Policy Brief – # 1

Drylands Management

Afar Integrated Dry Land Management Project

Afar Regional State, Ethiopia

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Ethiopia

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The booklet

This booklet briefs policy implications based on the success of the Afar Integrated Drylands Management Project implemented in 5 Districts of the Afar National Regional State, Ethiopia. The main objectives of the booklet are to indicate the policy implication from the best practices of the project. The report is divided into two chapters: chapter one is a brief introduction and the Climate Change Program of Action of the Region. The points of policy implications are detailed in chapter 2 of the report.

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1. INTRODUCTION

1.1 General

Drylands, which include dry sub-humid, semi-arid, arid and hyper-arid lands, cover more than 41% of the earth's land surface and are home to 2 billion people, many of whom depend on natural resources, biodiversity and agro-biodiversity for their livelihoods. Drylands are defined by water scarcity and characterized by seasonal climatic extremes and unpredictable rainfall patterns. The drylands rural residents are mainly dependent on biodiversity for food production, fuel provision and other resources that are essential to survival. The most widespread land-use system in the drylands is pastoralism, which relies on a diversity of grasses and shrubs as key productive inputs. Pastoralism is the only feasible agricultural strategy and depends on herd mobility to track the extremely high seasonal variability of rainfall, vegetation and other resources.

Climate change is reported to be an important driver of ecological change in the world's drylands. It is projected that climate change will lead to a decrease in water availability and quality, while extreme weather events such as droughts and floods will increase in number and/or intensity. Rising temperatures and changing precipitation patterns are predicted to lead to an expansion of drylands worldwide. Climate change is predicted to reduce agricultural productivity overall in the drylands and this will have severe impacts on food security. Drylands are challenging environments where human ingenuity, knowledge systems, and careful use of resources are essential for survival.

The drylands, where most of the Afar Region belongs, are currently highly challenged with scarcities that impede the delivery of expected and historical responsibilities to inhabitants, basically because of land degradation and climate change impacts. With these deficits the communities are suffering seasonal shocks and recurrent disasters, demanding the proper design of policy issues. This requires the integration of climate and development planning. This could help lower greenhouse gas emissions, reduce vulnerability to climate shocks and then poverty reduction gains can be sustained to enhance the adaptive capacity of the community. To develop and pilot a range of effective community level adaptation mechanisms for reducing the vulnerability of pastoralists and agro pastoralists particularly women and children and supporting policy advocacy issues, the UNDP supported AIDLMP was implemented in Afar since 2010. This policy brief is drawn from the experiences gained from the AIDLMP in Afar. It is aimed to Policy/Decision makers. Its main objectives are to draw attention to key drylands concerns to enable decision/policy makers to have knowledge of these in order to make informed choices pertaining to drylands development; and to influence policies that shape development in the drylands. Additionally it is hoped that the brief will inform and raise public awareness on the opportunities and challenges in the drylands.

1.2 Vulnerability and Climate Variability in Ethiopia and the Region

The National Adaptation Program of Action of Ethiopia (NAPA) and the Regional and District level Climate Change Program of Actions (CCPA) have identified the causes for vulnerability of the Afar pastoralists, to climate variability and change. These include land degradation due to various manmade and natural reasons, high dependence on rainfall variability, under-development of water resources, low health service coverage, low economic development, low adaptive capacity and inadequate infrastructure in drought prone areas, weak institutions, lack of awareness, and others. According to the NAPA and the CCPA, the most vulnerable sectors to climate variability and change are pastorals, agriculture, water and human health. In terms of livelihood approach, smallholder rain-fed farmers and pastoralists are found to be the most vulnerable.

The NAPA and CCPA have sorted out and classified traditional and contemporary coping mechanisms to climate variability and extremes in Ethiopia. These mechanisms include changes in cropping and planting practices, reduction of consumption levels, collection of wild foods, use of inter-household transfers and loans, and increased petty commodity production and petty trade. Temporary and permanent migration in search of employment, grain storage, sale of assets such as livestock and agricultural tools, mortgaging of land, credit from merchants and money lenders, use of early warning system, food appeal/aid, are also being exercised. The implementations of these mechanisms need the entire policy support and capacity building. This policy brief, has identified a few elements of these mechanisms identified as best in the AIDLM Project, and points and areas of concern.

1.3 The AIDLM Project

The Afar Integrated Drylands Management Project, in Ethiopia was implemented in 5 districts of the Afar Regional State, dating January 2010 to December 2012. The project aims at building the environmental management capacity and the Climate Change Adaptation Programs of the 5 Districts and the Regional State. This project has been seen as part of Ethiopia's contribution to the implementation of the United Nations Convention to Combat Desertification (UNCCD). The program values that this requires rapid and appropriate action to ensure the communities' survival, care, protection and recovery while enhancing their resilience to shocks and leading to food security and sustainable livelihood. A multiple of activities were implemented for ensuring such objectives.

The beneficiaries of the project were the pastoral communities in 15 kebeles of the 5 Districts (Mille, Chifra, Ewa, Awra and Dewe). The Ethiopian Government and UNDP are the major implementers of the project. Federal Ministry of Finance and Economic Development (MoFED) was the signatory and controls the project implementation and budget. The EPA was a signatory and the project owner. The Afar EPLUA, and Dewe, Mile, Chifra, Ewa, and Awra *Districts* of Afar Regional state were responsible in managing the entire execution of the project.

The program has accomplished many of the outputs set in the program document. The accomplishments in the watershed management specifically the soil and water conservation activities, the provision and installation of solar panels, the establishment of fodder banks, the capacity building elements of the project, and other can be mentioned as success of the project. The Project has supported experience sharing tours, training events, the assessment of traditional conservation practices, the construction of soil and water conservation activities, construction of river bank and gully reclamation structures, the establishment and construction of market places, the promotion of alternative housing materials/mud-brick housing, the promotion of alternative energy source/solar panels for electrification, and the promotion of rangeland improvement activities including closing, rehabilitation through soil and water conservation activities, clearing of invasive weeds and plants, and planting of improved grasses was conducted in selected areas. The project has also supported the provision of veterinary drugs, the establishment of fodder banks, and expansion and maintenance of small scale irrigation structures and related activities.

Given the nature of the community in the implementation sites, the much delayed start up of the project, the harsh weather condition and other challenges, the effectiveness of the program can be rated as better.

2. THE KEY POLICY/DEVELOPMENT ISSUES

Many of the project activities/practices were successful in achieving intended objectives. To further improve the performance of such projects and enhance the scaling up of the best practices, this policy brief is developed for use by decision makers. Those put here are some of the on-going initiatives that implementers and the beneficiary community proposed.

2.1 Alternative Energy Sources – Relieve land degradation

Solar electrification

As part of its alternative energy sources agenda, the AIDLM Project has introduced and installed solar panels at health institutions, for electrification, which was proved as a best practice. The destructive use of the natural, which results in a sharp increase in Green House Gas Emissions (GHG) needs to be reversed and replaced by environmentally friendly and sustainable development strategies. This could lead to sustainable growth and can be achieved through building green economy strategy.

Ethiopia is currently taking the lead and has developed and launched a Climate Resilient Green Economy Strategic Plan aimed at helping the country curb the rise in green house emissions at it accelerates its growth rate over the coming years. The Strategy will provide focus on renewable energy and efficient sources of energy, clean productions processes in both agriculture and industry, and enhancement of sustainable management of forests. The AIDLMP has worked and successfully promoted the adoption and use of alternative energy sources, specifically solar panels. Five Rural Health Posts/Institutes received 10 panels each with a capacity of producing 1300 watts. This serves 1 deep freezer and more than 20 lumps of 60 watts each, and is fully serving the entire electric requirements of the rural health institutes.

In areas where schools and health institutes are established at a nearby area, the schools have the opportunity to use electricity for teaching and mini-media purposes upon agreement with the health institute. These multipurpose uses will double the purpose of the solar electrification. Furthermore, the Health institutes, which used to suffer a lot due to absence of electricity, are now enjoying the multiple advantages of solar electrification. They are able to preserve vaccination drugs and they accomplish planned community vaccinations/immunizations at required times. Regular night service to patients such as distribution of medication, monitoring of patients vital statistics, etc., and any emergency treatment is provided at anytime of the night. This has resulted in the improved functioning of the health institutes, drastic upgrading of services being provided to the pastoral and agro pastoral communities, as well as in the reduction of their health related risks. This activity is considered a best practice within the Afar community.

In areas where schools and health institutes are established side by side, the schools were also benefited through the use of electricity for teaching and mini-media purposes upon agreement with the health institute. These will double the purpose of the solar electrification. Other sets of solar equipments for health centers and for schools along with Mini Media equipment were under procurement. This will promote community dialogues, stimulate adult education classes at night and also provide opportunity for surrounding students as study clubs.

There is a dramatic-growing demand in the utilization of solar energy sources. Many of the target community, the district experts and officials, and regional state experts were very much attracted to using such techniques and were recommending similar supports. The use of the solar electrification is not restricted to institutions, and can be implemented in rural private households. The use of fuel wood as source of heat and light energy can be replaced by solar electrification.

The Afar Regional government is promoting settlement programs for pastoralists at selected areas. The program will work on the construction of social infrastructures like schools and health institutes. These institutes would require electricity, for the sake of performing to the standards anticipated and required. This might not be possible through the current electrification system, which is literally called as the parallel-grid system. The other but less effective system is the use of LPG (liquefied Petroleum Gas) system, which would result in increased in greenhouse gas emission. The best alternative is the inclusion of the renewable energy sources like the solar electrification. The inclusion of the solar electrification, in such circumstances would enhance the purpose of the program. This solar electrification could be used for households, and for the institutions.

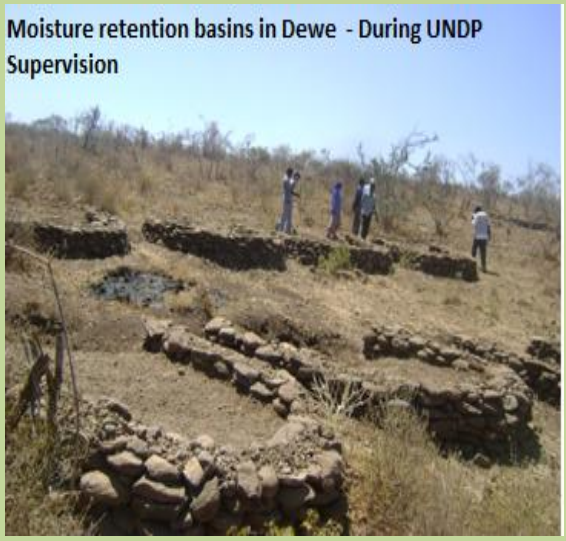
2.2 Soil and Water Conservation - key to improved natural resources management

The condition of drylands can be significantly improved by better and integrated management of the natural resources base. Many approaches to the management of the scarce resources are available and form the base of overall resource management in drylands, where water and soil management are at the center. Such measures include erosion control, water harvesting techniques, water storage and conservation measures, afforestation to arrest soil erosion, improving ground water recharge, and intensifying agriculture using resource conserving technologies that do not increase pressure on drylands water and soil resources services provisions. The AIDLMP has been designed in such a way as to address such issues and has successfully accomplished a multiple of activities of high importance. The project has promoted the construction of watershed management activities.

A first-ever activity for all the five districts target community, the construction of soil and water conservation activities was seen as an ice-breaker. This started on experience sharing visits held in the Amhara Region, the communities have had opportunities to learn the best practices where they are exercising on themselves. This has helped expand their thinking on coping and

mitigation mechanisms within their own communities and environment to build resilience to climate change impacts and/or reduce their vulnerability to extreme climate events such as droughts, floods, etc.

The construction of the soil and water conservation activities at the AIDLMP areas, AIDLMP areas has been accomplished with a 50% community contribution, where half of the contribution was from women (labor and other materials such as stone). This proves that the communities are very much encouraged to have taken part in this activity. Some community leaders explained to the documentation team that though such activities are the very first, and the techniques new in their locality, they are now convinced of the importance/benefits in the fight against climate change induced life threatening situations. This is reflected in the commitment they took in achieving the implementation of these activities. They plan to continue working on new activities even after the close out of the programme, with minimal coordination support from the local government.


Moisture retention basins in Dewe - During UNDP Supervision

The implementation of soil and water conservation activities included the construction of soil and stone bunds, hillside terraces, check-dams, and a variety of water retention structures (trenches, tie-ridges, water retention pits, and half-moon structures). The quality of the activities, for a first ever activity, is exceptionally good. The necessity of keeping the quality of these these structures is unquestionable for the simple reason that the failure of physical soil and water conservation activities will end in a much larger catastrophe/devastation than without such activities.

As part of the water and soil conservation activity, gabion reinforced river bank stabilization and gully reclamation activities have also been conducted in all project areas. These river bank and gully reclamation structures will be further reinforced by the plantation of vetiver grass, jatropha plants, fodder trees and other grasses, sesbania and neem trees plantation. Some catchments areas such as the Bolotom of Chifra District are now fenced and protected. It is expected that other communities will learn from such sites. In many sites water harvesting trenches have already been used and water harvested in them and gabion checkdams were seen filled with soil


Water harvesting basin with planting pit - Mille

material proving that the gullies can be rehabilitated.

The communities plan to implement additional activities, e.g., the protection and maintenance of the constructed structures, proof of the quality of the structures (as seen in few sites), the maintenance of the structures after heavy rains, and the protection of the structures from roaming livestock. On the quality side, some issues can be pinpointed, including starting at the top of the catchment, over-sizing of structures which might lead to structure failure. The physical structures will be integrated with biological water and soil conservation measures including the plantation of multipurpose trees (fodder trees, forage trees and grasses and fruits to be included). This will be conducted on closed lands and in areas where physical soil and water conservation structures have been constructed.

2.3 Mud bricks: Alternative housing materials

The traditional way of constructing dwellings (house construction employing woods as major input) widely contributes to the deforestation and hence it is very important to introduce sustainable building materials suitable for use by low income groups and also to the harsh weather. Of the different techniques available that are suitable for construction of sustainable low-cost houses, mud blocks, were selected and demonstrated in the AIDLMP. Since these alternative building materials potentially could contribute to a better standard of living for people and counteract the environmental problems, there is reason to continue, broaden and deepen the knowledge about these possibilities.

There are different techniques available that are suitable for construction of sustainable low-cost houses, mud blocks were selected as the most viable option in the AIDLMP. Since these alternative building materials potentially could contribute to a better standard of living for people and counteract the environmental problems there is reason to continue to broaden and deepen the knowledge about these possibilities.

The construction of mud-bricks house is not new to other areas in Ethiopia, but the Afar community when they first learnt were surprised about the technology. Bricks made of mud, which everyone can produce at their vicinity are good construction materials, with ecological, economical and social advantages as compared with wooden houses. The specific advantages include reduced deforestation, economically low cost – reducing material and construction cost by half (needs further cost estimates), very durable (more than 60 years in some parts of Ethiopia), moderating temperature (reduces warming effects), and fireproof. Mud brick housing also has some disadvantages (such as poor water resistance, brittleness, low tensile strength and poor resistance to abrasion), but the advantages very much surpass the disadvantages.

Working on Mud-block house construction - Awra

The inputs for the production of a mud bricks are soil, straw and water. A very cheap, simple and easy to operate block mold, which the AIDLMP is promoting produces two blocks at a time. The size can vary, however based on current trials, the size of a single solid mud block under AIDLMP piloting/demonstration is 20 cm x 20 cm x 40 cm. The current price estimate for a single solid block is around 5 birr at Awra District, where a single hollow concrete block costs 14 birr in the same place.

The demonstration houses built by the IDLMP in Afar, will hopefully facilitate the implementation process of the unfamiliar building materials to the society by showing people the advantages when compared to the traditional way of building. Given the interest shown by communities to embrace this simple technology, it could be beneficial for decision/policy makers to consider adopting this technology and making it part of the on-going regional settlement programme. Experiences have shown that intensive settlement programmes usually have significant ecological impacts, especially following cutting of trees and excavation of the land for construction. However if managed properly the impacts have been proven to reduce dramatically. In the Afar scenario, construction of dwelling houses for settlers will follow the traditional methods, i.e., .cutting of trees/shrubs and grasses to be used as the main construction materials. This impact can be buffered by adopting the mud-brick house construction methodology. A quick strategic win-win development outcome would be to incorporate the mud bricks technology into the settlement programme. It is therefore recommended that the Regional Government consider addressing this through further investigations.

The regional settlement program will have social infrastructures such as schools and health institutes. These institutes would require large amount of construction materials such as wood and grass, and/or HCB – hollow concrete block. These materials are very expensive and would degrade the forest resources of the settlement areas. This program could be challenged because of these scarcities. The cutting of huge amount of trees would mean less carbon sequestration and on the other side increased greenhouse gas emission. The best alternative is

the inclusion of the alternative construction materials through the provision of SMB producing molds. This sector requires that the land degradation due to the removal of the top soil be checked frequently, and house builders should be advised/ trained not to do in a degrading manner.

The best advantage of building with SMB in many areas in Afar is that most soils in and around can be used for the making of the blocks. The variation in block dimensions lead to construction of different walls with different thickness, hugely necessary for solar passive designs, and block strengths can be varied as required. Since the soil is collected in the building area, the houses will merge into the landscape beautifully becoming unobtrusive and low key.

Especial precautions have to be placed for the walls facing to wind and rain directions. When there is the need to plaster with cement, uniformity in block dimensions are paramount and uniformity of the blocks is a must otherwise this leads to varying mortar dimensions as the masons try to adjust the horizontal level during the construction of walls. Block making is a critical activity and testing the soil before production of blocks start and then sample checking the block strengths is a good practice. Lighting the inside of the house is important for design in stabilized mud block buildings. Mud blocks when left un-plastered absorb light and rooms can tend to be dull. Designing for sunlight from roofs, placing of windows and designing nighttime lighting preferably through yellow bulbs are design issues, which require care. Focused and directed light is better than general all-purpose lighting. Pointing of the stabilized mud block walls is another important activity, which should be done with the right mortar mix and with the right labour and tools. Especially if stabilized mud mortar is used pointing will be the key to eliminating dampness and water ingress into buildings.

2.4 Improving the Early Warning Systems - will ensure timely disaster preparedness

Enhanced use of early warning information in drought areas is a system that helps the provision of timely and effective information that allows individuals to take action to avoid or reduce risk and prepare for effective response. Early warning systems (EWS) can prepare governments and donors to respond to situations before they turn into emergencies and farmers to get prepared for upcoming incidents (positive or negative). Projects such as the AIDLM that supports the drylands communities, pastoral and agro pastoral life's will strengthen the use of EWS as a major activity. The establishment of the EWS demands the integration of four main elements: risk knowledge, monitoring and predicting, information dissemination and response, by which failure of any part of the system will imply failure of the whole system.

The development of the early warning system can be possible developing strong partnership among the stakeholders especially among the office of agriculture (early warning section), research centers and meteorology branch offices, and through building the capacity of the institutions involved in the information communication system. An organized data collection, analysis and communication system has to be established at the district level within the district Pastoral Agriculture and Rural Development Offices and at the kebeles. All the necessary

equipment such as computers, softwares and internet services must be provided to the offices to enable them to collect rainfall data, make analysis and communicate to the communities. At the kebele level ordinary and household plastic rain gauges and thermometer can be installed, and training should be given at all levels to capacitate all actors on the system, and the use of the technology. Hence, the established systems with monitoring and predicting capabilities can provide timely estimates of the potential risk faced by communities. The support in delivering training to the district and regional staff can be a start of the application of the system, however further thought needs to go into the development of the EWS to ensure a well structured and fully functional system that will provide timely, accurate and demand driven information for disaster preparedness and mitigation in the region. The established systems with monitoring and predicting capabilities can provide timely estimates of the potential risk faced by communities.

All the target districts and the entire zones in the regional state are susceptible/ vulnerable to climate change and drought. This would worsen the natural resources base of the region, and the whole livelihood of the pastoralists, if allowed to continue with the current early warning system. There is a critical need to adopt modern early warning systems, development of information collection and communication/ dissemination systems. Therefore, important decisions are required to be placed at the regional state and district levels.

2.5 Eradication of Invasive species

Global trade, transport, food grain transportation and tourism are leading to a global homogenization of biodiversity, as species are moved into new areas that are foreign to them. Many species do not adapt to their new environment and cannot survive there. However, some of these species do survive and even thrive in their new environment, to the extent that they cause an infestation that has a negative impact on the economy and biodiversity of a region. These species are termed invasive and they are a major cause of species extinctions, increasing the rate of extinction.

Invasive alien species are animals, plants or other organisms introduced by humans into places out of their natural range of distribution, where they become established and disperse, generating a negative impact on the local ecosystem and species. Alien invasive species are a significant threat in many drylands, often assisted in their expansion by the destruction of indigenous habitat as a result of land-use changes. In some cases, exotic plants have been introduced to combat perceived (although not always real) environmental problems such as desertification. Other species have been introduced through agricultural development projects or simply as ornamental plants. Invasive plant species are often unpalatable and sometimes even toxic to herbivores, which undermines local productivity and may contribute to their competitiveness against indigenous vegetation. Invasive plants can reduce access to productive resources, such as pasture and water, for instance, by forming impenetrable thickets or by lowering water tables and their economic impact is often highly significant.

Invasive alien species are one of the greatest threats to biodiversity worldwide, replacing indigenous fauna and flora and in many cases significantly affecting ecosystem function. These species often lead to land degradation, pest infestations and reduction in crop productivity. Semi-arid areas, particularly grasslands, have been hugely affected by invasive species that have accompanied farming, including the widespread introduction of nonnative grass species for livestock grazing. Invasive trees, has to be removed by mechanical means, through well-organized clearance programs. These clearance programs provide important conservation and social benefits by removing invasive species in habitats through a win-win for water supplies, poverty alleviation and biodiversity conservation. Other restoration efforts link habitat restoration with employment and livelihood opportunities as well as enhanced ecosystem services.

In the Afar region the invasion of large areas of grazing lands by mesquite (Prosopis juliflora) is of significant economic harm, but the AIDLM Project areas are not that much affected. Other species such as parthenium and Gerento (Local name) are widely harboring many areas in all the 5 districts. Parthenium is already categorized as an invasive weed and many efforts have been exerted through the support from the government and other international and local organizations. Its infestation is not halted. In due recognition of the problem, the eradication of parthenium was among the activities within the AIDLM Project. Many efforts were exerted by the project through mechanical weeding and dumping the uprooted plants. This has shown a significant impact, and many have praised for going further. Given the damages the plant is imposing on grazing lands, the clearance of parthenium is crucial and but demands a concerted and integrated effort among all actors grounded in the region. The seeds of the plant have the capacity to stay longer in the soil and spread easily from place to place. Therefore, a coordinated and well organized effort is necessary to bring success.

Another attention grabbing issue is the case of Gerento. This is an acacia speicies which among many farmers was heard as an invasive species. Gerento is not none-native plant, but there is information that it has undergone biological transformation (this needs further researching and proof). It was also proved that, though the plant is aggressive, camel used to browse at the plant. The author would like to inform that the entire condition be further studied, and actions taken accordingly.