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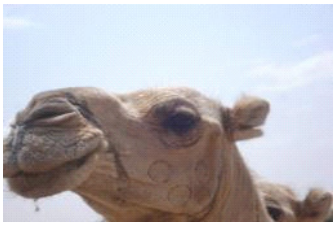

Resilience of households' livelihoods to hazards in Somaliland

Commissioned by Save the Children Somalia / Somaliland as part of the

SUSTAINABLE EMPLOYMENT AND ECONOMIC DEVELOPMENT (SEED) PROGRAMME

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List of abbreviations

ADO	Agriculture Development Organization
CCA	Climate change Adaptation
DRR	Disaster Risk Reduction
FAO	Food Agricultural organization
FSNAU	Food Security and Nutrition Analysis Unit
GDP	Gross Domestic Product
HAVOYOCO	Horn of Africa Voluntary Youth committee Horn of Africa
HOA	Horn of Africa
IDP	Internally Displaced people
ILO	International labour organization
M&E	Monitoring and Evaluation
MNPO	Ministry of National Planning and Development
NRM	Natural Resource Management
NGOs	Non governmental organizations
PENHA	Pastoralist and Environmental Network in the Horn of Africa
TOR	Terms of Reference
SEED	Sustainable Employment and Economic Development
SWC	Soil and Water Conservation
UNDP	United Nations Development programme
WASH	Water Sanitation and Hygiene

Executive summary

MAIN FINDINGS

Livelihoods

- At regional level, 65% of the population is nomadic and communal land accounts about 70% of the total land; it implies that nomadic pastoralism is still a dominant way of life.

- Livelihood activities across the wealth spectrum are diversified and a minimum of eight have been identified. Some of the activities are widespread across the wealth spectrum and others are localized on the better-off.

- However, the impact of an activity depends on the synergetic effect on the overall means of livelihood.

- Generally most of the diversified activities are very sensitive to climate change.

- In the past five and ten years, there has been a trend of failure of the big (Gu) and small rain (Dyer), with a resulting shortage of water and pasture, spread of livestock diseases, flooding, intensification of soil erosion, crop failures and resource base conflicts. Its impact includes loss of livestock assets.

Social issues

- Dominant grassroots institutions in the study areas are the village committees, which have limited capacity to address the resource management and conflicts. There are also some informal self-help groups, mostly organized by women but these are not strong.

- The rural community (pastoral and agro-pastoral) have a strong social bond within and across the border. The better-off are assisting the poor with loans and gifts, while the whole community assists other communities in Gashamo, Ethiopia.

- Similarly the rural / urban linkage is very strong, which includes marketing, access to credit, and source of employment, emergency support and restocking in the form of savings.

Hazards, adaptation and resilience indicators

- Hazards included drought, livestock diseases, population pressure, private land enclosure, flooding, invasive weeds, charcoal making, resource base conflicts and chat chewing.

- Many hazards are human-induced and need accountable grassroots institutions with clear rules and regulations to mitigate the problems.

- Agro-pastoralists have a wider range of adaption mechanisms including livestock diversity, different source of pasture and water source, mobility with livestock, traditional early warning, crop production, petty trade and a social safety net. However, they are not immune to the influence of environmental changes when drought extends for longer years.

- At the village level major indicators for resilient livelihoods are the resource base, wealth distribution, events of irregular drought, livestock combination, peaceful coexistence with neighbours, level of mobility, proximity to social services and grassroots organisation.

- At household level the indicators for resilience are diversity of activities, multi-functionality, spatial and temporal aspects and its integration and synergetic effects.

- At plot level indicators to be considered are relative geographical location of a plot, micro-climate situation, labour availability, access to inputs, and use of soil and water conservation measures and situation of rain in the upper streams.

SEED contribution in communities

- The classical approach of "Transfer of technology" considering the agro-pastoralists as receiver has many failure stories. There is not enough documentation of local experiences on farming, fodder production, fodder banking and beekeeping.

- SEED has a fundamental role in supporting local initiatives, reducing human pressure: targeting the poor, improving gender sensitivity, and stimulating self-help grouping. Generally contributing to have a resilient livelihood bases. However, measuring its contribution to the resilient household livelihood needs to consider the combination of indicators.

RECOMMENDATIONS

- **Resilient livelihood:** Under the agro-pastoralist system resilience of livelihood is determined by a combination of different indicators at different levels. Hence the indicators and linkages at community, household and plot level is worth considering. In other words we need to consider environmental and social, individual, group, local and external factors. Generally the core areas of resilience are a combination of factors revolving around resource base, diversity and synergy of different activities, peaceful co-existence, grassroots institutions and level of mobility. Under the frequent and prolonged drought, the better-off fare better, as they have better resources (livestock and land), diversified source of income, and can exercise mobility and power in decision making.

- **Root causes of vulnerability:** The livelihood of a single household is dependent on the private and communal resources with strong social integration. The findings show that, by and large, the human induced hazards such as private enclosures, invasive weeds, charcoal making, population pressures and resource base conflicts contribute to the loss of pastoralist competence and reduce ability to adapt to any risks and uncertainties.

- **Training as a continuous process and multi-functional:** As a process the SAVE THE CHILDREN SOMALIA / SOMALILAND staff involved in the SEED project need to recognise the paradigm shift needs that have occurred in agro-pastoralist livelihoods. A shift from vocational skill training to rural livelihood bases without losing the children issues, from targeting the youth and women to targeting the differentiated rural communities, from sect oral to holistic on resource use, partnership and networking and from quantitative M&E to participatory and process oriented. This implies that the deep-rooted knowledge, experiences need to be accommodated. No doubt the SEED capacity building has attempted to accommodate DRR and climate change and adaption issues in its training, but this is not well documented and needs further analysis.

- **Monitoring and Evaluation:** The monitoring and evaluation indicators need to be designed with participatory approaches involving the households. For example the agro-pastoralist has a wide range of indicators to the variety and quality of fodder. Some of the indicators include biomass production, nutritious value and storage sensitivity. With the beekeeping similar criteria in relation to location, material for construction, design, and quality of honey (forage source).

- **Demonstration approach:** The agro-pastoralists have a wide range of risks and uncertainties which cannot be easily solved by government limited budget and NGOs. Hence under an integrated approach, the different interventions including the fodder, crop and beekeeping can be used at village level and household level. This will also give a good opportunity to gauge and document the different interfaces in time and space. Moreover, the existing intermediate top bar beehive can be improved to modern beehive with frame and wax for quick harvest of honey.

- **Documentation of indigenous practices:** pastoralist and agro-pastoralists have deep rooted practices that contribute to the resilience of community livelihood. Moreover, there are many innovators who made some experimentations and innovations by both women and men. These practices need to be documented as an integral part of the SEED program. This process of documentation helps to identify range of options and determine the added value incurred from the project. The existing SEED monitoring and evaluation seems highly biased to quantification with less attention to community criteria. Moreover, the qualitative analysis is also very fundamental in understanding the process under complex system.

- **Supporting Facilitation of participatory technology development (PTD):** The different interventions in crop, fodder and beekeeping should not be considered as a final product to be transferred but need to be adapted to the local and individual situations. There are a wide range of options under crop production as mixed, agro-forestry, horticulture and use of fruit trees. Similarly under the fodder production and beekeeping households have a wider range of managing and reserving using local and external information. Hence the SEED project needs to have a strategic plan to facilitate joint experimentation and documentation. The process will be an input to the training component and the process of experimentation helps the community to develop competence to solve their own problems.

- **Facilitation of mobility:** Mobility with its packages of reciprocity in resources uses has been the fundamental bases of the livelihood among the pastoralists and agro-pastoralists. Yet the mapping of the spatial and temporal distribution of pasture and water sources is fundamental. Hence the synchronisation of the different sources of water and pasture helps to develop an efficient use of

resources and support resilient livelihood. It is also worth revisiting how the SEED interventions are facilitating mobility or triggering sedentarisation on the long run to make agro-pastoralists more vulnerable under the semiarid situations.

- **Natural resource management as cross cutting activity:** The bases of the livelihood of the agro-pastoralists revolve around the management of the communal and enclosure areas, with development of nurseries, focusing on multi-purpose indigenous plants and fruits, soil and water conservation, energy saving stoves and *prosopis* management as an approach to reduce disaster and climate change risks. It is worth mentioning that the convectional approach of community based natural resource management need to be clearly understood, as well as its implications to highly differentiated communities under agro-pastoralism.

- **Water development:** Synchronisation of the different sources of water, protecting the pollution of water for human consumption, introduction of the communal water source managed by women, scaling up of roof harvesting where schools with roof harvests built by SAVE THE CHILDREN SOMALIA / SOMALILAND can serve as demonstration sites.

- **Support self-help groups:** There are already some initiatives of informal self-help groups by women. Moreover, groups can be established on the commodity bases such as crop, vegetables and fruits, fodder and beekeeping. This also helps to give intensive training from production to marketing without undermining its linkage to the other activities. Moreover, these groups can be developed in to cooperatives to establish a strong economy and a fundamental role in decision making.

- **Early warning systems:** The agro-pastoral community have developed some early warning systems and documentation of these indicators and systems and their integration with modern systems is helpful to the efficiency and effectiveness of any development interventions. The existing modern early warning system operates at national level for emergency intervention. In the absence of metrological stations and grassroots extension workers to advise modern early warning systems, the documentation of this knowledge is essential as a component of improving the livelihood of the agro-pastoralists. The SEED project can use such fundamental information to assure the success of its development intervention.

- **Participatory resource mapping:** Different villages have different resource bases as a foundation of their livelihood. Mapping of the resources by the community helps to observe the potential and limitations for any external interventions. For example Beerato village where 70% the total land is under private ownership, the impact of the SEED intervention (crop, fodder and beekeeping) will be different than the village of Ceel-bilile where only 20% of the total area is under private ownership. Both need different strategic approaches. The map also needs to be updated with the rapid landscape changes.

- **Partnership and networking:** The agro-pastoralist problems and risks are diverse and complex and demand the collaboration of different organizations. The SEED project is a good entry point as a consortium. However the different activities/projects carried out by the respective consortium members are not well integrated. Moreover, scanning of the different activities by different organizations at regional and district level has multiple benefits; it avoids competition and

duplication of efforts and stimulates exchange of information, and promotes solidarity for a common goal and efficient use of the scarce resources.

1. Introduction

1.1 Background of study

Under the arid and semi-arid areas of Somaliland pastoralism and agro-pastoralism are the fundamental basis of livelihoods. According to Ministry of National Planning and Development (MNPD, 2011),the livestock sector employs over 70% of the population and accounts more than 60% of the GDP and 85% of foreign exchange. Moreover, farming, fishing and petty trade complement this sector. The livestock, as a source of food, income and savings is not confined to the rural community; many of the urban dwellers engaged in trade and commerce and those who receive remittances are also investing their savings in livestock in the pastoral and agro-pastoral areas with their relatives and respective clans and sub-clans.

Generally as an adaption to climate change and other hazards, pastoralists and agro-pastoralists of the Horn of Africa (HOA) have developed complex and diverse strategies including the rearing of different livestock as grazers and browsers, mobility, diversification, and grassroots institutions to management natural resources, resolving conflicts and assuring social safety nets. Much evidence still indicates that that pastoralism is economically viable, ecologically sound and a socially accepted agricultural system under the dry land environment (Scoones I. 1995, Hesse & MacGregor 2006, Devereux, 2006, Rodriguez, 2008).

Today, many of the pastoralists are exposed to different challenges of ecological and human crisis such as drought, famine and environmental degradation, conflicts and dependency on food aid. There is a general consensus in the literature that the vulnerability that characterizes many pastoral groups in the HoA is not drought, but the increasing marginalisation of their drought-response mechanisms. These challenges include restriction of mobility, resource base conflicts, land tenure policy and resource base (Devereux, 2006; Morton, 2008; UN OCHA, 2006). Similarly, for the agro-pastoralists of Somaliland, the cumulative effect of the civil war, marginalization in decision making, defective market system, poor infrastructure, and land tenure issues have been compounded with the recurrent drought to contribute to the loss of their resilience to different shocks.

1.1 Background of Sustainable Employment and Economic Development

This study was commissioned by Save the Children (SAVE THE CHILDREN SOMALIA / SOMALILAND) under the Sustainable Employment and Economic Development (SEED) programme which is a consortium comprised of Save the Children Somalia / Somaliland, FAO, ILO, UNDP, and implemented in Somaliland, Puntland and Somalia with funding from DfID.

The purpose of the program is to improve economic and employment prospects, targeting women and young people in conflict affected communities. The goal of the program is improved stability in Somalia through economic growth and sustainable employment. SEED has two components:

- Component One – develop markets and create employment, with accompanying skills training, focusing on agriculture (South Central Somalia), fisheries (Puntland) and livestock (Somaliland); and
- Component Two – support the investment climate and regulatory framework in Somaliland to increase investment and growth

In Phase I of SEED, SAVE THE CHILDREN SOMALIA / SOMALILAND trained 1,660 people in improved practices of meat hygiene, and on the fodder, honey and agricultural production value chains in Borama, Hargeisa, Togdheer and Erigavo in Somaliland. As a result of these trainings, households were able to increase their knowledge/skills which contributed to increased production and incomes.

During the three-month period of bridge-funding, SAVE THE CHILDREN SOMALIA / SOMALILAND consolidated and expanded achievements already made based on key lessons learned and experiences from the first phase. The main activities included training, provision of assets and research.

The purpose of this study is to investigate and examine the resilience of the livelihoods of agro-pastoral areas in Somaliland, specifically Odweyne district where SCSIOM has been implementing SEED.

1.2 Objectives and methodologies

As indicated in the Terms of Reference (ToR) (Annex 1) the specific objectives of the consultancy were:

- To examine the extent to which major livelihoods activities are resilient to common future shocks and their adaptive capacity
- To examine the potential effects of shocks on sustainable income earning over mid and long term
- To explore the adaptive capacity of the communities in the study
- To develop indicators on resilient livelihood activities and adaptive capacity to inform appropriate decision making and programming
- To make comprehensive recommendations on livelihoods activities that show potential to be most resilient. The findings will used for internal SAVE THE CHILDREN SOMALIA / SOMALILAND, SC at regional / global level and the greater humanitarian community as appropriate.

The following approaches and methodologies had been followed during the evaluation process:

- **Document review and brainstorming:** Prior to the mission, literature was assessed, while most of the relevant reports have been available while on the field trip. Prior to the field trip brainstorming was carried out on the SEED project intervention and pilot areas to be visited for the study by the SEED program staff of SAVE THE CHILDREN SOMALIA / SOMALILAND.

- **Piloting of areas for evaluation:** After brainstorming, four villages from SEED project sites and two villages outside SEED project area were identified from the district of Odweyne. The selected villages are Beer, Beerato, Ceel-bilile, Ceel-xume, Galolay and Haahi (Figure1). However, there was not much difference between the project and non-project villages due to similar activities by other NGOs prior to the SEED intervention. Currently most of the villages are also piloted in the DRR/CCA project and WASH projects of SAVE THE CHILDREN SOMALIA / SOMALILAND.

- **Key informant and stakeholders' discussions:** Made with stakeholders including government and NGOs at Hargeisa and district and village leaders, elders, IDPs, women headed households and handicapped (See Annex 2).

- **Focus group discussions:** Were made with different groups of the community with the help of semi-structured checklist. The different categories of groups included elders and leaders, women groups, youth groups, IDPS, wealth rank groups, SEED program target groups, and children. Sometimes, the group discussion starts with few group members and gradually increases the number with a range of 5 -15 people.

- **Field observations:** Mainly focused on the observation of the enclosure farmlands, communal areas, water points, SEED interventions and market areas.

The methodology had some challenges. First, due to the frequent and prolonged drought in the last three to four years, community expectation for external support was very high. Similarly, because of the strong social safety net practices among the differentiated agro-pastoral community within and outside of the locality, segregating resilient livelihood household level become difficult if not impossible. Moreover, SEED has already done impact assessment with qualitative analysis (SAVE THE CHILDREN SOMALIA / SOMALILAND, 2011). Hence more focus has been given to the understanding of the process in rectifying resilient livelihood and its indicators.

Figure 1: The study area

1.3 Conceptual clarity on terms

Vulnerability is the degree to which individuals, households, communities or geographical areas are likely to be affected by disaster when hazardous events occur. Factors which determine the level of vulnerability include economic, social, political and environmental (IIRR and SCUSA, 2007). Similarly, the IPCC (2007) defines vulnerability as the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Therefore vulnerability is a function of the character, magnitude and rate of climate change and variation to which a system is exposed, its sensitivity and its adaptive capacity.

According to Burton *et al* (1993), the term "adaptation measures" covers eight categories: bearing losses (doing nothing), sharing losses, modifying the threat and thus preventing effects, changing use, changing location, accessing new research-based technologies, disseminating knowledge through education to change behaviour, and restoration. Others have classified the different forms of adaptation as

anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation (IPCC 2001).

Livelihood is a means of living with a packages competence, assets and activities. Livelihood is assumed to be sustainable when it regulates and recover from any stress of hazards or develop resilience to any vulnerability. Similarly the Livelihood diversification is 'the process by which rural households constructs an increasingly complementary activities and assets in order to survive and improve their standard of living. Generally the livelihood approach is very complex and diverse as it is influenced by different natural and human factors which are very dynamic. Hence livelihood approach follows a holistic and integrated approach (Pavanello, 2009, Chambers and Conway, 1992, Ellis, 2000, Scoones, 1998).

Historically, the concept of resilience was coined to address the ecosystem stability from multiple shocks with interdisciplinary approaches. In other words, the inherent interest of resilience is how a system or group or individuals can deal with shocks for a better outcome, in other words a 'bounce forward' ability. While dealing with resilience, some researchers focus on the process rather than an outcome for a better understanding of the dynamics, actors and the interface between systems and sub-systems. Moreover, a combination of different pillars is used to gauge the level of resilience including diversity, connectivity, capacity, equity, social cohesion and capital (Mitchell et-al 2012).

A wider range of definitions have been given to the disaster resilience, but the adopted definition by DFID (2011) has been considered in this context. Accordingly disaster resilience is defined as:

> *The ability of countries, communities and households to manage changes by maintaining or transforming living standards in the face of shocks and stress.*

Under the DFID approach, four elements of the resilience framework, namely context, disturbance, capacity to deal with disturbance and reaction to disturbance are considered. This implies that measurement of resilience is very complex and diverse, but also dynamic.

Similarly, hazard is also defined as a damage event that negatively affects lives, properties or activities. It is caused by natural or human factors such as drought, flood conflict and land degradation. When a community is unable to cope with the consequences of hazard using its own resources, the situation deteriorates in to a disaster. Accordingly, livelihood is a means of living and assumed to be sustainable when it regulates and recovers from any stress of hazards or develop resilience to any vulnerability (IIRR and SCUS 2007).

2. The study area

2.1 Profile

The regional population of the Togdheer region, which encompasses Odweyne, has an estimated population of about half a million. About 30% resides in urban area, while about 65% of the population is engaged in nomadic pastoralism, and about 5% practice agro-pastoral livelihoods, mainly concentrated in Odweyne district (FSNAU, 2011).

Odweyne district, which was has been up-graded to region, has an estimated population of 70,000 people, according to the regional governor. The women-headed households account for 30%, while the IDPs are about 25% on average (Table 1). The family size ranges from 5 to 18 people; the highest family size is skewed to the better off with two or more wives. The major livelihood base is livestock with some opportunistic farming and petty trade. The major sources of water during dry and wet season are area *berkhads* and *ellas* on the dry river courses or wadis. Generally about 50% of the *berkhads* are not functional; mainly as a result of recurrent drought many have been cracked and have become expensive to rehabilitate. Moreover, in many villages the cattle population is almost non- existent, while shoats and camel are resilient to recurrent drought.

On the basis of the discussions with the regional officials and community, at regional level the communal land coverage accounts about 70% of the total area, and the remaining 30% is privately owned or under enclosure. However, at village level the proportion of land under private and communal is highly variable. For example in the village of Beerato the communal land accounts only 30%, which means 70% is already occupied by individuals. This also implies that the pastoral drop-outs and the poor will have limited access to land. With the increase of the frequency of drought, there is high rate of mobility and yet, with the expansion of the private enclosures, such mobility will be localized and result in overgrazing, land degradation and spread of disease and loss of livestock in the absence of any veterinary services at the village and district level. Similarly in villages like Ceel-bilile the communal land accounts 80% where the different wealth groups have an equal access in the village (Table 1). This different land tenure influences livelihood activities. The villages with a high proportion of private land have high probability to diversify their livelihood with farming, fodder production and beekeeping, while the communal dominated areas might be biased to livestock.

From the livestock asset the shoats accounts up to 85%, which has an implication for pasture and water consumption and adaption to climate change and gender sensitivity. Chat is also becoming one of the serious problems at regional and local level and is further explained under hazards. Maybe the good trend observed in the district and villages is the use of mobile phones for exchange of information on drought, marketing and mobility. The regional administrator has assumed up to 70 % if the households have access to mobile phones.

Indicators	District	Villages			
		Beerato	Beer	Ceel-bilile	Galolay
Demography					
-Total	70,000	1500	8,640	500	1500
-Male (%)	60	57	60	70	60
-Female (%)	40	63	40	30	40
Classification (%)					
-Women head	30	20	25	30	20
-Youth	30	20	25	30	20
-IDPs	25	15	20	15	20
Livestock (%)					
-Cattle	2	5	10	0	2
-Shoats	70	70	85	80	80
-Camels	28	25	5	20	18
Berkhad **availability (No)**					
-Functional		20	20	20	8
-Non-functional		6	10	10	4
Land cover/use (%)					
-Communal	70	30	60	80	20
-Private	30	70	40	20	80
Chat consumption (%)	50	70	60	65	70
Access to mobile phone (%)	70	40	90	60	60

Table 1: Profile of the study area

2.1 Community differentiation and grassroots institutions

The community in a village can be classified in to different groups depending on the area of interest. As entry point to the understanding of the livelihoods the community can be classified or disaggregated in to agro-pastoralist, farmers, wealth rank groups, women headed household, majority and minority clan and sub-clans, IDPs and returnees, handicapped and orphanages, traders and merchants. The average estimates of the wealth rank at village level were 50% for the poor and 15% to the better-off (Table 2). The poor group is slightly higher than the estimation of FSNAU (2011). However, such estimates are highly variable due to recurrent drought, spread of livestock disease and the situation of peace and security in the neighbouring areas. Moreover, due to the high clan and sub-clan interdependency across the border the wealth rank classification is very subjective and dynamic.

When a community suffers from drought, the better-off are the major source of loan and gifts. Similarly, with the widespread of the poor wealth category including women-headed households, handicaps, IDPs and returnees, the dependency as a source of income on fuel wood and charcoal intensified while private enclosure increases. This trend attributes to deforestation, overgrazing, land degradation and conflicts and ultimately to the trap of vicious cycle of poverty. The problem is also compounded with the loss of power of the customary institutions in land management due to the diversification of actors with different interests on the resources. Such unpredictable shift of landscape and social differentiation cannot be easily solved with the conventional approaches of community based natural resource management. The issue of endowment and entitlement and what need to be sustained to whom needs critical analysis (Leach et-al, 1999).

Indicators	Wealth ranking		
	Poor (50%)	Middle (35%)	Better-off (15%)
Family size	6-9	7-10	7-14
Shoats	5-10	15-30	40-70
Cattle	0	1-2	2-5
Camel	0	1-5	10-15
Farm size (HA)	0.25- 1.0	2.0 -5.0	10.0-50.0

Table 2: Wealth rank categories at village level

At the village level, the most dominant grassroots institutions are the village committees which are assumed to have 12 members including two women. This committee plays a fundamental role in the resource management, social safety nets, facilitation of emergency and development interventions, and trainers' selection. According to some of the middle and poor wealth groups most of the committee members are the elderly, illiterate and better-off. It seems wealth, power and generosity are overlapping under the clan system. There are also some informal self-help groups contributing monthly small money to help each other during bad times and other IDPs. However, such informal institutions are not well organized to make their voices heard. As a strategy supporting the self-help groups and establishing commodity -based groups might be a step to economic and decision making empowerment.

2.2 Analysis of community livelihoods

Generally the livelihoods of the agro-pastoralist in the study area have the following major characteristics:

Diversity: Any livelihood base under agro-pastoralism is governed by the principles of diversity. Accordingly, any household is engaged in different activities to assure the livelihood. However, the number and types are variable with wealth rank. Better-off have relatively wider range of diversity than the poor, but not very far from the influence of climate change.

Multi-functionality: The livelihood activities are by and large geared to principles of multi-functionality. For example livestock rearing provides access to food, income, savings, risk spreading, traction and source of manure. Similarly mobility is not only for pasture and water but also to avoid disease, conflict and overgrazing.

Spatial and temporal aspects: Access to pasture and water varies in space and time under the private, communal and reciprocity with neighbouring community. This is a rational use of the rainfall variability in space and time in the semi-arid areas.

Integration: Many of the activities have complementarities and synergetic effects. For example livestock rearing is complemented with dairy farming and fodder production. Some of the activities are contradicting each other such as charcoal making and private enclosures.

Generally the deep-rooted fundamental principles followed by the pastoralists to assure their livelihoods are worth considering in any development interventions. In other words, SEED project activities need to be equated with the four pillars to determine the relevance of the livelihood under agro-pastoralism.

As shown in Table 3, some of the activities are widespread across the wealth rank groups, others are at least practiced by two wealth rank group and the localized ones are practiced by a single wealth rank group. The table has different implications, first the widespread activities need intensification to balance the disaggregate difference. For example, livestock rearing with diversified livestock and number is more resilient to drought than a single type of livestock. Secondly, some activities are highly localized and might need further prerequisites to widespread. Such prerequisite might be asset, capital, labour and capacity. Thirdly the wealth rank groups are involved with a minimum of eight different activities, yet it in the name of diversity it is not the number which matters, but also the type of the activities and their synergetic effect in the overall livelihood. Moreover, almost all are not free from the influence of environmental changes or drought. Fourthly, the savings from the diversified activities are mostly in the form of livestock.

Livestock is the major means of livelihood in the agro-pastoral system. Yet due to the frequent and prolonged drought many have lost their livestock assets. The goats and camels were found to be more resilient to irregular droughts and diseases. However, this also depends on the availability of pasture and water source in time and space. For example the source of pasture can be from private enclosures, crop straw, communal land from the locality and outside, purchasing of fodder and renting of pasture land. Usually, the better-off has wider access than the poor. The challenges associated with the pasture are the infestation of *Prosopis juniflora*, charcoal making and private land grabbing. Similarly water source are the natural ponds, communal earth dams, private *ellas* and *berkhad* and boreholes and *haffir* dams across the border. Yet accessing the different sources of water again depends on the type of livestock owned and on the purchasing power and competence to move. Again, the water source has many challenges such as siltation of communal water sources, demolishing of private *berkhad*, flooding of shallow wells and drying up of haffir dams and boreholes.

Livelihood bases	**Wealth rank groups**			**Trends**
	Poor	Middle	Better-off	
Livestock rearing	*	*	*	**Widespread**
All combination of livestock			*	**Localized**
Crop farming	*	*	*	**Widespread**
Horticulture		*		**Localized**
Dairy farming	*	*	*	**Widespread**
Water selling			*	**Localized**
Fodder selling and pasture renting	*	*	*	**Widespread**
Petty trade		*	*	**Medium**
Bee Keeping	*?	*?		**Localized**
Daily labourer	*	*		**Medium**
Fuel and charcoal selling	*	*	*	**Widespread**
Remittance		*	*	**Medium**

Table 3: Livelihood practices among the differentiated community in the study areas

2.3 Household economy

Food sources: Both livestock and crop are serving as food sources (40%) and the highest proportion is coming from purchasing ranging from 40-65%, which is highly skewed to the poor. Maybe the recurrent drought attributed to the high purchasing of food source, dependency on loan for the middle and better-off. However, under the strong social safety net practice of food redistribution in the form of

gifts to the poor is very common (Table 4). According to the FSNAU (2011),the middle households consume up to 54% of the total annual milk production (2712 litres) while the better-off consume 37% (795 litres) of their milk production.

Income sources: Generally livestock, and livestock and crop products are the major source of income across the wealth rank; it differs due to unequal holding of livestock and private land. Moreover causal labour and fuel wood sale are important sources of income to the poor, while remittance is received by the middle and better-off households. Similarly from the private enclosures many of the better-off and middle wealth rank groups with relatively bigger land holdings generate income by selling fodder and renting the pasture land. Usually the fodder is kept as reserve for domestic use and for the better income, for sale. The poor also generate income from the sale of fodder but this is small in volume. According to the impact assessment of the SEED project (SAVE THE CHILDREN SOMALIA / SOMALILAND, 2012B) individual poor households who have access to the training were able to produce up to nine loads each season and this generates an income of up to US$1,079 per season. However, considering the short period of the project and the prevailing of drought during the project cycle, the quantitative analysis needs to be viewed in this context. .

Based on field observations of enclosures, production depends on combination of factors including soil fertility, inputs like manure and access to inland water harvesting or flood. The best fodder production was observed in depression areas where water is drained from the proximate road and communal grazing areas. There were some observed poorly used? practices like underground storage that was not applied correctly. There was no any documentation on the different types of traditional fodder banking practices by the agro-pastoralists and no evidence that the new technology is superior to the traditional. This has at least two fundamental implications; first inappropriate technology makes the agro-pastoralist more vulnerable. Secondly, the agro-pastoralist can lose confidence in trainers.

Household economy	**Wealth rank groups**		
Food source	Poor	Middle	Better-off
Livestock products	5	10	20
Crop production	5	15	20
Purchasing	65	50	40
Food loan	0	5	10
Food gift	5	0	0
Income source			
Livestock sale	5	15	20
Livestock products	5	15	20
Crop sale	10	15	30
Pasture rent/sale	10	10	5
Water sale	0	0	5
Charcoal	10	5	0
Labour	50	20	5
Petty trade	0	15	10
Remittance	0	5	5
Expenditure			
Food	50	35	25
Water	20	20	10
Pasture	5	15	10
Non-stable	45	35	30

Table 4: Wealth groups and household economy at village level in Odoweyne

No doubt the training might have an influence, but attribution is difficult to pin-point. There were many cases in the villages that they demand "capacity building" or "training", but do not clearly indicated what type of gaps they have to be trained in. This might indicate an attraction to the per-diem than the training content per se.

Beekeeping might be also a good potential source of income for the agro-pastoralists. In the villages visited it was not widespread except very few households with some of the traditional and top bars. Some of the households have indicated that the top-bar is better than the traditional. However, generally beekeeping as an activity in the agro-pastoral system has some challenges. First the in some localities the water source is salty and many of them are dying. Secondly under recurrent drought water and bee forage shortages the size of the colony diminishes and many have left. Thirdly the bees are badly attacked by pests and birds. For example at the Beer village five of bee colonies inside the top-bar had been demolished due to salt water, but able to produce about a total of 15kg of honey from the ten top-bars.

Expenditures: The highest expenditure goes to food and non-stable expenses across the wealth rank. Water and pasture are also source of expenditure; this may be due to the recurrent drought and demolishing of many *berkhad* and flooded *ellas*. Now the SEED project needs to be critical in its strategy and approaches. Considering the resource potential do we need to focus on specialisation or diversification or both? Based on the discussions and field observation, crop production was dominated by failure rather than success, mainly due to the recurrent drought. Similarly, the loss of livestock was inevitable due to the recurrent drought and spread of diseases. If SEED is to support the specialisation on livestock, it needs to consider the issues of pasture and water sources at private, communal and cross border level. Similarly if one needs to diversify source of income, it needs to understand the risks incurred and its interface with the resource bases. In other words, fodder production at household level for consumption or for sale needs to know how the communal sources within and outside the locality is used by the same household. Similar rationalities can be applied to beekeeping and crop production (Table 4).

2.4 The interface between different livelihoods

At macro level, the rural and urban relationship is mainly on marketing of agricultural and industrial products. Similarly during irregular drought many of the agro-pastoralist access loans from the traders and merchants in cash and in kind (consumable commodities) which is highly skewed to kinships. Similarly many of the traders and merchants have invested their savings on livestock in the rural areas with their relatives. Moreover, during drought many of the rural community purchase water from private and government water source (i.e. deep wells and boreholes). In many cases water shortages occurred in the urban areas due to the scarce water completion between the urban dwellers and livestock. The IDPs are also accommodated with emergency support in the urban areas and the labour migration of the youth to the urban centres is very high this has been compounded by the expansion of chat chewing culture mainly in urban areas.

The traditional social safety net among the agro-pastoralist community is strong. However, with the recurrent drought, the practice has been decline as many of the community members are becoming equally poor. In the SEED pilot areas the IDPs, returnees and nomadic pastoralists from drought prone areas have been accommodated in the community with the share of food, feed and water. The women

groups who are organize to sell milk have been saving some money to assist each other during bad times and support the IDPs. Similarly, those returnees and refugees are accommodated with some land and livestock from the clan and sub-clans to help start a new life. During irregular drought the agro-pastoralists move across the border mainly to Gashamo area of Ethiopia; at the time of the study there was a drought there and many pastoralists have come into the study area and were sharing resources.

The relationship between the poor and the better-off is not confined to the loans and gifts. The poor also work as labourers on the farms of the better-off. As already mentioned, there are also conflicts on the use of *berkhads* water between the owner and non-owners. The non-owners insist on purchasing water for their livestock while some of the owners resist selling as they would like to reserve it for the drought period for better income. Many of the poor and middle rank groups have to sell their livestock to cover the water expenses. Hence development of communal water points or group owned water points to regulate the price and generate income are fundamental.

There are also many destitute people in the villages, who need external support, mainly the old people and handicapped.

The handicaped and elderly are given less attention in the development interventions

2.5 Dynamics of livelihoods

According to FSNAU (2011) in the last seven years (2003-2010) the livestock population in Togdheer's agro-pastoral area, which encompasses Odoweyne has been in decline, across the wealth groups and livestock types. The poor households have essentially lost any access to cattle and camels. The most drastic loss has occured in the cattle population where up to 100% were lost.

Similarly the shoats and camel loss in the last seven years accounts up to 57% and 62% respectively (Table 5). Such drastic deterioration of livestock asset across the wealth many have been brought to the poor wealth category and the herd size recovery period becomes nearly impossible to achieve.

Wealth rank	**Cultivated farm area (ha)**		**% of change**
	2002/3	**2009/10**	
Poor	2.5	0.75	-72
Middle	5	2.5	-50
Better-off	10	8	-20

Table 5 Changes in livestock herd dynamics (2002/3-2009/10)

With the recurrent drought and spread of livestock diseases, it is assumed more pastoralists and returnees will engage in crop cultivation. However, the trend analysis by FSNAU (2003 and 2010) indicates a decreasing trend across the wealth ranks. The cultivated land declined by more than 70% for the poor and up to 20% for the better-off (Table 6).The reasons given were due to limited access to agricultural inputs and opportunity of fodder production. However, in the study areas of Odweyne, the major factor for the decline is the expansion of Prosopis in the pastoral areas, where the flood has also transporting the seeds to the plots. Moreover, under the dense weed coverage, exercising water harvesting drainage become difficult, and the water harvested is consumed by the weed.

Secondly, due to the recurrent drought almost the entire cattle population had been eliminated. Consequently access to milk has been diminished, while farming with oxen becomes expensive, mainly for the poor. Renting a pair of oxen for ploughing is up to USD$ 15 per hour in the study areas. Thirdly, *Prosopis* is also serving as a good habitat for wild animals (i.e. wild pigs and birds) that attack crops; the family members now are forced to guard their crop land day and night from these animals. Fourthly, crop cultivation becomes less feasible with erratic and recurrent drought.

3. Vulnerability at different levels

3.1 Climate change and adaption

3.1.1 Events causing vulnerability

The study area has a semi-arid agro-climate with high variability of rainfall in space and time. Accordingly the area has two peak rainy season of *Gu* (April-May) and *Deyr* (October-December). The annual rainfall ranges from 200-300 mm. With the rain and flooding from the mountain areas some crops (sorghum and maize) legumes (cowpeas) and vegetables (tomatoes) and fruit (watermelon) are produced (FSNAU, 2011).

Historical events in Somaliland indicate that drought is not a new phenomenon, but with very dynamic changes compounded with population pressure and land degradations. Accordingly the interval of drought occurrence in history is highly variable which ranges from an interval of four to 11 years and extended period of two to three years and very recently occur almost every year (Table 7). The drought occurrence is usually coincides with different human and livestock disease and resource base conflicts. The consequence of the recurrent drought has already resulted loss of livestock, land degradation, crop failure, frequent mobility, increasing of IDPs and destitution.

Year	Drought local name	Meaning in English
1946	Koronkoraale	The year of hoppies, locust
1950	Siigo case	The severe drought year of brown dust
1951	Dumaale	The year of malaria
1952	Caan da'arre	The year of bitter milk
1954	Furqule	The year of small pox
1966	Cadholey	The year of scabies
1974	Daba- dheer	The long-tailed drought
1984	Aakhiro u guur	The year people moved to other world, outside their migratory routes
1995-96	Xoolo buka	The year of animal diseases
2002-2004		Prolonged drought
2005-2006		Drought
2008-2009		Drought
2009-2011		Predominate by drought (field observation)

Table 7: History of drought prevalence in Somaliland (Oxfam GB 2009 up dated)

Traditional early warning systems: Under the pastoralist system which is characterized by climate variability in space and time, out of necessity the community has developed a wide range of traditional early warning systems. Some of the indicators are known by the community while others are confined to the specific knowledgeable persons. Usually such knowledgeable people inherited it from their parents. Based on the discussions with elders and some literature review (G/Michael, 2010) the following major traditional early warning indicators have been identified. The modern Early Warning Systems at the national level are for emergency interventions, but not usable at community level. This may also require metrological stations, and skill manpower at district and local level. Some of these indicators include:

- **Behaviour of domestic animals:** This can include water and pasture demand frequency, pattern of mobility and body weight.

- **Direction of winds:** Already the direction of winds on specific season indicates the prevailing dry or wet winds.

- **Vegetation:** Different types of trees with flowers, fruits of shading leaves serve as indicators early warning at specific season. However, due to recurrent drought, deforestation and land degradation some of the indicate plants are diminishing.

- **Wild life and insects:** different wild animals including birds' change of their habitat and termites direction of movements are considered to be indicators.

- **Astronomy:** Knowledgeable people will analyse the arrangement of stars on a specific season and time; this is still widely accepted among the agro-pastoralists.

Usually the information is shared to the elderly pastoralists who further disseminate to the community. Still the reliability of the traditional early warning system is widespread among the agro-pastoralists. In the absence of any modern early warning systems the documentation of this knowledge is essential as a component of improving the livelihood of the agro-pastoralists. The SEED project can use such fundamental information to assure the success of its development intervention.

3.2 Climate change perceptions

The outcome of the discussions with the agro-pastoralists indicates that the rainfall pattern is becoming more and more unpredictable and the amount, pattern and duration of is also changing. Historically the *Gu* rainy season is more reliable than the *Deyr* rainy season. However, today both are becoming unreliable and characterized by total failure for an extended period. The dry season is extending from the traditional six and eight months to the whole year. This has been compounded with water and wind erosion, decline of land productivity and resulting crop failure and pastures shortage and resource base conflicts (Table 8). The intervention of SEED project was timely and appropriate under such economic and ecological crisis to rehabilitate the land degradation with enclosures and tree planting and water harvesting technologies to improve the crop and fodder production.

Indicators	Trend	Characteristics
Main rain season (*Gu*)	-	The rainfall is early. sometimes late, very short, period and intensive, crop failure, water shortage, flooding
Small rainy season (*Deyr*)	-	Usually characterised by total failure and hot temperature. Coincides with the DRR report that it was failing last four years
Dry season (*Hagaya* and *Jelaal)*	+	Temperature increase and duration more than six months, un expected very short rain result pests and disease
Crop failure	+	Very frequent due to shortage of rain
Flooding	+	Unpredictable, sometimes sequence of major floods, some times major flood followed by small flood with short intervals and result sever erosion and crop failure, poor soil fertility
Water erosion	+	Increased , due to intensive rain trigger overgrazing, deforestation and unplanned road and lateral water course erosion and result decline of land productivity
Wind erosion	+	Common both in dry and wet season and in some areas minimized due to Prosopis infestation
Water availability	-	The life span of communal water ponds sized during dry season while private *Berkhad* no more serving as reserves but immediate consumption or remain empty most of the time. The depth of hand dung wells increase and almost dry up in the middle of the dry season due to limitation of recharge from rain.
Pasture	-	Biodiversity decline with drought and trigger by deforestation with fuel wood, land degradation and infestation of weeds
Fodder production	-	A shift from crop to fodder production under the enclosures and yet the biomass production is minimal due to shortage of water in the middle of the growing period.
Livestock disease	-	Mainly occurred during drought shortage of grass and water and combined with very short rain which is enabling environment for pests and diseases to develop. Already cattle population is almost wipe-out in any villages and absence of veterinary services
Resource base conflicts	+	Due to the recurrent drought the need to have private enclosures and access to feed results conflicts

Table 8: Climate variability and changes in the study areas

Generally the community in the different villages believed that irregular drought, IDPs, migration, enclosures, mobility and chat consumption are in increasing trend, while the livestock number and species, charcoal use , role of customary institutions and economic disparity are decreasing trend (Table 9). The trends are indicating the threat of the livelihoods under agro-pastoralism, which again demands a joint effort of different institutions.

Indicators	Trends	Remarks
Frequency of drought	+	From long term interval to annual
Number of IDPs	+	Drought, livestock disease
Rural urban migration	+	Employment and assistance
Number of livestock/HH	-	Recurrent drought, death, cost recovery
Types of livestock/HH	-	Recurrent drought, death, cost recovery
Private enclosures	+	Pasture, income and fuel wood
Communal lands	-	Enclosure and degradation
Frequency and range of mobility	+	Pasture and water
Frequency of crop failure	+	Recurrent drought and land degradation
Role of customary institutions	-	Drought and increasing number of actors
Access to market	+	Local and urban area and export
Charcoal as source of income	-	Some controlling systems at village level
Chat consumers	+	Widespread among the poor with short vision
Economic disparity of community	-	Longer drought made all equally poor

Table 9: Community perceptions on the trend of changes in their locality

3.3 Hazards in livelihoods

The outcome of the discussion with the differentiated community members in different regions the following major stress and shocks have been identified:

Irregular drought: During the five and ten years there has been a trend of rainfall failure from one rainy season to two rainy seasons and consecutive years. Consequently the cross border mobility to and from the Gashamo area of Ethiopia is very common. The cumulative effect of the longer drought has caused loss of livestock and vulnerability to any risks or hazards.

Livestock diseases: With shortage of water and pasture, livestock have lost their resilience to any disease and pests. The problem has been compounded with deforestation by charcoal making, infestation of Prosopis and concentration of livestock on limited water and pasture areas the disease will be easily spread. More than 50% of the private *berkads* are not functioning and the absence of any veterinary services at village and district level has also trigger the problem. Human diseases such as malaria, diarrhoea and water bore diseases are common.

Population pressure: No doubt big family size has both economic, social and political values under pastoralism of clan based agricultural system. However, with the scarcity of resources feeding the ever increasing population becomes difficult. Youth unemployment is a chronic problem across the village. The SEED skill training component targeting the youth is a good entry point, but too small to address the huge youth population.

Private land enclosure: This problem is well pronounced among the elders, leaders and women groups. It was underlined that the land is unfairly enclosed where some individuals have grabbing the land up to 5km² while other have no any access to land. The village committee is busy with resolving the conflicts and yet with no any visible solutions as they are also involved in the grabbing process. The problem is serious in the villages of Beerato and Galolay; this may be due to the low proportion of communal land compare to other villages. The problem has been compounded due to the recurrent drought and increasing number of IDPs who are very dependent on sale of fuel wood and fodder grass.

Flooding: Many agro-pastoralists depend on flooding for crop production. Usually the flood water comes from the upstream many kilometres away from the locality. Therefore, the crop production depends on the rainfall situation in the upper course which is usually unpredictable and result crop failure due to severe erosion and shortage of water. This flood also comes with some weed seeds like Prosopis and the crop land is easily infested.

Prosopis juniflora: It is an indigenous plant to Latin America it is a fast growing and tolerant arid conditions and saline soils. It has a very deep root of more 50 meters and widespread in the Horn of Africa. According to the Somali Agriculture Technical Group, Prosopis was introduced in Somaliland in the 1959 possible with the rehabilitation of program. In Somali language it is called "*Garanwaa*" which means new plant. In some of the villages in the study area it was introduce by animals (livestock and wild life), water and wind in the last ten years. The concentration of the invasive plant is mainly on settlement areas, water points, cultivated areas, river banks, road side and communal grazing lands proximate to the villages. The community have acknowledged that the plant has an advantage as fodder during drought, fuel wood and wind break, yet they underline its demerits are higher than the merits. The demerits include destruction of water points where the natural ponds and earth dams are colonized by the plant, while some *berkhad* have been cracked down. The ground water from the *ellas* has been in decline due to the root completion from the plant.

Similarly due to the infestation of this plant in the crop land clearance has become difficult but also this plant serves as a habitat of wild life such as birds and wild pigs that attack the crop easily and demand high labour for guarding. Similarly the infestation of the plant in forest areas and grass land is also very serious; no biodiversity is possible under the infestation of this plant. Many of the agro-pastoralists are forced to take their livestock long distance and cross border to access indigenous plants and badly affect their livelihoods. In areas with better cover of indigenous trees the weed infestation is minimal. Which implies conservation of the existing natural vegetation is a step towards protect against the spread of the weed.

The problem is very serious; it has already eroded the resilience of livelihoods of many agro-pastoralists and demands external support to solve the problem. No doubt there are hot debates on the use of Prosopis globally among the intellectuals, however by the end of the day the needs and priorities of the community need to be considered.

Demolished Berkhad ***Siltation of communal water ponds***

Resource base conflicts: The major source of conflicts at village level which keeps the village committee extremely busy are, expansion of land enclosures, conflicts on land boundaries, illegal grazing on enclosures, on in land water harvesting, divorce issues, with *berkhad* owners and none owners (immediate need of water by none *berkhad* owners while *berkhad* owners want to reserve for better income during drought). Village committees are also in conflict with individuals in selection of trainers for any development interventions, mainly due to the mismatch of demand and supply. However, with the SEED program, the training of many people simultaneously on different topics has minimized the problem. Generally the village committee has limited capacity to address the wide range of sources of conflicts in their locality.

Charcoal making: During the civil war and absence of peace and security charcoal making for export was a big business. According to the estimates of the regional governor (Daad-Maghed) more than 50% of the natural forest in the region was destroyed during this period. Today many of the village committees have prohibited charcoal making in their localities. However, in many of the villages and towns there is a huge supply of charcoal and the demand in the urban areas is also very high. With the recurrent drought it will be inevitable many of the poor will depend on the sale of charcoal illegally. There are some views from the NGOs that charcoal making from Prosopis as a solution, but unless closely observed clearance of the indigenous plants is also be likely.

Chat chewing: In many of the villages visited, the women groups have highlighted Chat chewing as an emerging serious problem which affects their livelihood. Some of them say it is more serious than the drought. It was estimated in each village about 70% of the household heads are consuming chat and the consumers are increasing with the prevalence of the recurrent drought. An elderly person from Haahi village indicated that most of the chat consumers are the poor who have lost their livestock assets and confidence for recovery due to the recurrent drought. On average a single person invests from USD$2-4 every day. Due to chat, many of the male households and the youth have been migrating to urban areas and the burden is passed to women and their children. The rate of divorce, which is triggered by the recurrent drought, is higher among the chat chewing households.


Drought


Prosopis


Chat


Population Growth

Characoal **Environmental pollution** **Degradation**

Others: includes the problem of wild life, access to credit and seeds and unemployment of the youth, IDPs, returnees and refugees.

A group of women were asked to map the resource bases and challenges encountered at Beer village. As shown in Figure 2 the major features identified on the map are the road, village, Shallow wells (*ellas),* private enclosures and communal land. From the resource map they have identified the following major problems:

- Spread of Prosopis in the communal land
- Unexpected flooding of shallow wells (*ellas*)
- Expansion of private enclosure areas and unequal distribution
- Lack of access to flooding water in the croplands

These combination of problems implies that the SEED project need to do more on the communal resource management and the SEED activities including cropping, fodder production and beekeeping need to be reoriented to address the community needs and priorities

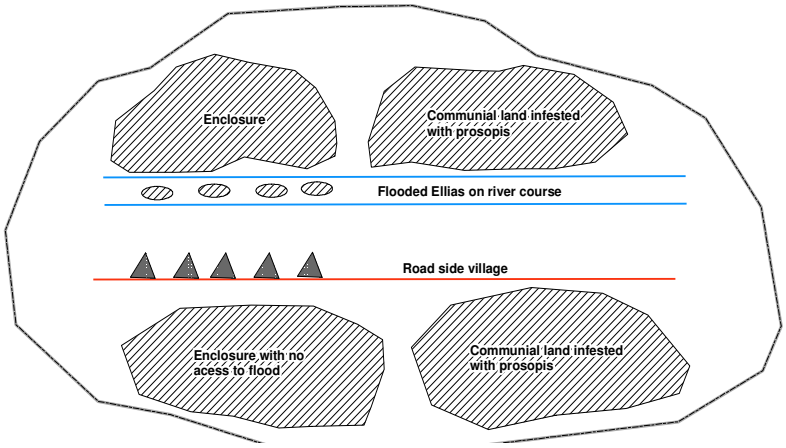

Figure 2: Participatory resources map of Beer village

3.3 The impact of hazards

The group of differentiated agro-pastoralists was asked how they have classified the drought situation in the last ten years in their localities. On average more than 50% 0f the households have classified the drought as serious. However, the magnitude varies from village to village. For example for the village of Galoaly the serious drought accounts 40%, while it was 70% to the village of Ceelbilile. There are also

variations within each village (Figure 3). This implies that the spatial variability of rainfall at village level and micro-climate situations at village level which can be attributed by the relative geographical location of the areas. Consideration of such variability at macro and micro level is fundamental in any development interventions.

Similarly an estimate was made to the loss of livestock in the past ten years with the district administration and some elderly agro-pastoralists. The recurrent drought attributes to the loss of about 70% of the cattle population, more than 50% of the shoats and 20% of the camels (Figure 4). This was due to the combined effect of drought and spread of livestock diseases. These estimates have also some similarities to the findings of FSNAU (2011). The diary income is also the reflection of the livestock status. For the poor the minimum income from milk sale is totally lost during drought, while the better off get at least up to 5% due to their livestock mobility outside of their localities and availability of some reserve fodder (Figure 5). Similarly the status of farm production in the past five years in different villages indicate 40-70% experienced a total failure of crop, while some grain harvest was possible in localized areas, mainly owned by the better off due to inputs of labour, manure and water harvesting. Also the feed production is low but better than the grain production (Figure 6). This has some resemblance with the findings of the FSNAU that there is a shift from crop to fodder production.

According to the village committees one of the serious problems of the recurrent drought is the increasing rate of divorce among the households. The loss of livestock asset triggers the split of the household, where the men migrate to urban for employment. Yet these men do not support their rural family for long period and some are addicted to chat. Similarly, due to the unequal distribution of enclosures and the wider infestation of Prosopis in the communal lands, during drought many are forced to graze on the private enclosures. Some poor also cut grasses for sale and conflict occurs between the owner and non owner as a result - usually between the poor and the better-off.

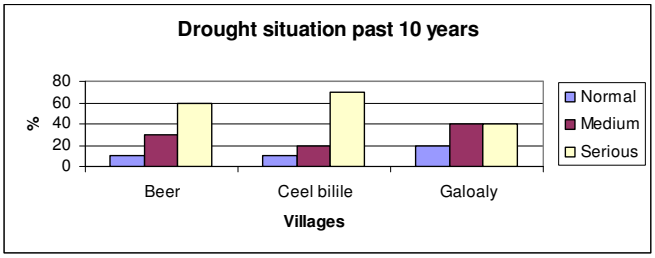

Figure 3: Drought situation in the past ten years

Figure 4: Livestock loss in the past ten years

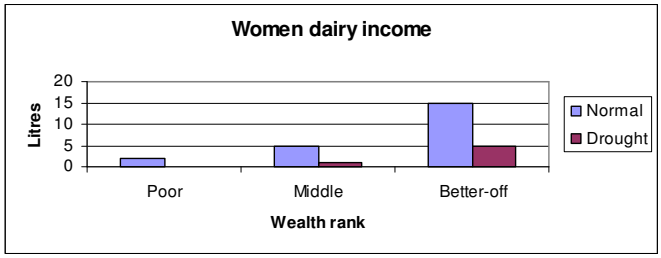

Figure 5: Diary income during normal and drought season

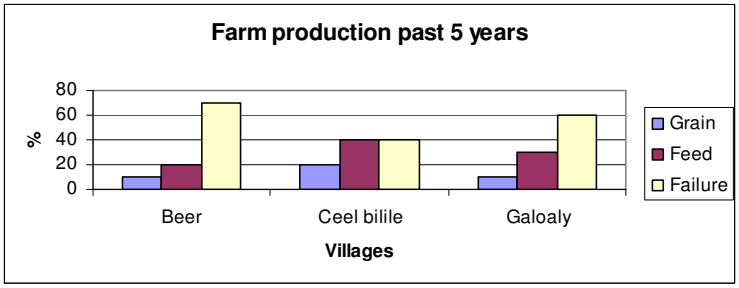

Figure 6: Farm production in the past 5 years

Impacts on children: The role of children in the livelihood of the agro-pastoralists is very fundamental. All means of adaptations to drought are done with the involvement of children. Splitting of livestock for grazing and browsing, finding of the right pasture area free of pests and diseases, watering of animals, transporting of water and fuel wood for consumption are the responsibilities of children. Moreover, under the farming system the fodder production, cutting and carrying and marketing are mainly done by children. Similarly, the fundamental role of children comes in guarding of the crop from wild life which extends more than one month.

Children's role in the livelihoods

Malnutrition prevails among the children with death of livestock and crop failure. This is compounded by the shortage of water and water borne diseases. During drought many of the poor households are splitting to assure their survival in urban areas or other villages a cross-border. Usually schools are closed during drought as many of the household are migrating. There are some cases where the poor families are forced to arrange early marriage of their daughters to get dowry in the form of livestock to ensure the survival of the family.

The increasing infestation of Prosopis around villages means that children are forced to take their livestock very long distance for pasture. Similarly, guarding the crop from wild life consumes much of their time and in many cases they are forced to quit the school. The variability of rain affects the cropping calendar and consequently the school term and class time and guarding the crops overlaps and become difficult to pre plan, unless flexibility is considering in the schooling.

Generally, the schools visited have no feeding centres; the different sources of water (communal ponds, *ellas* and *berkhad*) are highly polluted.

Water for human and livestock use

No doubt the SEED project with its packages of fodder, crop and beekeeping might be helpful to address the needs of children in terms of food sources and income generation. Yet such interventions are highly influenced by drought. Similarly the existing crop varieties are long growing seasons and demand high child labour in guarding. Shorter growing varieties should be considered. The availability of pasture with the fodder production might minimize distance travel, but this would still involve children to cut and carry. SEED also needs to have a system approach to look the resource bases of pasture and water as an integrated approach that would indirectly address the needs and priorities of children.

SAVE THE CHILDREN SOMALIA / SOMALILAND has constructed schools in some of the villages and the roof water harvesting system is the most successful. The schools with this technology had no serious shortage of water. They still have full water reserve, while the *berkhads* have nothing. It is unfortunate none of the village dwellers have adapted this technology. This can be done with simplified technology and any container including barrels can be used for human consumption (more hygienic and efficient use of water). The SEED project has an opportunity to demonstrate such technologies with the collaboration of WASH and DRR projects.

Roof harvesting in the school

Shocks	Vulnerability	Causes	Impact	Adaption
Livestock diseases	Poor (high) Middle (medium) Better-off (low)	-Drought -Deforestation -Weed infestation	-Livestock death -More affected cattle and sheep - Asset loss and IDPs	-Livestock diversity -Mobility -Livestock split -Shoats
Private land enclosures	Poor (high) Middle (medium) Better-off (low)	-Access to farm land and pasture, fuel wood, secure ownership -source of income	-Diminish common resources -Restrict mobility -unfair land distribution	-customer rules and regulations -But the power is deteriorating
Flooding	Poor (high) Middle (medium) Better-off (Medium)	-Intensive rain up stream -Land degradation	Weed infestation Crop failure	-Diversion ditches -Shift to fodder production -More to livestock
Population pressure	Poor (high) Middle (medium) Better-off (Medium)	-economic and social and political values	Labour source, strong kinship -Dependent population Unemployment	Labour source in livestock and farming
Resource base conflicts	-Poor (high) -Middle (medium) -Better-off (low)	-Private enclosures -Shortage of pasture Water harvesting ditches	-Shortage of pasture and crop -Unfair distribution of resources	-Use of communal -Mobility Poor less resource and power
Charcoal making	Better-off (High) Middle (medium), poor (low)	Level of poverty trigger by drought	Deforestation and land degradation	Customary rules against charcoal making -Diversity of activities
Chat chewing	Poor (High) Middle (medium) Better-off (medium)		Economic and social impact	Diversity of activities
Prosopis juliflora	Poor (High) Middle (medium) Better-off (medium)	-Livestock -Wind and soil erosion	-Colonization of grazing and crop land -Habitat wild life	-Increase mobility -Increase enclosures -Feed during drought -Source of fuel wood
Wild life	Poor (High) Middle (medium) Better-off (low)	-Bush encroachment -Expansion of crop land	- Crop damage	-Labour availability -Shift to fodder

Table 10: Summary of Shocks, impacts and adaptations

3.4 Adaptations

Generally the livelihood bases of the agro-pastoralists, as already mentioned, are geared to address the different risks and uncertainties. The adaptation mechanisms to climate change can be classified under the following categories:

Livestock diversity: Agro-pastoralists are rearing different animals with different types of pasture and water demand and mobility ranges. With the recurrent drought more emphases is given to shoats across the wealth rank.

Pasture: Agro-pastoralists have different source of pasture, from enclosures they have fodder and crop residues which is mostly kept as a reserve. The other sources are the communal land within and outside of their locality. The fodder production of SEED is a component of this strategy.

Water source: The different source of water sources include natural ponds, communal earth dams, *Haffir* dams, *ellas, berkhads*and boreholes. Usually the private water sources serve as reserves in bad seasons and better source of income.

Mobility with livestock: The fundamental role of mobility is not only to access water and pasture but also avoid pests and diseases and overgrazing. The better-off rent trucks to transport their livestock to longer distances for water and pasture.

Case study wide spread of family members

Mohammed Mahmud is a better-off agro-pastoralist in the village of Beerato. He has four wives and a total of 18 children. The four wives are located at three different villages and in one urban centre. Three of the wives are rearing livestock and practicing farming. During drought the households are assisting each other in restocking and pastures and water sources. The spatial distribution of resources with the linkage of mobility attributes to the adaption of the livelihood to different risks and uncertainties.

Traditional early warning: Using the different indicators traditional early warnings, most of the agro-pastoralist adjusts their use of water, pasture, food and mobility. The use of mobile phones also helps to get more information on the water, pasture and disease situation out of their locality.

Crop production: Most of the agro-pastoralist are growing local land race of sorghum and maize with drought resistance and good source of food and feed. To overcome the shortage of rain water, diversion of flood and SWC structures are used. Moreover, the use manure triggers quick plant growth. The SEED project is also facilitating such local initiatives.

Social safety net: The customary institutions play fundamental role in facilitating the assistance of each other during irregular drought. There are also some informal self-help groups saving some cash to assist each other and needy people. The social safety net is very strong in the Somali culture which links the relatives, clans and sub-clans at rural, urban and overseas with remittances.

Case study on early seeding

Hassen Ahemed is one of the poor whose livelihood is based on crop and fodder production in the village of Ceelbilile. With the coming of the first flood he was seeding sorghum and had a good crop stand. However, he encounters at least three problems in his farming plot. First it is difficult to use any water harvesting structures on plots located in the flood plain as it is easily washed away by floods. Secondly, his neighbouring plots were late in seeding; his crop matured earlier and was easily attacked by birds. Thirdly he did not have enough manpower to guard the crop and harvested it earlier. This implies that crop farming for the poor has some challenges including labour shortage and the need for joint decision making for seeding to spread the risk.

Beekeeping: It is a component of the diversification of the household economy. However, the introduction of modern beekeeping by SEED is at its early stage of development.

Petty trade: It is not only practice to diversify the source of income in the village and towns but also serve the community to have access to the different commodities on credit bases charging any interest.

Generally the different adaptation strategies are not free from the influence of environment and the need a strategy of diversification on non- agricultural activities.

3.5 Resilient livelihoods and its indicators

To determine the indicators on resilient livelihood activities in the agro-pastoral areas consideration of the situation at different levels and its relationships is very fundamental. Accordingly the agro-pastoralism livelihood bases have been analysed at different levels as indicated below:

Macro-level: The outcome of the discussions with the agro-pastoralists indifferent villages has come with the following combinations of indicators for the livelihoods resilience to shocks at community or village level:

- Frequency and duration of drought
- Optimum resource base availability (pasture and water)
- Balance of the wealth rank status of the community (proportion of the wealth ranks)
- Magnitude of IDPs and returnees
- Number of shoats and camels in the livestock asset (drought resistant)
- Harmony and mobility with neighbouring areas
- Strength of the village committee (accountability and capacity)
- Proximity to urban areas (market, employment and access to credit)
- Availability of veterinary services.

For example during the field visit due to the severe drought in Gashamo area of Ethiopia, many have moved to some of the villages of Odweyne and share pasture, water and food for about a month. Therefore, at village level the major indicators for resilient livelihoods are the resource base, wealth distribution, events of irregular drought, livestock combination, peaceful coexistence with neighbours, level of mobility, proximity to social services and grassroots organisation.

Meso level: Similarly at household level, the better-off households with diversified livestock species, wider enclosures, engaged with different source of income including remittance are in better position than the poor with a small number of shoats and farm land who are dependent on daily labour and fuel wood selling. Generally the different livelihood activities have many potentials but also limitations as indicated on Table 11. Moreover, the household interdependency across the wealth rank is still very strong. In one of the village (Haahi) the better-off farmer indicated that “when severe drought comes the most affected persons are the better-off as they have to share their resources to the poor in form of loan and gifts”.

Therefore, the different diversified activities at household level need to be evaluated to the local fundamental yardsticks of, diversity of activities, multi-functionality, spatial and temporal aspects and its integration and synergetic effects to determine its resilience to shocks.

Micro level: Similarly at farming plot level land productivity depends on a combination of factors such as the relative location of the plot (proximity to the village, forest area, and flood plain), availability of labour (traction and human), use of manure, soil and water conservation and agronomy (mixed) practices. Similarly most of the farming in the flood plains is depending on the situation of the rainfall in the upstream than what is happening on the locality.

Therefore, at plot level the combination of indicators needs to be considered are relative geographical location of a plot, micro-climate situation, labour availability, access to inputs, and use of soil and water conservation measures and situation of rain in the upper streams. As it is already indicated on Table 10 on the different types of shocks, it is worth equating the livelihood in line with addressing the different source of shocks.

The same locality but different crop production

Generally resilience issue under agro-pastoralism need to consider at least four fundamental issues; first any intervention on developing resilient livelihood in the agro-pastoral areas needs to consider the existing complex and diverse local initiatives. This also helps to avoid a quick fix solution with many undesired outcome. Secondly, household livelihood is highly influenced by the situation at local and cross border situations. Thirdly it needs the recognition of the fundamental role of mobility in the livelihood of agro-pastoralism in the arid and semiarid environment. Lastly, to assure resilient livelihood in the agro-pastoral system needs a holistic approach to integrate the different activities, resource bases (pasture and water), and differentiated actors within and outside of the locality.

Livelihoods/activities	Major features	Potential	Limitation/ Risks
Livestock rearing **-Cattle** **-Shoats** **-Camels**	-Diversity of livestock -Pasture source private, communal and purchase -Water source, private, communal and purchase -Mobility as fundamental strategy	- Multi-functionality of livestock food, income, Savings and social values -Grazers and browsers -Utilization of spatial and temporal variations of resources with mobility -High domestic and international demand - Adaptability to drought -Restocking in the form of savings -Resource management -Integration of water sources (ponds, shallow wells, *Berkhad*)	-Shortage of water -Shortage of pasture due to drought, weed and private enclosure -Shortage of water due to drought, siltation, demolishing of complementary water sources such as *Berkhad*. -Charcoal making -Spread of livestock disease in the absence of veterinary service
Livestock products **-Diary product** **-Tea shops/restaurants** **-Meat vendors** **-Livestock trader**	-Diversity of livestock - Availability of water and pasture	-Different source of pasture -High domestic demand -Existent of informal self-help group	-Drought followed by pasture and water shortage -Spread of livestock disease and livestock death -Mobility with livestock and migration to urban -Low purchasing power
Crop production	-Farm size and soil fertility -Relative location (access to water, proximity to village and forest area -Crop varieties and combinations -Soil and water conservation(SWC) and other inputs -Manpower and animal traction for agricultural activities and guarding	-Drought resistance land race -Synergetic effect as fodder source, traction and manure -agro-forestry and SWC measures and agronomy - There is demand and access to market	-Shortage of water -Poor soil fertility -Flooding -Labour availability -Infestation of weeds -Wild life -Joint decision for seeding
Beekeeping	-Traditional experience -Use of local material -Natural vegetation as forage	-Biodiversity of vegetation -Constructed with local material -Less labour -There is demand and market	-Water availability and its quality -Attack by pests and birds -Infestation of weeds and loss of biodiversity
Fodder production	- indigenous plants -Different source of pasture -Complementarities of private and communal source of pasture -Application of reserve, self-utilization and sell -Use of water harvesting Control grazing after harvest and increase fertility (manure and urine)	-Wider windows of pasture source, private, communal and cross-border, purchase -Fodder bank as savings -Application of water harvesting technologies -Source of income -NRM and nursery development	-Water shortage trigger overgrazing --Weak resource management institution -Unclear land tenure -Weed infestation Drought less water -Triggering land grabbing
Petty trade	-Small shops with industrial products -Consumable goods -Off farm activity -Part of the saving on livestock	-Less affected with climate change - Expansion of urbanization and modernization	-Drought low purchasing power of agro-pastoralists -Selling commodities on credit bases -Supporting relatives during drought and less savings/remittance
Daily labourer	-Framing and construction	-High demand with urbanization -Access to skill training	-unemployment -Drought trigger the IDPs
Water sale	From private *Berkhad*	-Rehabilitation with credit access	-Extended drought absence of water and cracking
Charcoal and fire wood production	Common among the poor increase with drought	Use of Prosopis for fuel and charcoal Introduction of energy saving technologies	-Shortage of pasture and land degradation -Lack of alternative livelihood

Table 11: Potential and limitations of household livelihoods

3.6 The SEED programme under the lens of resilience livelihoods

It might be too early to measure the impact of SEED program in developing resilience of households' livelihoods to hazards in the agro-pastoral areas. However, the outcome of the discussions with the stakeholders and differentiated community indicates already some positive outcomes.

- **Joint effort:** The establishment of the consortium addressing the complex and diverse problems of the agro-pastoralists with a joint organisational effort with some centre of excellence in training, livelihood improvement, community organisation, value chain and soil and water conservation is a strong entry point to address the livelihoods.

- **Supporting local initiatives:** Prior to the intervention SEED, agro-pastoralists have been practicing some activities of crop and fodder production under the enclosures. Moreover, very few households had been involved in traditional beekeeping. Therefore, the training intervention which encompasses crop and fodder production and beekeeping is not replacing existing practices but improving already existing practices. This is a good entry point to assure the sustainable use of the different activities. Sustainability the new practices of introduced however, in the case of the beekeeping it is very clear to observe some added values on the traditional beekeeping. However, with the crop and fodder production it is not clear what were the local practices and what are the added values. This is also not very clear from the agro-pastoralists despite their demand for training or capacity building which might be influenced by the incentive of the training per diem.

- **Release human pressure:** Some of the households have told us some of the youth who have been also attending the training have been migrating to urban areas and becoming involved in petty trades. To document those who have been engaged in different activities and use them as demonstration to diffuse the information among the population. In the long run this will help to release the youth pressure in the rural area, diversity of livelihood and accessibility of remittance sources from the urban areas.

- **Targeting the poor:** According to the village committees who are involved in selection of the trainee for the SEED project, most of the beneficiaries are the poor, including women household heads and unemployed youth groups.

- **Gender sensitivity:** Women are the victims of the ecological and economic crisis under the agro-pastoralist system. Under the SEED program women are given special attention in access to information and skills and provision of material support.

- **Stimulate self-help grouping:** Usually the trainings and material support of the SEED project has been deliver on individual bases. However, some of the individuals have come together to develop a self-help group. For example ten of the households including the five women in the village of Beer had received training and modern beehive at individual level. However, on their own initiative, they created a self-help group of beekeepers. If SEED project is to have an effective impact, training and material support need to be channelled through organised groups.

- **Contribution to household livelihood resilience:** Generally the SEED project with its training and material support (vegetable and beehive) has contributed to the improvement of

production of crop and fodder and access to beekeeping. No doubt the overall impact will be a contribution towards more resilient livelihood bases. However, measuring its contribution to the resilient household livelihood as indicated is very challenging. It requires many variables to be considered in the equation of assuring resilient household in the agro-pastoralist system. It needs a clear documentation of the local practices, the interfaces of the different activities at different level and clear indications of the added values form the training component.




Crop intensification ***Fodder production*** ***Beekeeping***

4. Conclusions and recommendations

4.1 Conclusions

Pastoralism is governed by the principles of diversity, multi-functionality, integration and mobility. These principles are highly relevant to any livelihood activities in the agro-pastoralist area of Odwenye**.** In the past five and ten years there has been a trend of failure of the big (Gu) and small rain (Deyr), shortage of water and pasture, spread of livestock diseases, flooding, intensification of soil erosion, crop failures and resource base conflicts. According to the population, this has resulted in 20-70% loss of herds and 40-70% crop failure. Generally most of the diversified activities are very sensitive to climate change.

All of this has negative impacts on children through increased labour input, malnutrition, water borne disease, drop out from schools, migration to urban and the splitting of families. Generally the root causes are the different; human induced shocks include population pressure, invasive weeds, land grabbing, and resource based conflicts. Children are also the victims of human induced shocks resulting in , malnutrition, water-borne disease, drop out from schools, migration to urban and splitting of families.

Grassroots institutions dominate in the study areas though they have limited capacity to address the resource management and conflicts. There is also some informal self-help groups mostly organized by women but these are not strong.

The rural community (pastoral and agro-pastoral) have a strong social bond within and across the border. The better-off is assisting the poor with loans and gifts, while the whole community assists other community in Gashamo, Ethiopia. Similarly the rural urban linkage is very strong, which includes

marketing, access to credit, and source of employment, emergency support and restocking in the form of savings.
Hazards identified included drought, livestock diseases, population pressure, private land enclosure, flooding, invasive weeds, charcoal making and resource base conflicts and chat chewing. Many hazards are human induced and require accountable grassroots institutions with clear rules and regulations to mitigate the problems.

Agro-pastoralists have a wider range of adaption mechanisms including livestock diversity, different source of pasture and water source, mobility with livestock, traditional early warning, crop production, petty trade and social safety net. However, they are not free from the influence of environmental changes when drought extends for longer years.

At the village level major indicators for resilient livelihoods are the resource base, wealth distribution, events of irregular drought, livestock combination, peaceful coexistence with neighbours, level of mobility, proximity to social services and grassroots organisation. At household level the indicators for resilience are diversity of activities, multi-functionality, spatial and temporal aspects and its integration and synergetic effects. At plot level indicators to be considered are relative geographical location of a plot, micro-climate situation, labour availability, access to inputs, and use of soil and water conservation measures and situation of rain in the upper streams.

SEED has a fundamental role in supporting local initiatives, reducing human pressure: targeting the poor, gender sensitivity, stimulate self-help grouping. Generally, it contributes to resilient livelihood bases. However, in measuring its contribution to the resilient household livelihoods, it needs to consider the combination of indicators. Additionally, the classical approach of "Transfer of technology" considering the agro-pastoralists as receiver has many failure stories. There is not enough documentation of local experiences are on farming, fodder production, fodder banking and beekeeping.

4.2 Recommendations

- **Resilient livelihood:** Under the agro-pastoralism resilience of livelihood is determined by a combination of different indicators at different levels. Hence the indicators and linkages at community, household and plot levels are worth considering. In other words, it needs to consider environmental and social, individual, group , local and external factors. Generally the core areas of resilience are a combination of factors revolving on resource base, diversity and synergy of different activities, peaceful co-existence, grassroots institutions and level of mobility. Under the frequent and prolonged drought, those with a better resilience are the better-off, who have better resources (livestock and land), diversified source of income, exercise mobility and power in decision making.

- **Root causes of vulnerability:** The livelihood of a single household is dependent on the private and communal resources with strong social integration. The finding shows that by and large the human induced hazards such as private enclosures, invasive weeds, charcoal making, and population pressure and resource base conflicts which attributes to the loss of pastoralist competence to adapt to any risks and uncertainties.

- **Training as a continuous process and multi-functional:** As a process the SAVE THE CHILDREN SOMALIA / SOMALILAND staff involved in the SEED project need to recognise the paradigm shift needs that have occurred under the agro-pastoralism livelihoods. A shift from vocational skills training to rural livelihood bases without losing focus on the child-related issues, from targeting the youth and women to targeting the differentiated rural community, from sectoral to holistic on resource use, partnership and networking and from quantitative M&E to participatory and process oriented. This implies that the deep rooted knowledge and experiences need to be accommodated. No doubt the SEED capacity building has attempted to accommodate DRR and climate change and adaption issues in its training, but it is not well documented for further analysis.

- **Monitoring and Evaluation:** The monitoring and evaluation indicators need to be designed with participatory approaches involving the households. For example the agro-pastoralists have a wide range of indicators to the variety and quality of fodder. Some of the indicators include biomass production, nutritious value and storage sensitivity. With the beekeeping similar criteria in relation to location, material for construction, design, and quality of honey (forage source).

- **Demonstration approach:** The agro-pastoralists have a wide range of risks and uncertainties which cannot be easily solved by limited government budgets and NGOs. Hence under integrated approach the different interventions including the fodder, crop and beekeeping can be used at village level and household level. This will also give a good opportunity to gauge and document the different interfaces in time and space. Moreover, the existing intermediate top bar beehive can be improved to modern beehive with frame and wax for quick harvest of honey.

- **Documentation of indigenous practices:** pastoralist and agro-pastoralists have deep rooted practices attributing to the resilience of community livelihood. Moreover, there are many innovators who made some experimentations and innovations by both women and men. These practices need to be documented as an integral part of the SEED program. This process of documentation helps to identify range of options and determine the added value incurred from the project. The existing SEED monitoring and evaluation seems highly biased to quantification and less attention to community criteria. Moreover, the qualitative analysis is also very fundamental in understanding the process under complex system.

- **Supporting Facilitation of participatory technology development (PTD):** The different interventions in crop, fodder and beekeeping should not be considered as a final product to be transfer but need to be adapted to the local and individual situations. There are a wide range of options under crop production as mixed, agro-forestry, horticulture and use of fruit trees. Similarly under the fodder production and beekeeping households have a wider range of managing and reserving using local and external information. Hence the SEED project needs to have a strategic plan to facilitate joint experimentation and documentation. The process will be an input to the training component and the process of experimentation helps the community to develop competence to solve their own problems.

- **Facilitation of mobility:** Mobility with its packages of reciprocity in resources uses has been the fundamental bases of the livelihood among the pastoralists and agro-pastoralists. Yet the mapping of the spatial and temporal distribution of pasture and water sources is fundamental. Hence the synchronisation of the different sources of water and pasture helps to develop an efficient use of

resources and support resilient livelihood. It is also worth revisiting how the SEED interventions are facilitating mobility or triggering sedentarisation on the long run to make agro-pastoralists more vulnerable under the semiarid situations.

- **Natural resource management as cross cutting activity:** The bases of the livelihood of the agro-pastoralists revolve around the management of the communal and enclosure areas, with development of nurseries, focusing on multi-purpose indigenous plants and fruits, soil and water conservation, energy saving stoves and *prosopis* management as an approach to reduce disaster and climate change risks. It is worth mentioning that the convectional approach of community based natural resource management need to be clearly understood its implications to highly differentiated community under agro-pastoralism.

- **Water development:** Synchronisation of the different sources of water, protection against the pollution of water mainly for human consumption, introduction of the communal water sources managed by women, scaling up of roof harvesting where the schools with roof harvest built by SAVE THE CHILDREN SOMALIA / SOMALILAND can serve as demonstration sites.

- **Support self-help groups:** There are already some initiatives of informal self-help groups by women. Moreover, groups can be established on the commodity bases such as crop, vegetables and fruits, fodder and beekeeping. This also helps to give intensive training from production to marketing without undermining its linkage to the other activities. Moreover, these groups can be developing in to cooperatives to establish strong economy and fundamental role in decision making.

- **Early warning systems:** The agro-pastoral community have developed some early warning systems and documentation of these indicators and systems and integrating with modern systems is helpful to the efficiency and effectiveness of any development interventions. In the existing modern early warning system is at national level for emergency intervention. In the absence of metrological stations and grassroots extension workers to advice with modern early warning systems, the documentation of this knowledge is essential as a component of improving the livelihood of the agro-pastoralists. The SEED project can use such fundamental information to assure the success of its development intervention.

- **Participatory resource mapping:** Different villages have different resource bases as a foundation of their livelihood. Mapping of the resources by the community helps to observe the potential and limitations for any external interventions. For example Beerato village where 70% the total land is under private, the impact of the SEED intervention (crop, fodder and beekeeping) will be different than the village of Ceel-bilile where only 20% of the total area is under private ownership. Both need different strategic approach. The map also needs to be updated with the rapid landscape changes.

- **Partnership and networking:** The agro-pastoralist problems and risks are divers and complex which demands the collaboration of different organizations. The SEED project is a good entry point as a consortium, however the different activities/projects done by the respective consortium members are not well integrated. Moreover, scanning of the different activities by different organizations at regional and district level has multiple benefits; it avoids competitions and duplication of efforts and

stimulates exchange of information, solidarity for a common goal and efficient use of the scarce resource.

4.2.1 Specific Recommendations to SAVE THE CHILDREN SOMALIA / SOMALILAND on short and medium term

Short term principles that need to be considered:

- Close partnership and networking with different organizations working in the same place
- Working with government organizations like environment, agriculture, health and education will bring some added values.
- Support the Ministry of Environment on initiatives to discourage permanent settlements in the communal range lands.
- Organize the community into different groups to create a team spirit and assure the sustainability of the intervention.
- Use focus, integrated and demonstration approach for the scale-up of the principles the intervention.
- Use the agents of changes as entry point in the community such as elders, women, teachers and students.
- Revitalize the customary institutions such as elderly groups including women who have deep knowledge and experience.
- Introduction on the moringa tree (*Moringa stenopetala)*; it is used as food, and fodder, and has medicinal values and is a source of water purification. It is used to overcome malnutrition, as the leaves are excellent sources of calcium, vitamin A and C, potassium and protein. It is a drought resistant tree which fits very well in arid and semiarid areas.
- Different groups organized need very short trainings with follow up and supervision. The use of incentives needs to be limited; rather the focus should be on principles of demonstration.

4.2.2 Medium term

- **Training is a continuous process:** to be designed in short and medium term ranges. In the medium term it can serve as a feedback mechanism and supervision and as a bridge to phase out.

- **Nursery establishments:** As a replication of the school nursery, a medium size nursery can be established round water points and to be run by the volunteer community members. Usually focusing on the multi-purpose indigenous trees is recommended to avoid undesired outcomes like Prosopis which was assumed to be introduced by NGOs. Similarly fruit trees and Moringa trees can be introduced. From the beginning the community needs to have commitment to and contribution to the preparation of the land and planting of the trees in private and communal lands to minimize the dependency syndrome.

- **Watershed approach:** At micro level this can be exercised

as a demonstration around the location of the water points including ponds and *berkhads.* The command area will be closed from human and livestock to avoid any pollution and soil siltation

problems. The elders, environmental and water and sanction groups can be targeted in the implementation of the pilot area which can be diffused to the communal lands.

- **Prosopis for fuel groups** will be established to process charcoal and the members are made known to the community: The elders, the environmental group and the environmental protection district representative will monitor the process and any illegal cutting of indigenous trees will be brought to justice.

- **Energy saving stoves:** The community in general and the restaurants in particular uses traditional ways of stoves. There are very few improve stoves used by individual households. Fortunately in Odwenye area there are a lot of artisans engaged on different stove design. By organizing these groups energy saving stoves can be easily designed and linked to the market. The same group can be also play fundamental role in the diffusion of roof water harvesting at household level.

- **Introduction of awarding system:** With the different short and medium term interventions an awarding system can be introduced to those who have best achievements and this also stimulates competition for better achievements. Such awards could be designed by the community.

- **Integration:** Generally in both short and medium term planning the line offices mainly environmental protection, health, education and agriculture need to be actively participated. Already some of the sector offices have representatives at district level and need to be participated in the planning and planning and implementation process as many of the activities are in line to the government strategy

References

Ahemed, I.A. (2007): Climate change stole our mist: A case study on the impact of climate change on Gacan Libaax mist forest and livelihoods, July, 2007, Hargeisa, Somaliland.

Cabot Venton, C.C. (2010) the benefits of a child-centred approach to climate change adaptation, UNICEF and Plan International.

CONCERN (2005): Approaches to disaster risk reduction, emergency unit.

Devereux S. 2006. Vulnerable livelihoods in Somali Region, Ethiopia. IDS Research Report 57. Brighton: Institute of Development Studies.

DFID (2011): Defining disaster resilience: DFID approach paper, Department for International Development, March 2011.

Ellis F. Rural Livelihoods and Diversity in Developing Countries. Oxford. 2000.

FSNAU (2011): Livelihood baseline analysis Togdheer agro-pastoral, Technical series report number VI.37, June 2011 .

G/Michael, Yohannes (2010): Evaluation of Ethiopia-Somaliland Cross Border Drought Preparedness Project, Oxfam GB, Ethiopia Programme and Oxfam GB Somaliland Programme, September, 2010 Addis Ababa, Ethiopia.

G/Michael, Yohannes and Mebratu Kifle (2009): Local innovation in climate-change adaptation by Ethiopian pastoralists, PROLINNOVA–Ethiopia and Pastoralist Forum Ethiopia (PFE), January, Addis Ababa, Ethiopia.

Hesse C & MacGregor J. 2006. *Pastoralism: drylands' invisible asset?* IIED Issue Paper 142. London: IIED.

IPCC. 2001. *IPCC third assessment report – climate change 2001: impacts, adaptation and vulnerability.* Published for the Intergovernmental Panel on Climate Change by UNEP/GRID Arendal, 1032pp. Retrieved from http://www.ipcc.ch/

IPCC. 2007b. *Climate change 2007 – impacts, adaptation and vulnerability: the Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report.* Cambridge. Cambridge University Press.

IRR and Save the Children USA (2007): Leaving disaster behind: A guide to disaster risk reduction in Ethiopia, International Institute of Rural Reconstruction, Nairobi and Save the Children USA, Addis Ababa.

Kerven, C. and Lchang'I, M (2012): Annual review of SEED programme, final report, 4 February, 2012.

Leach, M., Mearns, R. and Scoones, I. (1999): Environmental entitlements: Dynamics and institutions in community based natural resource management. World Development, Vol.27, No.2, PP.225-247, 1999, Elsevier Sciences Ltd.

Levine, S., Ludi, E. and Jones, L. (2011): Rethinking Support for Adaptive Capacity to Climate Change, The role of development interventions: Findings from Mozambique, Uganda and Ethiopia, Africa climate change resilience alliance, published by ODI, London.

Ministry of National Planning and Development MNPD (2011): Somaliland National vision 2030.

Mitchell, M. and Harris, K (2012) January 2012 Resilience: A risk management approach, ODI.

Morton J. (2008) *DFID's Current and Potential Engagement with Pastoralism: a Scoping Study*.

Muthee, Alfred (2011): The Somaliland value chain analysis: A proposal for livestock value chain development in Somaliland, Oxfam, Somaliland, January 2012.

Ombui, J.N and Kironch, G.N (2011): Training needs assessment for agriculture, livestock and fishers for DFI funded sustainable employment and Economic development (SEED) programme

Oxfam GB (2009): Ethiopia- Somaliland cross border drought preparedness project (July 2009- June 2010), Addis Ababa, Ethiopia

Pavanello, S. (2009): Exploring political marginalization, donors' polices and cross border issues: Literature review, Humanitarian Policy Group, Overseas development Institute, London.

PENHA (2012): ILO sustainable Employment and economic development project.

SAVE THE CHILDREN SOMALIA / SOMALILAND (2012A): Community-based Disaster Risk Reduction and Climate Change Adaptation in Oodweyne, Somaliland, Project Proposal

--- (2012B): The impact of SEED trainings in select communities of Somaliland: A tracer study, July, 2012, Somali/Somaliland

--- (2012C): Stakeholder Analysis - Community based DRR & CCA project Somaliland

--- (2012D): SEED project concept note on phase one extension

Scoones I & Adwera A. 2009. *Pastoral innovation systems: perspectives from Ethiopia and Kenya,* FAC Occasional Paper ST101. Brighton: Institute of Development Studies.

Scoones I. (1998): Sustainable Rural Livelihoods a Framework for Analysis IDS working paper No. 72. 1998

--- 1995. Living with uncertainty: new directions in pastoral development in Africa. London: Intermediate Technology Publications

Somali Agriculture Technical Group (SATG) the invasion of Prosopis juliflora in Somaliland and piloting of positive utilization. http://www.satg.org/wp-content/uploads/2010/12/Prosopis_Updated_Final.pdf (access July20, 2012)

Spore (2008): Special issue on climate change (August2008). http://spore.cta.int

Talascan consultant (2009): The impacts of enclosures on access to rangelands, Findings of a cross-border (Somaliland and Somali region) study commissioned by Oxfam Great Britain, April 5, 2009.

UNICEF (?): The benefits of a child –centred approach to climate change adaption

UNOCHA Pastoralists Communications Initiative (2006) *Is Pastoralism Still Viable in the Horn of Africa? New Perspectives from Ethiopia*.

Annex 1 Terms of reference for research on resilience of household's livelihoods in Somaliland

1. Introduction

Save the Children Somalia / Somaliland (SAVE THE CHILDREN SOMALIA / SOMALILAND) is a non-governmental organization (NGO) whose mission is to fight for children's rights and deliver immediate and lasting improvement to children's lives worldwide. SAVE THE CHILDREN SOMALIA / SOMALILAND has been operational in the Greater Somalia for over 40 years. Currently SAVE THE CHILDREN SOMALIA / SOMALILAND operates programmes that span relief to development with a wide range of programming in Health, Nutrition, Child Protection, Child Rights Governance, Vocational and Skills Training, Education and Food Security & Livelihoods working in Somaliland, Puntland and Central and South Somalia. SAVE THE CHILDREN SOMALIA / SOMALILAND works to ensure quality programming on the ground which forms the basis to advocate for greater changes in policy and practice at regional, national and global levels.

2. Background of project

Sustainable Employment and Economic Development (SEED) is a consortium based programme comprised of SAVE THE CHILDREN SOMALIA / SOMALILAND, FAO, ILO, UNDP, and implemented in Somaliland, Puntland and Somalia with funding from DfID.

The purpose of the program is to improve economic and employment prospects, targeting women and young people in conflict affected communities. The goal of the program is improved stability in Somalia through economic growth and sustainable employment. SEED has two components:

- Component One – develop markets and create employment, with accompanying skills training, focusing on agriculture (South Central Somalia), fisheries (Puntland) and livestock (Somaliland); and
- Component Two – support the investment climate and regulatory framework in Somaliland to increase investment and growth

The SEED program is estimated to run for four years with Phase I running from December 2010 to March 2012. DfID has proposed bridge funding for three months (April-June 2012) while the strategy for Phase II is refined.

In Phase I of SEED, SAVE THE CHILDREN SOMALIA / SOMALILAND trained 1,660 people in improved practices of meat hygiene, and on the fodder, honey and agricultural production value chains in Borama, Hargeisa, Togdheer and Erigavo in Somaliland. As a result of these trainings, households were able to increase their knowledge/skills contributing to increased production and incomes.

During the three month period of bridge-funding, SAVE THE CHILDREN SOMALIA / SOMALILAND proposes to consolidate and expand achievements already gained based on key lessons learned and experiences from the first phase. The main activities: training, provision of assets and research. This ToR focuses on the research aspect of the implementation.

3. Purpose & Specific Objectives

The purpose of this consultancy is to examine the resiliency of selected livelihood activities to shocks in at least one of SAVE THE CHILDREN SOMALIA / SOMALILAND's areas of intervention in Togdheer and / or Erigavo.

The specific objectives of the consultancy are:

- To examine the extent to which major livelihoods activities are resilient to common future shocks and adaptive capacity
- To examine the potential effects of shocks on sustainable income earning over mid and long To explore the adaptive capacity of the communities in the study
- To develop indicators on resilient livelihood activities and adaptive capacity to inform appropriate decision making and programming
- To make comprehensive recommendations on livelihoods activities that shows potential to be most resilient. The findings will used for internal SAVE THE CHILDREN SOMALIA / SOMALILAND, SC at regional / global level and the greater humanitarian community as appropriate.

4. Scope of work

The research will include:

- **Desk review:** on past and current documents on associated programs
- **Prepare study tools and questionnaires:** these should be appropriate for different target audiences and be shared with Save the Children Somalia / Somaliland program team for review and comments
- **Field work**: Discussions with key SAVE THE CHILDREN SOMALIA / SOMALILAND, GoSL, Other INGOs (CARE, Horn Relief, Oxfam) and other key informants, discussions with beneficiaries including children on their adaptive capacity
- **Report writing:** from findings

5. Expected Outputs

- A brief inception report and appropriate instruments submitted within 5 days of the start of the consultancy.
- A draft report will be submitted for comment by SAVE THE CHILDREN SOMALIA / SOMALILAND.
- A validation workshop will be held in which the consultant is expected to present key findings for critique and validation by key stakeholders
- A final report will be submitted by 30 days of the launch of the work.

6. Methodology

A combination of methods will be used as outlined below:

- Review of secondary data from project reports and other similar projects' documents
- Review of future predictions on shocks linked to seasonal calendar
- Focus group discussions: disaggregated by gender, adults, children and youth.
- Key informant interviews with community leaders, relevant GoSL representatives, NGO/ IO staff
- Case studies focusing on individual households and communities

- Observations

Annex 2 Itinerary and people met

Date	Location	Activities	Origination
July 4	Addis-Berbera	Traveling	
July 5	Hargeisa	-Travel from Berbera to Hargeisa -Brainstorm with SEED staff	SAVE THE CHILDREN SOMALIA / SOMALILAND Abdulkadir Osman Ubah Awaleh KinziFareh
July 6	Hargeisa	-Reading -Cross border issues and NRM	HFH staff Abdirashid Ahmed
July 7	Hargeisa	-Brainstorming on SAVE THE CHILDREN SOMALIA / SOMALILAND activities	Abdulkadir Osman
July 8	Hargeisa	-Livelihood involvement and networking with SEED Discussions with SEED staff	-MOA (Ibrahim Arab, advice consultant) -ADO (Hussien Ismail, executive director and SulimanTukale (expert) -Oxfam GB (ConisiaShuba, livelihood program) - HAVOYOCO (Smail Mohamed, exc.director and JimalYousf , skill program coordinator) -??????PENHA SAVE THE CHILDREN SOMALIA / SOMALILAND (Ubah and Kinzi)
July 9	Burao	Traveling Hargeisa to Burao	
July 10	Owdweyne/Elbel	Discussions with agro pastoralist in Elbel village -Discussions with merchants in Buro -Visiting water points and owners of deep well in Buro	-Elders group -School principal -Different wealth rank 5people - 3 youth group -Visiting Birkas, farm lands -Poor farmer field visit and flooded farm lands -Discussions with traders Burao -Owner of deep well Burao
July 11	Odweyne /Berato	- Regional profile and needs and priorities - Discussions with the differentiated community members -Field observations	-regional governor and council member of Daad-Maghed Mohamed Hussein and Yusuf Ibrahim -Village committee (3), women group (7), elders (2), wealth rank (6), youth group (10) and school children (3), handicaps - Water sources, cultivated areas
July 12	Odweyne /Deer	- Target groups of the SEED program - Community differentiation, livelihood bases, impacts and adaptations -Community needs and priorities -Field observations beehives, fodder bank and SWC works	-Beekeeping groups --Deer village with 3 beehive users -Discussions with 3 elders and village committee - with 3 women groups - with 5combined members -With 2 youth -Visit the beehives, fodder bank and SWC works

			-ILO consultant Seid (Village saving and loan) Mohammed -World Bank, Matthias Mayer , social accountability and demand for good governance)
July 13 Friday	Burao	-Visiting urban market centres (livestock, fodder, vegetable and vegetable)	
July 14 Saturday	Odweyne /Gelole/Haahi	- Target groups of the SEED training - Community differentiation, livelihood bases, impacts and adaptations -Community needs and priorities -Field observations beehives, fodder bank	-Elders and leaders/5 -Women group/5 -Case of poor woman -Youth group (6) -Field visit non-functional birkas, beekeeping, farming and enclosures , traditional Ceelxume
July 15 Sunday	Owdweyne/Beer	-participatory mapping -Events of drought and early warnings -Livelihoods -ILO as the SEED consortium	-Women group (6) -Elderly groups (3) -Training target -Field visit -Abdirsqwgsgme (Development Alternative Incorporation) DAI
July 16 Monday	Burao	Visiting the meat venders at Burao town	3 women involved in meat venders
July 17 Tuesday	Burao-Hargeisa		SAVE THE CHILDREN SOMALIA / SOMALILAND (MowlidMudan (Communication officer)
July 18 Wednesday	Hargeisa	Debriefing Call Holly Send first draft Holly Market Overnight Hargeisa	ADO and HAVOYOCO staff PENHA (John Livingston (Regional policy and research officer, AmsaleShibeshi (regional programme coordinator)
July 19	Berbera-Addis	Early morning departure Berbera	