a set of *linked and coordinated actions*, based on *expanded research and extension services* (participatory agricultural knowledge systems), and *the engagement of communities and the private sector*, that depends on *improved institutional arrangements* set out in a separate thematic section. *Harnessing research for development* is central to the approach.

Strategic Objective 1. *Integrated landscape restoration and economic development.*
Promote cost effective, replicable, and sustainable SWC and landscape restoration measures, forest and woodland management practices and agroforestry systems, introduce effective fire and invasive species control and management measures, and develop the value chains of tree and forest products from the drylands

Strategic Actions:

i. Undertake a comprehensive resources assessment, document management practices, and map existing and potential restoration, forest and woodland areas and agroforestry systems
ii. Transform the management of dry forests and woodlands as well as the production and use of wood and non-wood products and services from drylands in ways that help achieve the conservation targets and socio-economic developmental goals of Ethiopia
iii. Strengthen dryland agroforestry research and promote agroforestry systems as a feasible land use system to minimize the tradeoffs and increase synergy between agriculture and conservation objectives in the dryland areas
iv. Promote cost effective, replicable, technically proven and socially acceptable forest land restoration practices such as assisted natural regeneration, with the establishment of objective-based exclosures that maximize livelihood and conservation outcomes
v. Promote cost effective, evidence based, replicable, and technically proven and socially acceptable standards and approaches for soil and water conservation measures for dryland areas

vi. Develop value chains for tree and forest products from the drylands, link producers to input and output markets, and build the knowledge and skills of entrepreneurs in business development
vii. Put in place mechanisms (including the development of extension packages) and an enabling environment (*inter alia*, by fostering capable institutions and mobilizing finance in innovative ways) for taking to scale proven innovations (technologies, practices, and systems) in forest and woodland management, agroforestry systems, landscape restoration, and soil and water conservation in the drylands
viii. Negotiate and agree on shared responsibilities between state agencies, the private sector and communities in INRM and promote collective actions for INRM by mobilizing resources, knowledge, and labour from these key stakeholders, in implementing effective programs and sustaining positive gains in forest and woodland management, agroforestry systems promotion, SWC and landscape restoration measures in the drylands
ix. Build the logistical and technical capacity of implementing stakeholders through training and by supporting them with practical guidelines and extension materials, so that experts, extension officers and lead farmers are equipped with appropriate and relevant information, skills and knowledge on forest management, adaptable agroforestry systems, FLR and SWC in drylands
x. Adopt participatory and inclusive processes, so that forest management and landscape restoration measures are community led and owned, jointly analysing forest trends through regular inventory work, developing a common vision, negotiating objectives and strategies and means to attain agreed objectives
xi. Develop and promote invasive species and forest fire control and management mechanisms and measures in order to minimize their negative effects on forest ecosystems and rangelands.
xii. Design and promote afforestation and reforestation programs using appropriate tools and methods and species – site matching principles and techniques to ensure the right tree and shrub species are planted, in the right place, with the right management, for the right purpose.

Strategic Objective 2: *Well managed parks and protected areas that meet conservation, social and economic objectives.* Improve management of parks and protected areas, promote community-based ecotourism, and build relationships with the surrounding communities.

Strategic Actions:

i. Produce up-to-date information on the status of parks and protected areas in the drylands
ii. Enhance the security of parks and protected areas by strengthening inter-regional and regional-federal state collaborations and by improving their management and the relationships with the surrounding communities though negotiated net benefit sharing arrangements

iii. Identify, pilot, and promote management systems for parks and protected areas that maximize not only conservation but also local livelihood, social and cultural objectives
iv. Develop projects on community-based tourism and other interventions that help improve relationships between communities and parks and protected areas in ways that enable the voices of communities to be heard, and on the basis that responsibilities and benefits are negotiated and equitably shared
v. Develop and implement biodiversity conservation projects that are knowledge-based, suit local contexts and contribute to global goals
vi. Identify new tourist destinations, seeking the prior and informed consent of communities, and prepare proposals for public or private investment to develop these destinations in ways that maximize environmental and economic objectives and fit local contexts
vii. Build the technical, managerial, and administrative capacity of communities and CBOs in order to enhance their roles in biodiversity conservation and the management of parks and protected areas
viii. Incentivize communities and the private sector to engage in and invest in the conservation of biodiversity, in eco-tourism, and in the sustainable management of parks and protected areas

Strategic Objective 3. *Increased water availability and water use efficiency.*
Increase water availability by conserving and/or increasing capacity to use available surface or ground water resources, and by enhancing water use efficiency

Strategic Actions:

i. Map available surface and groundwater resources in the drylands
ii. Promote water harvesting and conservation strategies to better adapt to future challenges of climate variability and change by promoting appropriate water harvesting structures at different scales in ways that actively engage and benefit communities
iii. Make irrigation canals cost effective in order to promote and sustain irrigation-based farming and other activities
iv. Build on existing traditional water management systems and use technological advances and relevant experiences to put in place good governance in water use in the dryland areas and promote equitable and efficient water management, including water sharing arrangements among users.
v. Identify and popularize the use of appropriate water lifting devices (including solar pumps), and promote innovative water solutions for sustainable development
vi. Take steps to significantly enhance water use efficiency in livestock as well as annual and perennial crops production
vii. Develop by-laws in inclusive and transparent ways and ensure these are aligned with existing legal instruments (laws and guidelines that govern water use), increase awareness and enforce existing rules regarding water resources management and utilization, as well as irrigation programs

viii. Plan and implement drought and flood risk prevention, preparedness, management, and mitigation/adaptation measures
ix. Establish incentives for private investors and CBOs to engage in conservation and the sustainable use of water resources in the drylands

Strategic Objective 4: *Enhanced rangeland management and productivity.* Improve management of rangelands, feeding and watering systems, and disease control in order to enhance the productivity of livestock keeping, beekeeping and fishery

Strategic Actions:

i. Produce and share up-to-date and reliable information on the status of rangelands, and on species composition and number of livestock, and management practices and productivity levels in livestock production, apiary, and fishery in the drylands
ii. Identify and promote tools for disease control (systems) and climate smart rangeland management, as well as for improved livestock feeding and watering, and beekeeping and fishery practices that enhance productivity
iii. Improve seasonal availability and quality of livestock feed, *inter alia* by promoting irrigation-based fodder production and establishing fodder banks to minimize feed shortages.
iv. Develop water points at appropriate sites to improve livestock access to water while also taking measures to reduce overgrazing and land degradation around water points
v. Put in place mechanisms, extension packages and an enabling environment (building institutional capacity and mobilizing finance through flagship programs and bankable proposals) for taking to scale proven climate smart innovations (technologies, practices and systems) in livestock production, beekeeping, and fishery
vi. Develop livestock marketing and value chains for livestock products, beekeeping and fishery, link producers to input and output markets, and build knowledge and skills of producers and entrepreneurs in product management and business development to promote commercialization and transform subsistence-oriented livestock production systems into market-oriented production systems
vii. Create incentives to attract community-friendly private sector investment to unlock under-exploited potentials for livestock production and milk processing
viii. Set clear targets for increasing the productivity of selected livestock breeds and track progress through digital means

Strategic Objective 5: *Increasing the productivity of dryland agriculture, rather than expanding agriculture onto marginal land.* Improve crop productivity through carefully designed irrigation and efficient water allocation systems; proper flood management techniques, improved agronomic, climate smart agriculture and soil and water management practices, with appropriate species and varieties, and promote the use of technologies to minimize post-harvest losses

Strategic Actions:

i. Produce and share up-to-date and reliable information on the current status of rainfed and irrigated crop production and productivity levels, including information on potentially irrigable areas
ii. Identify and promote climate smart crop production and protection innovations that increase productivity and reduce loss (improved varieties, IPM, post-harvest management and related technologies)
iii. Identify irrigable areas and promote irrigation based and mechanized crop production to significantly increase the contribution of dryland areas to local and national economies in ways that do not negatively affect livestock mobility in pastoral and agropastoral communities
iv. Promote the use of appropriate irrigation structures and technologies and watering practices that will not increase the risk of salinization in irrigated fields
v. Build the capacity of beneficiaries and stakeholders to ensure that water allocation systems are efficient and, where traditional institutions are involved, ensure that they operate in line with the formal legal frameworks
vi. Develop proper use and management of floods and turn flood threats into opportunities
vii. Establish legal and institutional mechanism to manage competing demands on water resources (river, runoff, lakes, underground water) in ways that help build positive relationships between lower and upper catchment communities
viii. Put in place mechanisms, extension packages and an enabling environment (fostering capable institutions and mobilizing finance) that make it possible to take to scale proven climate smart innovations (technologies, practices, and systems) in dryland crop production
ix. Develop supply and value chains for crops (cereals, legumes, fruits), link producers to input and output markets, and build the knowledge and skills of producers and entrepreneurs in value addition, product diversification and business development to promote commercialization and transform subsistence crop production systems into market oriented production systems
x. Create incentives to attract community-friendly private sector investment to further unlock the under-exploited potentials of the drylands for crop production
xi. Set clear targets for increasing productivity of selected crops and track progress through digital means

Strategic Objective 6: *Climate smart and efficient energy production.* Promote wider use of cost-effective climate smart energy technologies to reduce pressure on forests and woodlands

Strategic Actions:

i. Map currently available technologies for renewable alternative energy sources (solar, wind) and for saving biomass (including efficient cookstoves), and select and introduce appropriate technologies for dryland areas.

ii. Identify and address barriers to the adoption of these technologies and to investment in climate smart rural energy technologies appropriate for dryland conditions
iii. Develop flagship programs and projects to facilitate access to and wider use of these technologies and to encourage the engagement of the private sector in their production and distribution
iv. Create incentives to encourage private sector engagement in the production and distribution of renewable energy sources and biomass saving technologies

Strategic Objective 7: *Sustainable mining that minimizes social and environmental impacts and is integrated with landscape restoration.* Improve governance of mining practices in dryland areas and rehabilitate excavated sites

Strategic Actions:

i. Produce a comprehensive map of currently mined and potential mining areas in the drylands
ii. Put in place legal instruments to better govern access to and use of mining areas, including procedures and steps to be followed when converting a given land use to mining, and to specify the rights and responsibilities of the surrounding communities and relevant government structures.
iii. Carry out Political, Economic, Social, Technological, Environmental, Legal and Ethical (PESTELE) analysis before issuing permits for mining
iv. Develop flagship programs and projects to facilitate access to finance, training and technologies to support the sustainable development of (safe) artisanal mining by communities in the dryland areas, and to link miners to markets
v. Promote the use of voluntary good practices and legalize and enforce obligatory social and environmental safeguards to be respected in practicing mining
vi. Legalize and enforce obligations of miners and the state regarding restoring areas after mining
vii. Create incentives to attract community-friendly private sector investment in mining to create jobs and to further develop the contribution of drylands to local and national economies

Strategic Objective 8: *Establish the infrastructure and institutional capacity to support enhanced NRM as an integral part of broader social and economic development across landscapes and urban centers.* Promote equitable infrastructure development, build the capacity of institutions, and establish multi-stakeholder platforms at various levels to coordinate cross-sectoral activities at landscape level and for scaling out proven NRM practices in dryland areas

Strategic Actions:

i. Put in place mechanisms to ensure that, through socially inclusive processes, community voices are heard, and their prior and informed consent is obtained in planning and implementing conservation and development projects in the dryland areas

ii. Undertake infrastructure needs assessments to identify and prioritize interventions aimed at improving access to education and health centers, roads, transport and telecommunications and markets in order to support social and economic development in the dryland areas.
iii. Put in place mechanisms (including PESTELE analysis) to ensure that decisions/interventions in infrastructure development for social and economic purposes duly consider biodiversity conservation and have low ecological footprints
iv. Undertake a comprehensive assessment of the capacity of institutions and experts to design and implement tailored capacity building undertakings
v. Prepare locally relevant, gender-sensitive, training materials and organize training and awareness raising sessions
vi. Organize a series of awareness creation, mindset changing and empowerment training sessions for communities, CBOs, women's and youth groups as well as local government officials and experts
vii. Establish multi-stakeholder engagement platforms at various levels of government to promote cross-sectoral collaboration and learning and support the scaling up of good practices.
viii. Adapt research in development approaches to bridge the research-extension-development gaps in INRM and ensure that landscape restoration interventions in drylands are knowledge based.
ix. Establish research stations and community training centers in suitable areas in the drylands to support research and capacity building activities, and to collect the socio-economic and biophysical data necessary to examine long-term trends in natural resources and to inform planning and early warning systems, and building knowledge management for sustainable management of drylands.
x. Put in place a MEAL system appropriate for the drylands to help inform project planning, implementation and M&E, as well as to build accountability and facilitate co-learning
xi. Work towards a national system of accounts that better captures the overall contribution of dryland ecosystems to the national economy as well as the gains from restoring drylands.

Integrated natural resource management involves the application of technical innovations and climate-smart practices that enhance resource use efficiency, but natural resource management is inseparably connected to livelihoods and land governance, as well as institutional and social arrangements, all of which are addressed in detail in the thematic sections that follow.

Trees, in dry forests and acacia woodlands, play important roles in dryland ecosystems and livelihoods. Gums and resins, particularly the Frankincense producing trees, are important economic trees in the drylands. The related value chains are addressed in the section below on Livelihoods, Markets and Value Chains. The dry forests can benefit from enrichment planting with selected indigenous species. The introduction of suitable fruit trees and fodder trees can boost incomes and strengthen livelihoods. The national tree

planting effort, under the "Green Legacy Initiative" , can be adapted to suit the specific needs of the drylands, following the principles set out in the box below.

"The right trees, in the right places, with the right management, – for the right purposes" *

The Right Trees

- Seed selection for different ecosystems (drylands)
- [EFD/ICRAF]
- Seed multiplication
- Collaboration with private seed suppliers
- Support for local tree nurseries
- Development of an extension package for the drylands

The Right Places

- Homestead planting
- Sites owned and managed by community groups/ institutions
- Micro-environments with favourable ecology, soils, waters supply

The Right Management

- Ownership that incentivizes management
- Oversight by regional bureaus (agriculture and environment)
- Government and private tree nurseries in collaboration with farmers', womens' and youth groups
- Information, education andcommunication
- Water, nutrients andseedling care

The Right Purposes

- "Economic trees"
- Fruit trees
- Fodder trees
- Fast growing trees for energy/charcoal
- Trees for environmental restoration/ stabilization

* Dr Kidane Giorgis, Dr Wubalem Tadesse & Niguse Hagazi

Tenure and ownership is also vitally important in providing the incentives for the sustainable management of the drylands' tree resources.

6. Land Tenure, Community Rights and Governance

6.1 Introduction

In Ethiopia's drylands, traditional institutions have remained relatively strong and continue to play important roles in the governance of not only land but other resources as well. There is rich indigenous knowledge and wisdom for resource management as well as for conflict resolution, across regions and international borders. However, there are critical challenges related to land tenure systems, ownership, legal rights, equity, and resource governance, particularly with respect to new investments and land use change, as well as extractive industries and the exploitation of mines in the drylands.

To optimize the use of the drylands as potential frontlines of development, it is crucial to consider their particular environmental and social conditions and adopt a people-centered approach in designing and implementing land governance and land use strategies that support local livelihoods, while also facilitating local and national development. This calls for strong political commitment, building on the resilience of drylands and their people, improving access to extension, finance and other services as well as to infrastructure, capacity building for intra- and cross-regional transboundary negotiation and collaboration in our efforts to create an enabling environment for development and the reduction of conflict. This positive development agenda requires putting in place effective and efficient land governance in the drylands.

The benefits of effective land governance in the dryland areas of Ethiopia will also extend beyond Ethiopia, to other IGAD countries, supporting intra-IGAD collaboration, regional economic integration, effective transboundary resource and conflict management, peace and stability building, and sustainable regional economic and social development. With respect to land governance, this Strategy addresses numerous elements, including: ownership and tenure security; benefit sharing and equity; use rights and access to resources; traditional institutions and indigenous knowledge; participation in decision making, conflict management; transboundary resource management and governance; the promotion of harmonious development, and the integrity of legal systems (reconciling the duality of customary and modern laws).

6.2 Gaps and Challenges

The main challenges and gaps in land governance include the general insecurity of land and forest tenure; the failure to align policies and laws governing ownership of land with those governing forested land; the weakness of institutions for land governance; the undermining of traditional institutions for land governance in the drylands and the problems of "elite capture", along with a lack of inclusiveness in traditional institutions; the transfer of large areas of land and forest to external investors without proper compensation and without due attention to economic and environmental trade-offs; the loss of access to vital dry season grazing land and water resources that threatens pastoral

systems; and the failure to map land and forest resources, develop coherent land use plans and track environmental performance and outcomes.

These challenges and gaps are associated with and linked to the following:

- The lack of a national land use policy and plan contributes to rapid and poorly governed land use changes in the dryland areas that in many cases has constrained pastoral mobility, a key strategy in the livelihoods of pastoral and agropastoral communities.
- Though the role of traditional institutions and customary rights in governing access to and use of natural resources including land in the dryland areas is significant, the current legal documents regarding land are not explicit about the role of traditional institutions in land governance.
- In the dryland areas duality of tenure (formal and traditional) prevails. But there is little experience and no effective legal provisions on how best to manage this duality of tenure in the drylands in ways that ensure that land is used in the most appropriate way, and the process ensures the inclusion of women and socially marginalized communities.
- Experience is limited and opinions are divided regarding the formalization of tenure in the drylands and the individualization and certification of communally used land.
- Government institutions and community-based organisations in the dryland areas face capacity limitations (technical, logistical, and financial inadequacies, as well as a lack of qualified staff) that make it difficult to implement existing policies, to enforce laws and to design and implement land governance appropriate for the drylands in line with the relevant national laws.
- Conservation and development initiatives in the dryland areas are poorly coordinated, and few are sufficiently informed by science
- Resource related intra-and inter-ethnic conflicts are expanding, being aggravated by the impacts of climate variability and change and population growth, with poor management that fails to promote a peace and development and nexus. In some cases, such conflicts involve communities across international boundaries, reflecting a failure to implement effective transboundary resource management and the promising resource utilization and governance frameworks proposed by IGAD and the AU.
- Insufficient research and analysis on land governance in the dryland areas, with a poor understanding of the issues hampering the development of effective policies.

6.3 Key Issues

The following were identified as key issues to be addressed in order to improve land governance in the drylands:

1) The absence of national land use policy and planning, developed with the participation of local communities, that adequately considers the peculiarities and potentials of drylands ecosystems, the prevailing production systems, and the needs of dryland communities, as well as the central role of mobility in the livelihoods of pastoral and agropastoral communities.

2) The need to customize national land proclamations to fit the unique features of the different regions and pastoral settings.
3) The need to clearly define the role of traditional institutions and customary tenure systems in governing access to and use of land, as well as the relationships between traditional institutions and systems and the formal federal and regional land laws. Also, the existing legal instruments need to be contextualized to better reflect the contexts of and be more appropriate to the dry lowlands of Ethiopia. Key issues, such as when and how to formalize tenure and where, under what conditions, to encourage the privatization of communal lands need to be carefully examined and better understood.
4) Weak capacity of institutions at local level for the effective management and utilization of natural resources and land, and for establishing effective governance of these resources.
5) Encroachment on high potential and rehabilitated lands due to population pressure.
6) Lack of tenure security in the communal property areas of the pastoral drylands, with only limited work on the certification of communal lands and resources.
7) Conflict among land uses and intra- and inter-ethnic conflicts among land-owners due to limited resources, boundary issues and poorly managed development-peace nexus.
8) Lack of implementation capacity of state agencies at lower levels of the government structure (weak human capacity, high staff turnover, poor infrastructure) and weak enforcement of existing laws.
9) Limited knowledge and experience on land related issues in the dry lowlands, owing to a lack of focused research that involves all stakeholders at different levels, and indicating the need to address knowledge and awareness gaps in this area.
10) Sub-optimal participation of key actors and weak coordination of interventions, pointing to the need to improve the coordination of initiatives and ensure community participation.

Land-use planning at multiple scales and pastoral mobility

Effective land-use planning at multiple scales is needed to facilitate optimal and conflict-free land use, while conserving biodiversity and promoting ecosystem services. *A central element of this National Drylands Restoration Strategy is the need to establish a national land-use plan, with a framework for cross-sectoral harmonization. Here it is important to recognize that land-use planning at Woreda level is not enough, as pastoral systems depend on resource use and seasonal movement that cross Woredas as well as national borders.*
ILRI. 06 Feb 2022. Policy gains from ILRI's land-use planning in eastern Africa. Fiona Flintan & Elliot Carleton.

There has been considerable progress in developing approaches to participatory rangeland management in Ethiopia. Reviews of global experience suggest that it is possible to develop legislation that enables pastoral mobility, at the same time as providing for security and accommodating suitable land use changes.
FAO. 2022. *Making way: developing national legal and policy frameworks for pastoral mobility*. FAO Animal Production and Health Guidelines, No. 28. Rome.

6.4 Strategic Objectives and Actions

Based on the key issues identified above, and recognizing the need to create a sound, functional, and legally recognized inclusive land governance system in drylands that considers local communities as key actors in and drivers of development, the following five strategic objectives and their corresponding actions are identified:

1) Establish a clear land tenure system and effective land use planning mechanisms
2) Strengthen and improve land governance institutions and build their capacity in ways that empower local people
3) Establish clearly defined community use rights to ensure equitable access to agricultural lands, rangelands, woodlands, forests, and other natural resources.
4) Establish inclusive and transparent mechanisms for land governance
5) Address long-term development challenges and intra-and inter-regional as well cross-border conflicts over resources through negotiated and agreed upon transboundary resource management and governance arrangements.

The five strategic objectives and corresponding actions are presented below.

Strategic Objective 1: Establish a clear land tenure system and effective land use planning mechanisms, in order to improve existing land access and use modalities in ways that suit dryland particularities, address priorities, and fill critical gaps

Strategic Actions:

i. Scale up and support the implementation of land certification (communal and private) and develop communal land registration procedures that are aligned with local contexts and embrace legal pluralism in land governance (defining the roles of formal and informal institutions).
   - Scale up land certification (communal and private) and existing and evolving communal land administration and management practices in order to bolster tenure security
   - Enact legal provisions that protect, promote, and ensure customary land tenure security (certification guidelines, regulations, etc.) in order to facilitate legal pluralism in land governance (reconciling formal and informal systems).
   - Promote communal land and resources valuation (surface and sub-surface) and put in place the legal framework for adequate compensation (in respect of land acquisition)

ii. Establish legal and institutional frameworks for participatory land use planning that encompass and harmonize biophysical and socio-cultural aspects (including traditional pastoral systems) and are aligned to local contexts with a view to establishing an effective land governance system. Relevant frameworks and initiatives to inform this include:

   - Natural Resources Governance Framework-NRGF (IUCN Working paper 15, 2016)

- Voluntary Guidelines on Responsible Governance of Tenure (land, forestry, and fishery) in the context of national food security.[4]
- Principles for responsible investment in agriculture and food systems.
- IGAD Drought Resilience and Sustainability Initiative (IDDRSI).

iii. Assess, recognize, improve, and adapt locally used traditional land governance systems and tools (such as the Somali dheeda and dhul daqsimeed) and take appropriate measures to create synergy and harmony at all levels by also institutionalizing mechanisms of accountability and transparency.

iv. Critically review and draw lessons from land certification experiences in pastoral and agropastoral areas, before taking them to scale in similar environmental and sociocultural setups. A synthesis of the available information and evidence base is needed regarding the strengths and limitations of existing local land governance; the processes and outcomes of communal land registration, the role of customary institutions in land governance and the management of land related conflicts. This can inform the decision and policy making processes that are needed for the customization of land governance to regional particularities and local contexts, and to ensure that community rights are respected and that interventions contribute to improving local livelihoods and the development needs of dryland communities.

v. Revise existing federal and regional land laws to better serve the needs of the drylands.

vi. Put in place a land use policy and plan that provides for clear and well thought out land use in the drylands, accommodating economic and social goals, and enabling efficient, equitable and sustainable use of land resources in the drylands, with the periodic undertaking of a resource inventory, mapping, and the delineation of boundaries.

Strategic Objective 2: Strengthen and improve land governance institutions and build their capacity in ways that empower local people

Strategic Actions:

i. Invest in the drylands in terms of infrastructure and resources to strengthen the capacity of government institutions, demonstrating the necessary political commitment

ii. Establish a well organised land information system to assist restoration initiatives and to improve land governance

iii. Put in place means and mechanisms to organise communities for development, supporting collective action and mobilising resources from the communities themselves with a view to promoting self-reliant development

iv. Clarify and enforce community use rights on managed state forests with negotiated responsibility and benefit sharing mechanisms to promote conservation and the sustainable utilization of forests.

v. Provide legal recognition to customary institutions for sustainable resource management, in equitable benefit sharing mechanisms, decision making, and

4. FAO. 2022. *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security*. First revision. Rome. https://doi.org/10.4060/i2801e

governance, and provide for their institutionalization – i.e., traditional institutions should be formally organized as legal entities for sustainable resource management, decision-making with respect to land and resource use, and governance, with provisions for inclusiveness and transparency as well as mechanisms for collaboration with local and federal government.

vi. Developing context/demand-based research and extension support to the drylands in land governance, with broad building capacity for land governing institutions (formal and customary).
vii. Embrace legal pluralism by involving traditional institutions in forums for land governance
viii. Promote gender-sensitive land governance, establishing inclusive "Community Land Governance Entities" (CLGE) to ensure that the resource poor and the vulnerable are not denied access to key resources.
ix. Identify areas where communities need support in land governance – e.g., in dealing with third parties such as investors and other private sector actors, and in resolving disputes through state law enforcement agencies, and help them build the requisite capacities.
x. Promote IT and Geoinformation–based Early Warning Systems for disaster prediction and the facilitation of real time routing and mobility of pastoralists seeking feed and water, enhancing land use efficiency. In addition, build integrated services at local level and promote behavioural change (particularly in terms of savings behaviour), building savings in the good years, in order to better cope with the droughts and disasters that frequently hit the drylands.
xi. Enhance the participation of women and youth, promoting innovative business models for livelihood diversification of women and youth and supporting them to better manage rural-urban interfaces and linkages, making them less dependent on the land for their incomes, at the same as giving them a greater say in local decision-making with respect to land use.

Strategic Objective 3: Establish clearly defined community use rights over communal natural resources that promote equitable access and responsible use of agricultural lands, rangelands, woodlands, forests, and other resources.

Strategic Actions:

i. Establish a (qualified) community ownership and tenure system, providing use rights on managed forests, with certain conditions.
ii. Ensure the land use rights of local communities, strengthening their rights, benefits, and voices in dealings with third parties in respect of different land uses (private sector, investment, mining and infrastructure projects, etc.) in accordance with the principle of a priori and informed consent (CBD, Article 8J). Related measures can strengthen the tenure security of local communities through recognized bodies (with inclusive representation that goes beyond traditional leaders), thereby enabling partnerships and joint ventures with external partners.

iii. Pilot innovations, before scaling out good practices on land certification and governance, as well as on community use rights, and assess options for scalability from pilot areas to similar environmental and socio-cultural setups. This will involve a period of some three years over which efforts will be made to assess the strengths and limitations of existing and traditional local land governance tools, as well as the processes and outcomes of communal land registration; and the role of traditional institutions in land governance and management and in settling land related conflicts.
iv. Put in place legal and institutional frameworks to actively engage communities in forest conservation and forest landscape restoration (FLR)

Strategic Objective 4: Establish inclusive and transparent mechanisms for land governance by enhancing partnership, coordination and learning among stakeholders at all levels (Government, customary institutions, academic institutions, and other actors).

Strategic Actions:

i. Conduct broad consultative exercises, under regional administrations, aimed at adapting land governance approaches and institutions to fit local contexts, considering regional specificities, demands, and priorities, and drawing on recent experience with participatory land management approaches.
ii. Review the Voluntary Guidelines on the Responsible Governance of Tenure (VGGT) and other international guidelines and frameworks, in a multi-sectoral platform, with a view to developing guidelines tailored to Ethiopia and the diverse local contexts.
iii. Institutionalize clear and agreed land tenure systems that fit the drylands, through open and inclusive processes, with wide public participation.
iv. Promote the harmony and integrity of land governance (national-local) institutions through synergy of legal quality and pluralism enactment
v. Establish mechanisms for the provision of legal support to ensure the rights of local communities to access resources. Ensure inclusive participation and empowerment of women and youth for equitable access to land and decision making with no gender bias and marginalization of any social group.
vi. Assess appropriateness to dryland areas of the existing processes of land acquisition and propose options for improvement .
vii. Review existing procedures and establish effective and efficient mechanisms for the valuation of (communal and private) land and resources (surface and sub-surface) and propose compensation schemes (with compensation at market rates for land or resources given up) that are fit to local contexts.
viii. Establish mechanisms for coordination across regions, linking highlands, mid lands, and lowlands, recognizing the integration and inter-relatedness of agro-ecosystems and the flows of water and people across regional boundaries, affecting land use.

Strategic Objective 5: Address long-term development challenges and intra-and inter-regional as well as cross-border conflicts over resources through negotiated and agreed upon transboundary resource management and governance arrangements

Strategic Actions:

i. Minimize conflicts between national needs and grassroots community priorities through negotiation and consensus building, emphasising shared benefits and promoting win-win approaches.
ii. Establish a "Center for Drylands Research and Development", as a knowledge hub for knowledge sharing and networking on the governance of natural resources in the drylands, with an emphasis on land first at country level and later at regional level, working with IGAD.
iii. Establish local multi-stakeholder platforms that draw on traditional knowledge and customary institutions for resource management as well as conflict resolution.
iv. Promote trans-boundary resource management and collaboration, building on IGAD frameworks and longstanding relationships between border communities.
v. Establish conflict resolution platforms and a responsible inter-regional institution for cooperation and collaboration

Security of tenure provides the incentives for sound environmental management as well as sustainable economic exploitation.

It is the responsibility of the Government of Ethiopia to establish a n effective legal and regulatory framework, facilitating a multi-stakeholder approach allied with coordinated land use planning at multiple levels.

Taken together, these actions aim to promote secure tenure and rights over rangelands, dry forests and woodlands, enabling community stakeholders to support long-term stewardship and the sustainable use of land and natural resources in Ethiopia's drylands.

7. Livelihoods, Markets and Value Chains

7.1 Introduction

Three major production systems – pastoralism, agro-pastoralism, and mixed farming – form the basis of livelihoods for communities living in the dryland areas, with a smaller but growing number of people depending on petty trade, artisanal mining, and other non-farm activities. Pastoralism and agro-pastoralism dominate and contribute significantly to the national economy, accounting for about half of Ethiopia's livestock population, and almost all of the live animals exported. Agro-pastoralism combines livestock keeping with small-scale, low-input and low-output crop production. Mixed farming, combining livestock and crop production within the same sedentary farm unit, dominates in the dry highlands. Mixed farming at national level is practiced by most of Ethiopia's smallholder farmers and accounts for over 90% of the area under crops and two-thirds of the livestock population, notably cattle and shoats. Crop production and supplementary livestock production are the two major sources of income, both cash and subsistence, for smallholder farming households. In certain areas, trees are becoming increasingly important sources of cash income for smallholder farmers.

In the lowland dryland areas where we have dry forest and woodlands, commercial production of gums and resins is becoming an important option for increasing household income and, for some, an additional livelihood diversification strategy, accounting for up to one-third of the household income. Improvement in infrastructure (roads, telecommunications, electricity, water supply) and the proliferation of small towns are improving access to information, transport, health, and education services, and to markets. These developments have created additional job opportunities, mainly in the service sector, and to a certain extent in public institutions.

The dryland areas in Ethiopia are the source of a number of agricultural and forest products that can be marketed both in the domestic and international markets. The major dryland products that offer scope for the enhancement of productivity and marketing systems include livestock and livestock products (meat, milk, skins and hides), bee products, fish, and forest products, mainly gums and resins and bamboo. There is a growing global demand for some dryland products that can be tapped in order to increase incomes and provide alternative livelihoods for local people. Some dryland products offer particular opportunities for value addition and manufacturing, and thus the opportunity to serve large export markets, as well as Ethiopia's domestic market. The marketing of dryland products provides cash income for rural households and employment opportunities, at the same time as enabling the accumulation of assets, for smallholders as well as traders, and bringing in foreign currency. But it is evident that performance is far below potential, and much could be done to upgrade value chains and increase returns.

The marketing of livestock and livestock products is characterized by long value chains, and the marketing systems involve a large number of value chain actors. Studies indicate

that weak and informal linkages among market actors are common, support from GOs and NGOs (at the bottom end of value chains) remains limited, and policy environments continue to be constraints. Gums and resins are the major forest-sector export commodity from the dryland areas. The marketing system for gums and resins is well structured in the north and north-western Ethiopia but remains semi-structured in the south and southeastern Ethiopia where informal cross-border trading dominates. To conclude, the sustainable production, marketing, processing, and marketing of products from Ethiopia's drylands is limited by a host of constraints and much more needs to be done if the nation is to benefit fully from the potential of its dryland resources.

7.2 Gaps and Challenges

Improving the livelihoods of communities and the value chains for products from the dry land areas requires addressing the following main challenges:

Declining resource base in the face of growing human and livestock populations: Traditional livelihoods strategies are no longer able to provide livelihoods for the rapidly growing population in the dry lowlands, resulting in a large number of unemployed youth and pastoral "drop-outs". Though more frequent droughts result in the periodic loss of livestock, overall, the livestock population of Ethiopia has increased over time. This is happening in the face of declines in the area (due to land use changes) and quality of rangelands (due *inter alia* to overgrazing, invasive species, bush encroachment, land degradation and declining soil fertility). The impacts of climate variability and change have aggravated water scarcity, which affects crop, rangeland, and livestock productivity. These challenges are linked to and exacerbated by local conflicts that increase the vulnerability of dryland communities.

Droughts, floods, conflicts, and livestock import bans by Middle Eastern countries continue to be the major sources of risks to the livelihoods of communities in the drylands. The frequency and severity of droughts and floods have increased over time. Yet measures taken to build the resilience of production systems and dryland communities have been inadequate. Instead, relief measures in the form of food aid have continued for decades and these are feared to have also increased aid dependency. Limited capacity to control livestock diseases results in the outbreak of livestock diseases that can lead to import bans by livestock importing Middle Eastern countries. When this happens, the livestock trade (heavily reliant on the Gulf) is seriously affected, and prices drop significantly. This greatly affects livestock producers and those dependent on livestock marketing. Insurance services to cushion these productions and trade risks are limited or non-existent.

Dryland communities have very limited access to infrastructure, markets, and social services. The underdevelopment of infrastructure (roads, electricity and communication) limits opportunities for the development of non-farm employment. The attendant high transaction costs also limit opportunities for the development of product processing.

Markets for dryland products are underdeveloped. Though the drylands generate a range of products (including livestock and livestock products, tree, and forest products such as wood, gums and resins, and mining output), value addition and the marketing of these products remain underdeveloped. As a result, both the volume and quality of dry forest products remain low, limiting opportunities to benefit from export markets. Poor infrastructure also limits people's access to inputs and technologies that might enable them to increase crop and livestock production, and to engage in value addition and the processing of products.

Access to financial services is extremely limited. Market actors are highly constrained by a lack of access to finance. Livestock are not considered as collateral by banks when offering loans. This makes it very difficult for pastoral-area value chain actors to access credit, for example for livestock feeding, and to expand domestic and international livestock trade.

The potential of mobile money to support micro-finance has been under-exploited. Elsewhere in the region notable successes have been achieved. The M-Pesa service has helped rural women to scale up their enterprises and to move from farming into business and retail occupations[5]. We must consider the broader expansion of rural and dryland economies, beyond livestock and agriculture, to include services and urban development, understanding that urban centers are intimately connected to economic activities and resource use on landscapes. Youth unemployment plays a major role in the intensification of resource use and the expansion of (low-productivity) agriculture onto forested lands.

Financial services – the need for reforms?

Digital services have done much to promote financial inclusion across Africa, but Ethiopia performs relatively poorly. ***Digital payment and transfer services could greatly expand access to financial services for lower-income and less literate segments of the population. This is particularly important in the drylands, where low population densities across vast areas make the unit costs of traditional banking relatively high.*** *There are two key underlying institutional deficiencies - the lack of capacity of regulatory and supervisory institutions, and a lack of competition for the dominant public enterprises, Ethio Telecom and the Commercial Bank of Ethiopia. This suggests the need for a policy review, with an effort to promote suitable approaches to the provision of financial services in the drylands, with a supportive regulatory framework. "The dominance of public enterprises, Ethio Telecom and the Commercial Bank of Ethiopia, has kept the prices of digital payment services high, particularly for low-income populations, as fees charged for undertaking low-value transactions are very high and the cost of digital infrastructure (mobile phones and plans) is also substantial."*

Identifying Binding Constraints on Digital Payment Services in Ethiopia: An Application of a Decision Tree Framework. Getnet Alemu, Tadele Ferede, and Alejandro Fiorito. Center for Global Development. Washington. 2021.

5. UK Innovation Strategy, July 2021, Department for Business, Energy & Industrial Strategy

And women in the drylands often face constraints on their involvement in economic activities, including limited access to financial services. Mobile money can help women to expand their economic activities and enable local economic diversification[6], with positive impacts in terms of environmental management[7].

Informal cross-border trade dominates livestock marketing. Limited market access, the relatively low prices obtained in the formal market and the tax imposed on the trading of live animals have pushed market actors to opt for informal livestock trading routes to neighboring countries. The policy and regulatory environment makes it less attractive to do business in Ethiopia. It is widely reported that a very large number of live animals cross borders illegally and are traded in neighboring countries. This not only makes the country lose foreign currency earnings from live animal exports, but also limits the domestic supply of livestock products like meat, skins, and hides.

Production systems remain subsistence oriented. The underdevelopment of infrastructure and limited access to health, extension, credit, and insurance services in the drylands continue to limit the introduction and wider use of innovations (inputs, technologies, improved management practices, better marketing strategies, etc.) that would make it possible to increase, diversify, and commercialize production. This is also associated with the limited number of actors along product value chains (including providers of business advisory services, financial services, extension services, credit and insurance services, suppliers of inputs, and buyers of outputs). Market concentration and barriers to entry limit the competition that might lead to productivity-enhancing investment and improved performance. As a result, the low volume and poor quality of products continue to make prices for dryland products less attractive to producers and traders.

Mobility of pastoralists and agro-pastoralists is being increasingly restricted. Pastoralists are facing restricted mobility and decreasing access to the natural resources (water and pasture) on which their livelihoods depend because of changes in land use and access rights as development, investment, and conservation interventions (mining, commercial agriculture, biodiversity conservation and national parks) continue, with the support of regional and central government in the name of investment promotion. The increasing privatization of communal resources by individuals has also constrained pastoral resource management and mobility.

7.3 Key Issues

With a view to addressing the above-mentioned challenges and exploiting the potential of the drylands for improved livelihoods, the following strategic issues have been identified.

6. Tavneet S. and Jack W. (2016) 'The long-run poverty and gender impacts of mobile money'. *Science*, 354(6317), pp. 1288-1292. Available from: https://science.sciencemag.org/content/354/6317/1288

7. GSMA (2019) 'Harnessing the Power of Mobile Money to Achieve the Sustainable Development Goals'. Available from: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/10/GSMA-Harnessing- the-power-of-mobile-money-to-achieve-the-SDGs.pdf

1) Natural resources degradation in dryland areas remains serious, increasing vulnerability to droughts and flood risks, the frequency of which has increased over time. Droughts, floods, (local) conflicts, disease outbreaks and livestock import bans continue to be the major sources of risks to dryland communities, but the expertise, technological and logistical capacity to forecast and manage these risks remains underdeveloped.
2) The low level of agricultural productivity affects the livelihoods of dryland communities, yet attempts to increase productivity remain limited and fragmented. In addition, limited livelihood options and severe natural resources degradation aggravate the vulnerability of socio-ecological systems in the drylands.
3) The expansion of agriculture provides opportunities to increase local incomes and meet increased demand, but threatens dry forests and woodlands, as well as pastoral livelihoods. These trade-offs need to be carefully managed, building on the basic complementarities between livestock keeping and crop farming, with crop residues providing feed for livestock and livestock fertilizing fields. There is great scope to expand irrigated agriculture, but this must be done on the basis of efficient techniques and with great care to avoid the danger that irrigation leads to potentially disastrous increases in soil salinity. And, as noted in other sections of this document, there are also important issues with respect to land governance, equity and the need for land use planning. Accordingly, this Strategy emphasis efficiency and productivity enhancement, on existing farm land and homesteads, rather than agricultural expansion, with the integration of rural livelihoods.
4) The underdeveloped marketing system for livestock and livestock products and for other dryland products, the lack of product standards, the lack of quality control and poor traceability (of live animals and other agricultural and forest products for export), makes it difficult to exploit export market opportunities.
5) The weak enforcement of existing policy and legal frameworks intended to make large-scale investments socially and environmentally responsible, and the failure to effectively reconcile the interests of investors with local livelihoods and community rights.
6) Restricted herd mobility for pastoralists and agro-pastoralists, with diminishing access to the natural resources (water and pasture) on which their livelihoods depend, due to rapidly changing land use and access and the allocation of large tracts of land to local and international investors engaged in agriculture or in mining, especially in western and southern Ethiopia.
7) The inadequate legal framework and limited knowledge and capacity to manage trade-offs and increase synergy between conservation and development interventions in the drylands.
8) The absence of, or limited access to, conventional banking systems that serve rural communities, particularly in the dryland areas that depend on livestock production systems. These communities have little or no access to formal credit systems, since livestock are not considered as collateral by financial institutions and because transaction costs are high, with widely dispersed communities across a large geographical area, making the per capita costs of delivering services high.

9) Existing legal and policy frameworks have not facilitated cross-border trading, for such activities are generally considered illegal. Yet cross-border trade has become the dominant market chain for the livestock and forest products of communities living close to international borders. Revisiting existing legal frameworks is suggested to bring (illegal) cross-border trade into the formal trading system and to put in place mechanism that facilitate this trade in ways that enhance the benefits local communities and to the national economy.
10) Communities in dryland areas are poorly linked to the emerging urban centers, and existing policy and institutional frameworks do little to support the growing integration of production systems between highlands and lowlands, moreover they fail to ensure that large scale investments are environmentally responsible, or even to conduct the monitoring needed to verify whether or not traditional livelihoods and community rights are accommodated and respected.
11) The drylands are poorly served in terms of physical infrastructure, as well as access to basic services, resulting in the underdevelopment of value chains and markets for dryland products, and also undermining efforts to promote tourism

7.4 Strategic Objectives and Actions

The following strategic objectives and their corresponding actions are proposed to address the key issues identified above:

Strategic Objective 1: Reducing the vulnerability of communities and ecosystems in the drylands

Strategic Actions:

i. Develop *ex-ante* (reducing risk exposure) and ex-post (adapting to and minimizing impacts) risk management strategies to address the major identified risks in the drylands.
   - Organize and support community based disaster risk management groups
   - Introduce and facilitate marketing practices that help *minimize the liquidation of productive assets such as livestock, land, trees, and other assets in drought times*; and promote the marketing of livestock at fair prices prior to the onset of severe drought conditions. Such market mechanisms, if enhanced and supported, can help in buffering the impacts of climate risks by facilitating increased livestock off-take before drought strikes, and enabling pastoralists to smoothen consumption over the drought cycle and during drought years. This kind of consumption smoothing needs to be bolstered by enhanced saving mechanisms that enable pastoralists to reduce the share of wealth held in the form of livestock. Government may also consider interventions aimed at stabilizing and/or subsidizing livestock prices to mitigate drought-induced decline in the terms of trade for pastoralists.

ii. Strengthen the national early warning system, build capacity for forecasting and make predictions available to users so that they can make informed decisions and improve preparedness, while at the same time raising awareness on the need for households and local administrations to prepare for drought.

iii. Map the seasonal availability of feed and water and share this information with users and decision makers
iv. Develop a framework that will facilitate the distribution of livestock through loans and exchanges among herders and/or village traders to reduce the impacts of localized droughts, raids, and disease outbreaks on stock number and composition, building on existing social capital, while also re-enforcing social ties that unite community members.
v. Build capacity to efficiently and effectively manage resource use related conflicts, which are often aggravated during drought times. This will involve taking steps to reduce the incidence of conflicts in and around parks, protected forests and mining areas, with enhanced communication and cooperation through multi-stakeholder platforms that bring together all relevant actors, including local administrations, traditional institutions, CSOs and the private sector.
vi. Improve smallholders' access to credit and insurance services, promoting inter alia the development of weather-based index crop and livestock insurance in the drylands.
vii. Strengthen safety-net and social protection programs that involve community-driven public works schemes, with a view to providing effective support for communities affected by drought and disaster risks, at the same time as establishing productivity-enhancing infrastructure and building on existing social capital.

Strategic Objective 2: Building resilience, strengthening livelihoods and promoting prosperity, by increasing productivity and promoting the diversification of livelihoods and new income generating options

Strategic Actions:

i. Introduce and promote innovations that help increase and sustain productivity
   - Introduce and support climate smart crop and animal husbandry practices that are appropriate for the drylands and help to increase productivity and household incomes, as well as food and nutritional security. (The promotion of climate smart agriculture will involve collaboration between local research institutions, local administrations and extensions services, farmers and the private sector, to introduce, develop and manage appropriate crop varieties or species, cropping patterns, management practices including soil and water conservation practices, adjusting planting and weeding dates, as well as agroforestry and carefully managed homestead tree planting. Mechanisms such as climate smart villages and farmer field schools need to be integrated into local development plans. Livestock productivity can be enhanced through improved feeding and disease control practices, and by improving local breeds through selection. Effective platforms need to be established for the collaboration of research institutions, livestock keepers and the private sector on feed and fodder production.)
   - Improve moisture availability through improved water harvesting – with more efficient and effective tapping of rainwater, flood waters, and underground water resources, as well as improved *in-situ* water conservation and measures to increase the water holding capacity of soils.

- Promote the irrigated farming of fruits, vegetables and other crops, including fodder, encouraging the adoption of efficient techniques such as drip irrigation and hydroponics, and taking great care to avoid increasing soil salinity.
- Promote locally adapted dryland agroforestry systems and practices that increase food, fodder and wood production and meet subsistence as well as market demands.
- Promote sustainable production and marketing of wild edible plants that can be used as emergency, supplementary or seasonal food sources during times of drought and crop failures that may lead to food insecurity and even to famine, aiming to also diversify food sources since wild plants are rich in nutrients that are absent or found in limited quantities in commonly cultivated crops.
- Support pastoralists to maintain the right mix of species and classes of livestock in their herds and to practice informed and planned mobility, taking advantage of digital technology in order to efficiently use available feed and water resources over space and time.
- Improve feed availability through improved management of dry season grazing areas, establishing fodder banks, introducing drought-tolerant fodder crops and irrigated feed production, and developing the feed resource base around water points in order to reduce overgrazing and land degradation.
- Reduce the mortality and morbidity of livestock by improving animal health service coverage and facilitating the role of the private sector in service provision.
- Improve the coverage of agricultural extension services suited to the needs of communities in dryland areas with a view to initiating and supporting a transition of production systems from subsistence farming to market-oriented production, with a modern conception of agricultural knowledge systems that involves collaboration among multiple actors, involving research institutions, farmers, pastoralists and the private sector, and making use of digital technology and audio-visual communication.

ii. Support households in the drylands to diversify their livelihood options and have access to additional income generating activities

- Promote the collection/production, processing and marketing of products from the drylands – livestock and livestock products, forest products (bamboo, gums and resins, fuelwood and charcoal (harvested and produced in a controlled way that maximizes efficiency and minimizes environmental impacts), wild edible plants, such as date palms, *Tamarindus indica* and *Adansonia digitata*, medicinal plants, honey and bee waxes, forest coffee and spices, while also introducing legal hunting that generates incomes for local people.
- Encourage and support the establishment of small and microenterprises engaged in the processing and marketing of products, at the same time as promoting private sector investment in commercial farming (vegetables, fruits, sugar cane, cotton, sesame and other industrial crops) that can create permanent as well as temporary job opportunities, encouraging a "community-friendly" approach that accommodates local needs and manage trade-offs in a fair and equitable manner.

- Encourage engagement of households in fisheries, apiculture, small-scale handicrafts, artisanal mining, small-scale enterprise such as the production and marketing of biomass saving stoves, solar appliances and other energy saving technologies, etc.
- Promote ecotourism that creates jobs for women and youth, as cooks, guides, trekkers, etc.
- Encourage the development of urban centers in dryland areas so that an expanding service sector in urban areas creates jobs for the youth and helps to improve communities' access to basic services.
- Facilitating seasonal migration of labour from drylands to commercial farming and grand investment/project areas and even to other countries to increase inflow of remittances.

Strategic Objective 3: Developing inclusive value chains and supporting expansion of domestic and export markets for products from drylands

Strategic Actions:

i. Identify and support the commercial production and marketing of quality dry land products with high demand and potential for sustainable growth
   - Irrigated farm products – horticulture, fruits, annual crops, etc.
   - Animal feeds – to meet demands for livestock holding grounds and to meet feed gaps in the dry season and during droughts
   - Tree and forest products – e.g., frankincense, bamboo, Honey and beeswax, wild edible fruits, medicinal plants, etc.
   - Minerals – by putting in place and enforcing framework that promotes socially and environmentally responsible mining
   - Fishery and apiary products, etc.

ii. Support proliferation of primary markets (next to producers) and improve efficiency of marketing channels to producers (e.g., reduce the number of middlemen and brokers)

iii. Provide market information to producers to avoid a monopolistic role of exporters/wholesalers and processors in setting prices.

iv. Reduce number of unlicensed middlemen that have become a burden on the profitability and perhaps viability of the various product value chains, notably livestock and vegetables and fruits marketing from dryland areas

v. Strengthen and improve the inclusivity of agricultural value chains, and bridge the gaps between the different elements of these value chains that can lead to inclusive outcomes for rural areas and cities

vi. Develop regulations for the development, operation, and management of market facilities and for making them work better for producers (e.g., regulating roles of brokers for example).

vii. Undertake a comprehensive dryland products assessment study and establish a prioritization of value addition activities.

viii. Establish or create new markets for underutilized dryland products (e.g., livestock, milk, edible indigenous fruits, minerals, etc.)
ix. Introduce value-adding practices for dry land products for better revenue (processed bamboo products, essential oils from gum and resins, jams or juice from wild fruits, packed meal from livestock, pasteurized milk, etc.,)
x. Improve the value chains for various dry land products (live animals, livestock products, gums and resins, edible plants, etc.), identify export markets for these products, and establish links with importers of other countries
xi. Promote entrepreneurship and build business skills and financial literacy for value chain actors and improve access to credit and insurance services for producers, processors and traders.
xii. Encourage and support cooperatives engaged in the collection/production, processing and/or marketing of products from the drylands to increase their bargaining power and to expand their roles in ensuring their sustainable supply to domestic and export markets
xiii. Enhance the role the private sector in product and market development, and strengthen linkages between input providers, producers, traders and processors
xiv. Facilitate import, and ensure proper dissemination, timely availability and quality of critical inputs (feed supplements, livestock vaccines and medicines, crop protection chemicals, …) by also encouraging engagement of the private sector
xv. Promote entrepreneurship through business skills and financial literacy training and encourage financial services providers to establish tailored services and financial products for the drylands, with access to business advisory services.

Strategic Objective 4: Establish quality control systems for live-animal exports and promote livestock insurance and trust funds

Strategic Actions:

i. Map livestock tracking routes, establish marketing centers and improve infrastructure (such as livestock resting/holding grounds with improved shelter and feed and water availability) and veterinary service and quarantine systems to facilitate export marketing
ii. Create awareness about the need for and importance of having weather Index-based insurance both for dry land rural communities and for financial service providers
iii. Improve access to credit and insurance services (e.g., weather index-based livestock insurances, livestock trust funds) to sustain livestock based livelihoods in times of droughts and other risks
    - Organize and provide credit, insurance and other financial services tailored to dryland communities (e.g., putting in place policy and legal support to facilitate the use of livestock as collateral to access credit from banks and weather index-based livestock and crop insurance from insurance companies to help protect dryland rural communities against drought-related mortality of livestock and crop failures.

- Put in place mechanisms to facilitate the expansion of microfinance, and digital and mobile financial services in the dryland areas

iv. Build capacity for live-animal exports – by improving infrastructure, feed supply, quality control systems and traceability mechanisms, etc.
v. Strictly adhere to the livestock Sanitary and Phyto-sanitary requirements of international buyers and importing countries
vi. Set standards and certify quality to ensure safety and pave the way for exporting products
vii. Establish quality control systems and traceability mechanisms for live animal exports and livestock products
viii. Establish a multi-stakeholder platform to bring together all value chain actors and discuss and solve disputes among actors

Strategic Objective 5: Legalize, facilitate and effectively govern cross border trade, mobility of pastoral and agropastoral communities, and rural-urban and highland-lowland links in ways that better benefit communities and the national economy

Strategic Actions:

i. Put in place legal and institutional frameworks to legalise and effectively govern cross border trade
    - Identify cross-border areas, trade routes, markets and commodities handled
    - Document current practices and legal frameworks governing cross border trade by also documenting the views and opinions of key stakeholders – producers, sellers, buyers, law enforcement agencies, customs officials, etc.
    - Propose options for improving legal cross border trade of livestock, crops and forest products in ways that benefit all parties, after undertaking ex-ante critical assessment of socio-economic economic benefits of the current and alternative measures in terms of impacts on communities and the national economy.
    - Formulate, enact and implement legal frameworks and guidelines to formalize and effectively govern cross-border trade after having consulted and agreed with neighboring countries in ways that would maximize benefits of communities and countries, and pave the way for integration of countries in the IGAD Region.
    - Improve access to infrastructures, market, financial, and communications services to facilitate cross border trade
    - Make information available to smallholder producers and traders so that they also could benefit from legalized cross border trade, and will be affected less by brokers
    - Coordinate security and regulatory activities governing movement of goods and services across borders (to control illegal collection of fees that would impact the efficiency and costs of cross-border trade) and harmonize animal health requirements and vaccination programs between countries to facilitate movement of animals across borders
    - To the extent possible decentralize border trade decisions to local officials and trader associations

ii. Ensure that mobility of pastoralists and agro-pastoralists is not hindered by development interventions, but facilitated through use of information and technologies
    - Map mobility corridors in consultation with pastoral community and ensure that they are respected
    - Establish legal and institutional framework for pastoral mobility that recognizes and facilitates herd mobility as a central management strategy to timely and effectively use seasonally available feed and water resources in the drylands, and to nurture the historical and cultural relationships amongst communities and between people and the land.
    - Facilitate regional and cross border mobility to effectively use seasonal availability of feed and water resources
    - Strengthen the traditional institutions and conflict management and dispute resolution mechanisms (processes) to avoid the hindrance of herd mobility due to insecurity that arise because of scarcity of resources (pasture and water)
    - Undertake near real time monitoring of resource availability using remote sensing and GIS and communicate the information to users to better inform mobility
    - Provide adequate services (veterinary service, school, human health, etc.) in ways that are compatible with lifestyle and requirements of mobile communities.

iii. Strengthen and better manage rural-urban and highland-lowland links, to the mutual benefit of lowland, highland and urban communities
    - Promote use of renewable energy (e.g., solar) and establish green villages/towns
    - Manage the links between highland crop and lowland livestock based production systems in ways that benefit the two communities by also improving transportation network and market links
    - Support and promote the establishment of basic cooperatives from pastoral communities to offer new perspective and insight on how to better maintain rural–urban linkages in the processes of urbanization in pastoral regions.
    - Recognise and enhance the role of the market centers and administrative towns expansion in dryland areas in creating opportunities for processing and marketing dryland products, and for improving access to inputs and basic services of dryland communities
    - Enact policies that support investment that are geared towards bringing about transformational, balanced and beneficial changes to rural-urban and high-land-lowland links by facilitating exchange of inputs and outputs/commodities.
    - Strengthen institutional linkages (such as agriculture, health, finance, and justice) between lowland and highland systems to extend support in the respective sectors in terms of training, facilitating transfer of technology and inputs (e.g., seedlings), control of crop insects and animal diseases breakout, etc.
    - Practice PES to create economic incentives for communities to conserve natural resources by making users of these services (e.g., urban communities or lowlanders using water from forested highlands for example).

Strategic Objective 6: Promote equitable and sustainable investment and infrastructural development in the drylands to improve access to markets and basic services

Strategic Actions:

i. Improve access to basic services to improve access to markets and market information and to narrow down rural-urban gaps across key development indicators, in access to roads, clean water, energy, communications, health and education services) and thereby in people's quality of life
   - Improve access to electric power and other energy sources as demand for power continues to increase with the expansion irrigation, mining, & tourism in the drylands.
   - Extend the coverage of telecommunication networks to facilitate information exchange – e.g., demands for products and market prices,

ii. Encourage livestock fattening activities in selected areas and times linked with markets

iii. Establish processing facilities in selected areas to create market links for dryland products – e.g., livestock fattening around extra feed producing areas (e.g., sugar cane plantations), slaughterhouses, essential oil extraction centers, apiary and fishery products collection and processing centers, etc.

iv. Establish a framework to promote socially and environmentally responsible mining

Strategic Objective 7: Build and maintain capacity both at strategic and operational levels for improving livelihoods, and developing value chains and markets

Strategic Actions:

i. Design and implement institutional support programs to build and maintain capability of actors and capacity of institutions focusing on technical, logistical (technologies, infrastructure, transportation, office facilities, field equipment, finance, etc.) and managerial aspects (e.g. to better align national and sectoral plans with local values and priorities, to make informed decisions in managing trade-offs between conservation and development objectives when making land use changes, to support and facilitate collection actions and negotiations in benefit and responsibility sharing among actors engaged in landscape restoration, etc.) to effectively plan, implement and evaluate conservation and development interventions in the drylands,

ii. Build the capacity of pastoral communities and their organizations to organize themselves for collective actions, to demand their rights from the government and effectively discharge their responsibilities, to be better prepared for and manage risks, and to build capacity to adopt and use innovations that increase productivity and reduce their vulnerability

iii. Prepare training modules tailored to dryland areas to help increase productivity, diversify livelihood strategies and additional income generating activities, and to develop dryland products and markets, organize training of trainers that will train development agents

iv. Put in place extension service provision that focuses on youth and women and responds to their demands to build knowledge and skills in agriculture and in establishing and running businesses

8. Policy Alignment and Coordination

8.1 Introduction

Economic progress, diversification, and integration, based on a modern pastoralism that relates to urban centres and complemented by climate-smart agriculture are central in promoting development in the dryland areas. Dryland restoration, as part of broader sustainable development, depends on the coordination and alignment of policies and strategies across sectors. If the great potential of Ethiopia's drylands for development is to be realized, policies and strategies that address agriculture, livestock, water development, environmental management and tree planting, mining, and urban development, inter alia, must complement one another, rather than work against each other. While Ethiopia has developed strong policies in the various sectors, weak policy coordination and alignment have continued to undermine their successful implementation. In order to address these failures of coordination and alignment, we must put in place structures and incentives that foster collaboration across sectors and institutions, and between all stakeholders, in pursuit of national goals.

Irrigated agriculture can expand, without compromising the vital biodiversity and economic potential of dryland forests and woodlands, which are often richly endowed with forest products such as gums and resins. Water resources can be utilized more efficiently, in ways that support dryland farming as well as livestock keeping, the mainstay of dryland livelihoods and a major contributor to the national economy. Climate-smart agriculture, alongside a modern and mobile pastoralism, can enhance food security, with expanded production based on increased efficiency and productivity, rather than the expansion of low-productivity agriculture onto marginal lands. But this depends on the effective and coordinated implementation of policies across sectors – inter alia, providing secure tenure for smallholders, delivering participatory extension services, and monitoring to ensure those natural resources are used in a sustainable way. The integrated management of trees, water, crops, livestock and other resources across landscapes can help Ethiopia to meet its international environmental commitments, as well as its social and economic goals under the Green Economy Strategy. This requires a new and more effective approach to policy alignment and institutional coordination.

The policies and institutions thematic area of this Strategy is organized into three subsections. The first subsection presents major gaps and challenges based on a review of policies, strategies, plans, and programs pertinent to dryland restoration. In this subsection, major gaps in relation to dryland restoration are identified. The second subsection identifies key strategic issues, drawn from the review, that need to be addressed. The third subsection sets out strategic objectives and actions to address the identified policy, institutional and legal issues.

8.2. Gaps and Challenges

Relevant policy documents were reviewed to gather information, with respect to dryland restoration, on policies, and strategies, with a view to promoting policy alignment and sectoral coordination for integrated sustainable natural resources management in the dryland areas of Ethiopia. The main documents reviewed were: the Pastoral Development Policy and Strategy; the Agriculture and Rural Development Policy (draft); the Environmental Policy; the Forest Development, Conservation and Utilization Policy and Strategy; the Water Policy (draft); the Mining Policy (draft); and the National Disaster Risk Management Policy Framework and implementation Strategy (draft). In addition, the Constitution, the 10-year Development Plan, and global and regional commitments signed by the Government of Ethiopia have been assessed in the same way. However, it is important to note, except the pastoral development policy and strategy that is totally devoted to the pastoral areas, none of the sector policies reviewed recognized the drylands separately as distinct landscapes, predominantly characterized by low precipitation, and pastoral and agro pastoral livelihood systems that require specifically crafted policy interventions within sectoral policies. This general failure to take into account the particular conditions of the drylands in sectoral policies needs to be addressed during the process of promoting cross-sectoral coordination.

8.3 Key Issues

On policies and institutions, the following seven key issues were identified from the review.

1) **Lack of a national land use policy and plan.** In efforts to establish integrated sustainable natural resources management for improved dryland livelihoods, the application of land use policy and planning is a determining factor. Legal and institutional frameworks to better manage land use changes in the drylands are needed and should be enforced. Effective land governance is fundamental, underpinning all other efforts.
2) **Weak enforcement of laws and poor implementation of existing policies and strategies:** Existing legal provisions that are meant to conserve and sustainably utilize natural resources are hardly implemented. Likewise relevant sectoral policies and strategies that would make a positive contribution to environmental protection and livelihoods improvement in the drylands are believed to have been marginally implemented in the dryland areas, due, among other things, to the underdevelopment of infrastructure.
3) **Poor policy coordination and weak accountability mechanisms:** As natural resources management activities are undertaken by different governmental and non-governmental agencies, coordination and accountability have become problematic, making it difficult to bring about the desired changes in dryland areas and people's livelihoods. Inefficiencies and trade-offs, resulting from the failure to align the natural resources management efforts of the different actors, have hampered dryland restoration, and even aggravated the degradation of resources, undermining livelihood systems.

4) **Institutional challenges in the promotion of landscape restoration and sustainable natural resources management in the dryland areas.** These relate mainly to the lack of a properly designated institution responsible for dryland restoration; to mandate duplication and institutional fragmentation, to the instability of institutions (with frequent administrative restructuring), to poor alignment of sectoral institutions at Federal and Regional levels; and to weak institutional capacity in the dryland areas of Ethiopia. There has been a failure to appreciate and prioritize the need to establish an institution responsible for integrated sustainable natural resources management in the dryland areas. Thus, natural resource management activities are being undertaken by different government agencies in a piecemeal or fragmented way. In addition, institutions are generally weak, with limited human and financial capacities to implement policies and programs. Efforts to build and sustain the capacity of CBOs and formal government institutions in the dryland areas remain scanty.
5) **Inadequacy of research and human resources development efforts in support of dryland restoration and the generation of technologies adapted to the drylands.** The Ethiopian Environment and Forest Research Institute (EEFRI) has undertaken research on the sustainable management of forests and woodlands in the dryland areas. But more needs to be done, especially on options to promote inclusive value chain development for products from dryland areas. Although some universities, notably those of Mekelle, Haramaya, Jigjiga, and Hawassa, have established teaching programs in dryland agriculture, none of them excel in the kind of dryland research that is needed to supply the required technologies for dryland restoration. Wondo Genet College of Forestry and Natural Resources of Hawassa University, the country's principal academic centre for forestry, has an MSc program on Dryland Forestry, but it is still only weakly linked to policy and practice. Research on harvesting and efficiently using water in drylands for crop and livestock production is also underdeveloped, due to the lack of capable institutions in managing existing natural resources in the drylands. Thus, there is limited knowledge and supply of technological inputs to support an extension system well adapted to dryland environments.
6) **Limitations in data availability on dryland areas to inform planning and policymaking, and the lack of effective monitoring (MEAL) to objectively evaluate plans and programs.** Dependable and up-to-date biophysical and socioeconomic data on drylands and dryland communities, disaggregated by gender and other crosscutting issues, is lacking. This undermines the capacity to engage in informed planning of interventions and in policymaking. Plans and programs are hardly evaluated, losing the opportunity to learn from them. The lack of dependable data on the direct and indirect contribution of forests in the dryland areas to the national economy and to local livelihoods continues to result in the underestimation of the contribution of the forestry sector in the national system of accounts. Information on dry forests is even scarcer.
7) **Underdevelopment of infrastructure in the drylands and extremely poor access of communities to markets, extension, credit, and insurance services.** Inadequate infrastructure, particularly for transport and telecommunications, has hampered

development in livelihood systems as well as wider (national) social and economic integration, maintaining the gap that has long persisted between the densely populated highlands, with adequate moisture availability, and the sparsely populated lowlands, characterized by moisture limitation. In addition, access to markets and extension services as well as to credit and insurance facilities has been extremely limited. This continues to undermine the adoption of new technologies and practices and hinders the marketing of products from dryland areas, by limiting access to information and markets and by making transaction costs extremely high.

8.4 Strategic Objectives and Actions

To address the key issues identified, the following strategic objectives with their respective actions have been proposed

Strategic Objective 1: Enact and enforce an effective and adaptable national land use policy and plan

Strategic Actions:

i. Promulgate laws, guidelines and directives for a national land use policy and plan
ii. Based on the legal framework and considering the contexts of drylands, improve the governance of land use changes in the dryland areas and better guide restoration efforts

Strategic Objective 2: Enforce existing laws and implement policies and strategies relevant to dryland development with full consideration of the contexts of drylands ecosystems and communities.

Strategic Actions:

i. Increase awareness about existing laws and policies among experts at lower levels of the government structure as well as community leaders
ii. Build the capacity of institutions and experts to enforce laws and implement policies

Strategic Objective 3: Ensure alignment of policies, and put in place mechanisms to promote sectoral coordination and accountability of institutions

Strategic Actions:

i. Align the dryland restoration strategy with global, regional, national sub-national and local development plans and commitments.
ii. Establish a dryland restoration stakeholders' platform that brings together stakeholders and actors to facilitate information/knowledge sharing and coordination.
iii. Enhance partnership and networking among key stakeholders
iv. Align the restoration strategy with local stakeholders' development needs
v. Establish a financing system that rewards cooperation and coordination among sectors

Strategic Objective 4: Assign/establish an institution in charge of dryland restoration and responsible for coordinating the efforts of relevant sectors and in ways that avoids gaps and overlaps in responsibilities

Strategic Actions:

i. Develop the policy and legal frameworks for governing drylands restoration at all levels
ii. Designate appropriate institutions at the federal, regional, and local levels responsible for coordinating and leading dryland restoration activities
iii. Establish a dryland restoration stakeholders' platform at all levels of the government structure to improve coordination of sectors and actors
iv. Establish a trust fund for dryland restoration
v. Establish a sustainable financing system and mobilize domestic as well as external financial resources to support restoration initiatives
vi. Assist financial institutions to support disaster risk mitigation and adaptation measures in the drylands, with stronger, more innovative, and flexible mechanisms
vii. Prepare guidelines to facilitate access to and use of financial resources by agencies and communities engaged in landscape restoration

Strategic Objective 5: Build capacity for innovation by strengthening research and human resources development for dryland restoration

Strategic Actions:

i. Build the research and outreach capacity of universities and research centers based in dryland areas
ii. Develop, adapt, and avail appropriate technologies for the drylands that can maximize both conservation and livelihood outcomes
iii. Strengthen the linkages between educational and research institutions and the extension system, as well as with the private sector
iv. Identify and address challenges faced in efforts to improve access to technologies and promote wider adoption and sustained use of innovations by dryland communities
v. Build the implementation capacity of relevant institutions, with adequate staffing that is accompanied by access to training in order to upgrade knowledge and skills

Strategic Objective 6: Establish a national database and knowledge management system for Ethiopia's drylands, together with harmonized planning, monitoring, and evaluation mechanisms

Strategic Actions:

i. Put in place a mechanism to, in a timely manner, gather, analyze, archive, and share socio-economic and biophysical data with a view to establishing and managing a country-wide database and knowledge management system on the drylands
ii. Enhance partnership and networking among key stakeholders
iii. Promulgate the required laws, guidelines, and directives for data sharing, and for coordinated and harmonized planning, monitoring and evaluation, and for

institutionalizing co-learning among stakeholders, in order to facilitate cross-sectoral coordination

iv. Strengthen a national MEAL system to evaluate interventions in a timely and responsive manner

Strategic Objective 7: Promote equitable development of infrastructure in the drylands in order to improve access to information, markets, extension, credit, and insurance services

Strategic Actions:

i. Undertake baseline studies on infrastructure development and social service needs in the drylands
ii. Improve access to market information and to markets in order to facilitate market linkages
iii. Improve access to basic social and economic services (including transport, telecommunications, banking/credit and savings services, insurance, demand, and price information on products)
iv. Support financial institutions (with mobile banking and insurance) to expand services, promoting disaster risk mitigation and adaptation in drylands, and enabling pastoralists and smallholders to build up cash savings.

9. Coordination and Implementation Arrangements

9.1. Stakeholders Mapping and Engagement

Based on the current public institutional arrangement, about 16 key governmental stakeholders have been identified in respect of their roles in natural resources management, natural resource-based livelihoods and land resource governance. These stakeholders need to collaborate in networking, partnership, and joint planning, implementation, monitoring, and evaluation to bring about the desired changes for dryland restoration. The key governmental stakeholders are the Ministry of Agriculture (MoA), the Ministry Irrigation and Lowlands (MILLs), the Ministry of Mining (MoM), the Ministry of Water and Energy (MoWE), the Ministry of Trade and Regional Integration (MoTRI), the Ministry of Innovation and Technology (MoIT), the Ministry of Industry (MoI), the Ministry of Tourism (MoT), the Ministry of Finance (MoF), the Ministry of Planning and Development (MoPD), the Ministry of Women and Social Affairs (MoWSA), the Ministry of Peace (MoP), the Ministry of Health (MoH), the Ministry of Education (MoE), the National Disaster Risk Management Commission (NDRMC), and the Investment Commission. Of these government institutions, MoA, MILLs, MoM, MoWE, MoT, MoF, MoPD, and NDRMC would be members of the Dryland Restoration Inter Ministerial decision-making body, given their significant share of implementation responsibility. In addition, relevant academic and research institutions, NGOs and donors would work together with governmental stakeholders. One or more universities that are believed to champion excellence in dryland restoration teaching and research would work in collaboration. The roles of these institutions, especially the public institutions, will be assessed in detail with respect to alignment in dryland restoration efforts. These institutions will be accordingly assigned by the Ministry of Agriculture for the purposes of alignment and harmonized implementation. A table showing the detailed roles of the key stakeholders is annexed as Table 2.

9.2. Building Partnerships and Strengthening Networking

The partners in dryland restoration can be classified into two basic categories. The first are implementing partners (including coordination) and the second are financing partners. The prime factor in effective partnership is sharing objectives in dryland restoration efforts. The vision, mission and goal of the national dryland restoration strategy would be aligned with the common interests of the implementing governmental and nongovernmental agencies and funding partners. Having shared goals helps to avoid the numerous problems that could arise from competing goals and conflicting interests and deter the implementation and effectiveness of the strategy. The second important element for effective partnership is building trust among partners. Implementing agencies should be accountable for bringing about the desired changes and held accountable for the efficient use of financial resources allocated to dryland restoration. Resource mobilization shall be an integral part of the strategy, which is expected to be holistic and

inclusive, and should promote networking and the building of partnerships to facilitate its implementation.

Networking plays an indispensable role in strengthened partnerships. Experience sharing, information and resource sharing would be enhanced among partners. Web-based platforms and stakeholders' forums facilitate networking. A dedicated website on the restoration of Ethiopian Drylands will be established and owned by the Ministry of Agriculture. This dedicated website will facilitate information sharing and resource allocation among partners, besides hosting the dryland restoration stakeholders' forum, which should undertake periodic reviews of the implementation status of the dryland restoration strategy. Links would also be made with global, regional, and national research institutions, academia, and resource centers to serve researchers, academia, development practitioners with the required data and information for innovative interventions in drylands restoration.

9.3. Bridging Intra- and Cross-sectoral Gaps and Improving sectoral coordination

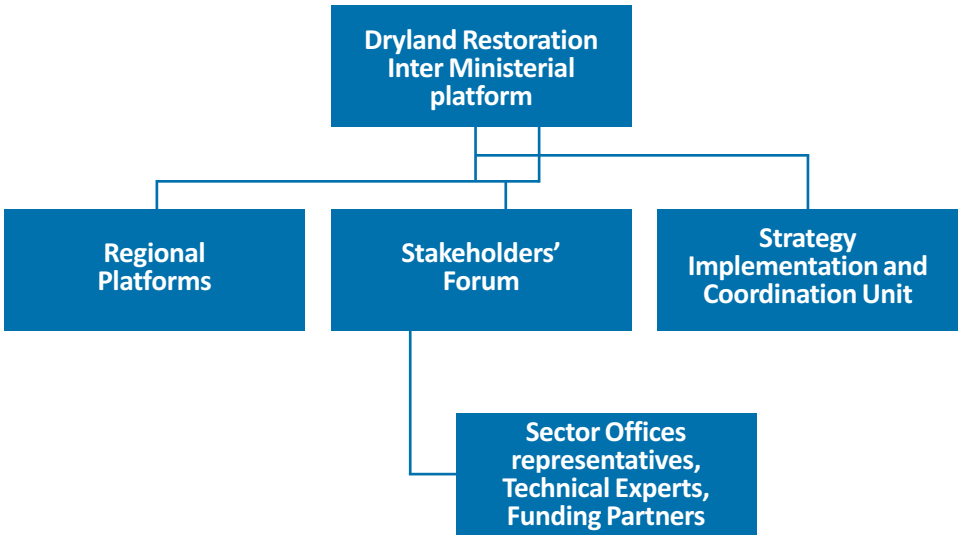
There will be a Dryland Restoration Inter-Ministerial Platform at country level, chaired by the Ministry of Planning and Development (MoPD), with the Ministry of Agriculture as secretary, comprised of delegates from ministerial offices with significant responsibilities in dryland restoration, to be determined during the wider stakeholder mapping exercise. The Dryland Restoration Inter-Ministerial Platform would serve as a decision-making body, providing strategic guidance in affairs related to the national dryland restoration strategy's planning, implementation and M&E.

The Implementation and Coordination Unit will work under the guidance of the Dryland Restoration Inter-Ministerial Platform. It is envisaged that the Ministry of Agriculture will be government agency to host the Strategy's Implementation and Coordination Unit. The Implementation and Coordination Unit's coordinator would serve as the secretary of the Dryland Restoration Inter-Ministerial Platform. He/she will work closely with the sub-national platforms from regions with significant areas of drylands, which would be represented by regional administration line offices, similar to the federal Dryland Restoration Inter-Ministerial Platform. The regional platforms would be responsible for the harmonization of planning, monitoring, and evaluation of the dryland restoration strategy, in line with regional development plans. In addition, these platforms would liaise with concerned line government bureaus or agencies, NGOs, community-based organizations (CBOs), associations, indigenous institutions, and local communities for the smooth implementation of the strategy. The Inter-Ministerial Platform would hold meetings twice a year, whereas the stakeholder forum would convene every quarter, following Ethiopia's budget year.

The Implementation and Coordination Unit at the national level would also be responsible for coordinating program routines, resources mobilization, institutional capacity building, system development, program and project preparation, planning, M&E, and networking

and partnerships with donors and other stakeholders. The Implementation and Coordination Unit would organize and strengthen the Dryland Restoration Stakeholder's Forum for dryland restoration strategy implementation reviews at regular time intervals. The Stakeholders' Forum is anticipated to be comprised of the planning monitoring and evaluation unit heads in each stakeholder ministerial office, representatives of funding partners (development agencies and NGOs), as well as technical experts from research institutions and academia. Members of the Stakeholders' Forum would be responsible for mainstreaming and integrating the national dryland restoration strategy with their respective sector development plans and M&E schemes.

Figure 10: Structure of the implementation and coordination arrangements



9.4. Improving alignment of planning, and reporting of activities of government agencies at different levels of the government structure

The national dryland restoration strategy would be aligned with the national 10-year Development Plan, sectoral development plans, regional and local development plans, and existing and new major projects (investments) in the drylands of Ethiopia. The dryland restoration strategy would also be owned by the respective governmental and nongovernmental actors at federal and regional level, enabling concerted implementation. Sectoral offices would be responsible to cascade and align the national dryland restoration strategy with the regional and local development plans.

The sectoral offices of the government would be responsible for reporting performance in their respective dryland restoration interventions and submit their reports to the Ministry of Planning and Development, aligned with their 10-year Development Plan sectoral reports, based on the government's reporting system or platform. Implementing sectoral government offices would also make sure that the performance indicators as agreed to measure dryland restoration interventions, according to the result matrix, are fully captured in their periodic reports. Separate periodic national reports on progress in drylands restoration would be prepared by the Ministry of Agriculture, or with the concerned accountable insitution, in collaboration with the Ministry of Planning and Development. Both sectoral and national dryland restoration periodic reports would be inclusive, considering the crosscutting issues and information disaggregated by gender and by area – pastoral, agro-pastoral, dryland and non-dryland. The coordination office at the Ministry of Agriculture would serve as a catalyzing agent for smooth reporting and communication processes among implementing agents and donors.

10. Financing Mechanism

10.1. Attracting International Support

Aligning the national restoration strategy with global and regional development commitments would help access global finance, such as the Global Climate Finance (GCF) and the Global Environmental Facility (GEF). Project proposals that emanate from the national dryland restoration strategy could be prepared by implementing agencies of the government and submitted to the identified funding partners for international financial support. Other potential global or regional partners for restoration would be identified and invited to work together towards shared goals in drylands restoration. A transparent financial management system would also be put in place with effective monitoring and evaluation and reporting systems. This may include carbon trading opportunities to better access global financing.

10.2. Mobilizing Domestic Resources

The Drylands Restoration Strategy is part and parcel of the national development plan of the Federal Democratic Republic of Ethiopia. Thus, the Government of Ethiopia would be committed to finance the implementation of the strategy under the 10-year Development Plan financing mechanism. However, global financing is expected to help fill financial gaps to ensure sustained implementation of the strategy, especially in areas of interventions where government support falls short. To finance the implementation of the strategy sustainably, existing government institutional infrastructures and manpower would be effectively harnessed. The government would also use financial and non-financial incentive mechanisms to attract investment (private sector participation) in the dryland areas. The local communities would also play their roles, contributing their labor, particularly in natural resources management. A grant transfer formula to support regional government could also be incentive based, in order to enhance sustainable natural resource management in the drylands.

10.3. Promoting Collective action, Community Participation and Private Sector Engagement

Communal participation would be motivated through awareness creation and empowerment. Communities in the dryland areas should know the specific potentials of their local environments that could be tapped for development. The drylands are commonly thought of as unproductive, hostile environments for development. Efforts have to be made to change mindsets, through awareness creation on the potentials of drylands for irrigation, tourism, and biodiversity (flora and fauna) conservation, besides enhancing government policies, strategies and legal frameworks. Dryland livelihoods can become resilient to drought, if steps are taken to harness the ample underground water resources of the drylands. Tourism could also support the diversification of livelihoods in

the drylands. Communities in dryland areas need to be assisted to actively engage in collective actions in planning and implementing dryland restoration activities. This could be assisted with carefully thought out awareness creation on the fragile and susceptible nature of dryland ecosystems and the need for concerted efforts to avoid ecological damage and subsequent impacts on local livelihoods. Awareness creation and local community empowerment can result in active communal participation in sustainable natural resources management efforts. Dryland communities could contribute labor for interventions in natural resources management and care for their environment if they feel a sense of ownership.

The private sector could be engaged in dryland restoration, if natural resources management based private enterprise is promoted. The private sector could be engaged in developing the value chains for frankincense, minerals, bamboo, tourism, irrigation, and livestock in dryland areas, based on principles of sustainable natural resources management, with inclusive business models that enhance local participation and increase local incomes. To attract the private sector to dryland areas, financial and non-financial incentive mechanisms need to be put in place by the government.

11. Monitoring, Evaluation, Accountability, and Learning (MEAL)

11.1. Monitoring and Evaluation System

Key indicators in major result areas are identified and baselines would be set to monitor and evaluate anticipated changes in drylands restoration. These indicators would be harmonized with global, regional, national, sub-national and local development plans, programs, and projects. For this, a comprehensive result framework is presented below (annexed as Table 1), designed to fit with the government's M&E system and to guide the M&E process for dryland restoration. Government implementing agencies are the data sources and responsible bodies to generate these data. The information management systems of the implementing government agencies (ministries and regional bureaus) would support the monitoring and evaluation system for the dryland restoration strategy, with the required data and information for decision making. Performance monitoring is mainly conducted by the respective government implementing agencies through continuous assessment, analysis, and communication. Evaluations would be coordinated by the Ministry of Agriculture, with the Ministry of Planning and Development, and with the active participation of implementing agencies, donors and other stakeholders.

11.2. Building Accountability

Evaluation helps to enforce accountability for one's responsibility to deliver a particular result, using the allocated resources. The national restoration strategy would be cascaded to the regions, to be owned by respective actors at federal, regional, and local levels and aligned with their respective development plans. Periodic evaluations would be conducted by independent evaluators. Baseline studies, a mid-term evaluation and final evaluation would be conducted by independent experts or firms. Lessons drawn from evaluation results would help improve the implementation processes, adjusting programs and projects towards the intended results. Periodic evaluation results would also be submitted to the federal and regional government decision-making bodies, the dryland restoration Inter-Ministerial Platform, donors and other key stakeholders. The media will also be informed, in order to build and strengthen accountability.

11.3. Building Knowledge Management System on Drylands

Knowledge management is important for many reasons. Lessons can be learnt from past experiences if there is a strong knowledge management system. Sustainable technology supply for improved production and productivity can be ensured if we can manage knowledge for innovation. The information generated in the drylands through research, evaluation and assessment of best experiences, and economic social and environmental development trends must be properly documented and shared regularly to stakeholders in dryland restoration. The required online information sharing platform (websites and links) would be established to facilitate learning and ensure access to information on drylands restoration, not only for Ethiopians but also for the global community.

12. Risks and Assumptions

The main risks expected in planning and implementing dryland restoration interventions are:

- Conflicts
- Climate change
- Financing

Accordingly, the following are the assumptions that this strategy is based on:

- Various kinds of conflicts (contradictory interests, resource related etc.) are managed and put under control
- Effective disaster risk management measures will be implemented to reduce vulnerability
- There will be sustainable financial resource flows.

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Annex 1. Proposed Results Framework for the Strategy (part 1)

Thematic Areas	Strategic Objectives	Expected Results (Outcomes)	Dryland Restoration Strategy Indicator
Restoration of dryland areas	Restore, conserve, develop and sustainably use dryland ecosystems	Economic contribution of drylands increased	Percentage share of drylands economy from the national GDP
		Aridity situations of dryland areas improved	Coverage of sustainably managed dry forests and managed landscapes from the total area of drylands
		Food security situations of communities in drylands improved	Percentage share of Food secured HHs in dryland areas
		Vulnerability of communities in the drylands reduced	Percentage share of HHs affected by disasters in dryland areas
	Promote Integrated and sustainable Natural Resources Management practices in drylands	Natural Resources base of the drylands enhanced	Percentage share of dryland forests under sustainable management
			Percentage share of dry land areas covered with soil and water conservation measures
			Percentage areas of land free from invasive species
			Number of in-situ conservation sites established
			Number threatened species/ genetic resources conserved
			Threatened ecosystems identified and rehabilitated

	National Development Plan Indicator	Sources of Data	Responsible agency
	Share of Forestry subsector in GDP (%)	Assessment	MoPD
		Assessment	MoPD, MoA
	Share of households that attained food security (%)	Assessment	MoPD
	Number of deaths, missing persons and persons affected by disaster per 100,000 people (disaggregated by gender and age)	Assessment	MoPD
	Share of land area covered by forest (%)	Report	MoA, FD
	Area covered by soil and water conservation structures (ha)	Report	MoA
	Annual invasive alien species control coverage (millions of hectares)	Report & assessment	MoA, EBI
		Report	MoA, EBI
	Recovered wildlife and genetic biodiversity resources	Report	EBI
		Report	MoA, EBI, FD

Annex 1 part 2

			Amount of carbon sunk in drylands
			Area of degraded dry forests rehabilitated
			Annual soil loss reduced in tons
			Payment for Ecosystem service established, and payments effected
	Improve management of parks and protected areas	Promoted community-based ecotourism	Number of parks or sanctuaries established or strengthened
			Number of community-based ecotourism established
			Number of rural jobs created (disaggregated by gender)
	Increase water availability and use efficiency in dryland areas	Increased water availability	Percentage share of HHs with improved access to irrigation water in dry land areas
			Percentage share of livestock with better access to water during the dry season
			Percentage of HHs in dry land areas benefited from irrigation technologies
	Improve management of rangelands and livestock in dry land areas	Enhanced productivity and health of livestock and rangelands	Percentage share of livestock vaccinated and with access to health service

	Amount of GHG emissions in million tons of CO2e from forest sector	Assessment	MoA
	Share of degraded forest area rehabilitated (%)	Report	MoA, FD
	Average soil loss in ton per hectare per annum	Assessment	MoA
		Report	MoPD
	Percentage of wildlife conservation coverage	Report	MoT
		Report	MoT
	Employment opportunities created in the agriculture sector (male and female) per annum	Report	MoA. MoT
	Total irrigation land area (thousand hectare) developed and became operational	Report	MoWE
	Share of pastoralists with access to livestock water point (%)	Report	MoA
	Percentage of improved use of irrigation technologies	Report	MoA, MILL
	Veterinary clinic service coverage (%)	Report	MoA

Annex 1 part 3

			Area of rangelands put under improved rangeland management
	Promote wider use of cost-effective climate smart energy technologies	Reduced pressure on forests and woodlands for fuelwood	Percentage share of HHs that adopted climate smart energy technologies
	Improve governance of the natural resource base of dry lands (including mining practices)	Existing Environmental & social standards of the government are adhered to	Number of community-based watershed user cooperatives established and managed to ensure improved governance of watersheds
			Number of projects with Environmental and Social safeguards management plan
Land governance	Put in place appropriate land use plan and clear and locally fit land tenure systems for dryland areas	Improved land tenure system	Number of dryland pastoral woredas with clear and effective land tenure system
			Percentage of HHs or communities issued with land use certificates, preferably second level land use certificate
			No. of watersheds guided by participatory local level land use planning process
			No. of woredas with National Rural land information system
			Proportion of land related conflict cases reduced

	Number of green technologies implemented	Report	MoWE
		Report	MoA
	Number of development projects passed and implemented environmental impact assessment	Report	MoPD, MoM, MoA, MILLS, MoWE
		Assessment	MoA
	Number of household heads who are issued second level of land certification (Total)	Report	MoA
	Integrated watershed development coverage in millions of hectares	Report	MoA
		Report	MoA
	Number of internal conflict incidents	Assessment	MoA

Annex 1 part 4

	Strengthen and improve land governance institutions in ways that empower local people	Capacitate institutions	Number of land governance related institutions supported for building and sustaining capacity and capability
Value chains, markets and livelihoods	Build the resilience and prosperity of livelihoods in the dryland areas by also supporting diversification	Vulnerability of livelihoods reduced	Percentage Increase in production & productivity of major crops
			Percentage Increase of livestock production and productivity
			Percentage increase in sustainably produced forest products
			Number of jobs created for women, unemployed youths and under employed farmers
			Percentage share of HHs with diversified livelihood options
			Percentage share of live animal exported through quarantine system from the total exports in dryland areas
			Percentage share of HHs with crop - livestock insurance system
	Strengthen value chains and market links of dryland products and services	Improved value chains and market links	Number of dryland products supported
			No. of dryland market products market links established with national or international markets

		Report	MoA, MoPD
	• Total crop production in million quintal (total) •Major food crops productivity	Report	MoA
	•Total meat produce in thousands tone	Report	MoA
		Report	MoA
	Employment opportunities created in the agriculture sector (male and female) per annum	Report	MoA
		Assessment	MoPD
	Foreign currency generated from exports/horticulture exports (in million USD)	Report	MoA, MoTRI
		Report	MoA, DRMC
		Assessment	MoTRI
		Report	MoTRI

Annex 1 part 5

Policy Alignment and Coordination	Enact and enforce national land use policy and plan	National land use policy/plan enacted	Land use policy documents
	Enforce existing polices, strategies and laws relevant to sustainable dryland development.	Polices and strategies duly implemented	Policies/strategies/laws documents identified for enforcement
			Number of stakeholders aware of the identified policy documents
	Ensure alignment of policies and strategies as well as sectoral plans, and put in place mechanisms to promote sectoral coordination and build accountability of institutions	Aligned policies and development plans	Stakeholders' platforms established at federal and regional level
			Dryland National strategy mainstreamed into sectoral development plans and periodical reports
			Number of institutions or departments assigned for implementing the dryland restoration strategy
	Build capacity for innovation through strengthening research and human resources development for restoring drylands	Research, academic and development institutions in dryland restoration capacitated	Number of Universities and Research centers capacitated
			Number of Universities and Research centers identified as center of excellence in dry land research and curriculum
	Establish a national database and knowledge management system for drylands and harmonized planning, M&E mechanism	Data base in place	Knowledge management and Information system Data base established for dryland areas

		Report	MoPD
		Report	MoPD
		Reports	Ministries/sectors
		Report	MoPD
		Reports	Ministries/sectors
		Reports	MoPD
		Report	MoPD
		Report	MoPD
		Report	MoPD

Annex 1 part 6

	Promote development of infrastructure in the drylands to improve access to information, markets, extension, credit, and insurance services	Gaps reduced	% of budget allocated for dryland restoration
			% of social services coverage in dryland areas
			% crop production share of drylands areas
			% livestock production share of drylands areas

		Report	MoPD/MoF
		Report	MoPD
		Report	MoPD
		Report	MoPD

Annex 2: Mapping of stakeholders by thematic areas and their expected roles

Thematic Areas	Roles and Responsibilities	Stakeholders
Integrated Natural Resources Management (INRM)	Comprehensive dryland natural resources assessment	MoA, MILLs, MoWE and MoPD
	Sustainable management of dryland forests	MoA
	Soil and water conservation measures in dryland areas	MoA
	Protection of dryland areas from invasive species	MoA
	Establishment and management of *In-situ* conservation sites	MoA
	Identification and rehabilitation of threatened ecosystems	MoA
	GHG measurement in drylands	MoA and MoPD
	Rehabilitation of degraded forests in the dryland areas	MoA
	Measuring annual soil loss	MoA
	Establishment of Payment for Ecosystem Services models	MoA, MoPD, MoT
Land governance	Put in place land tenure system that best fits and serves dry lowland areas	MoA
	Issuance of land use certificates to communities and individual households as found appropriate	MoA
	Guiding watersheds restoration by participatory local level land use planning	MoA
	Roll out national rural land information system	MoA
	Capacity building for land governance related institutions	MoA and MoPD
Livelihoods, value chains and markets	Monitor and report crop production and productivity	MoA
	Monitor and report livestock production and productivity	MoA

	Monitor and report production and productivity of forest products	MoA
	Create job opportunities for unemployed youths, women and under employed smallholder farmers and pastoral and agropastoral communities	Ministries
	Ensure live animals are exported through quarantine system	MoA, MoTRI
	Promote crop and livestock insurance	DRMC
	Support marketing of dryland products	MoTRI
	Establish and enforce quality standards for dryland products to facilitate linkage with international market	MoTRI and MoA
Policy Alignment and Coordination	Producing national land use policy	MoPD
	Identify gaps and overlaps among sectoral policies/ strategies/laws and plans in relation to dryland areas	MoPD
	Awareness creation for stakeholders on identified gaps and overlaps on these policy documents	MoPD, MoF
	Establish Stakeholder Platforms at federal and regional level	MoA
	Mainstream National Dryland Restoration Strategy into sectoral development plans and periodical reports	MoPD and other Ministries
	Assign / establish institutions, departments/experts for implementation of land restoration strategy	MoPD and other Ministries
	Capacitate Universities and Research Institutions to enhance their contributions to the development of Ethiopia's drylands	MoPD and MoE
	Establish center of excellence in dryland research and education	MoA, MoPD and MoE
	Establish knowledge management and information system/ database for dryland areas	MoPD
	Allocate budget for dryland restoration	MoPD and MoF
	Strengthen partnership and networking with NGOs, donors, private sector, communities and CBOs in dryland areas	MoPD and MoF
	Document success stories & traditional knowledge in drylands	Ministries

NOTES: • Ethiopian Forestry Development (EFD), under the Ministry of Agriculture, will have specific responsibilities for forests and woodlands. • MoA's regional bureaus will work with Kebele administrations, CSOs and community organisations at the local level and in multi-stakeholder platforms

MINISTRY OF AGRICULTURE

Ethiopian Forestry Development

PENHA

CIFOR

World Agroforestry

TROPENBOS INTERNATIONAL