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Ministry Of Environment
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The Management and Utilization of *Prosopis Juliflora* Policy Workshop

Ambassador Hotel, Hargeisa September, 2014.

Report prepared by: John Livingstone, Kaise Abdi and Amsale Shibeshi, Somaliland, 2014.



1. Background and Overview

The expansion of *Prosopis Juliflora* has been a serious problem across Sub-Saharan Africa and the IGAD countries. The species crosses borders and affects entire ecosystems, the environment and the natural resources upon which poor and hard-pressed pastoral and agro-pastoral communities depend for their livelihoods. *Prosopis* was introduced to the Horn of African countries for various reasons, but in most cases without preliminary long-term impact studies. In Sudan it was introduced as a shelter belt to stop the expansion of desert sand dunes. However, *Prosopis* seeds were then distributed even more widely through animal dung. It has begun to replace palatable and nutritious indigenous vegetation on a large scale.

PENHA-Somaliland is carrying out work under this regional program, funded by IFAD, aiming to address the problem of *Prosopis Juliflora*, a fast growing, deep-rooted and thirsty invasive plant that forms impenetrable bushes and has spread across rangelands in several countries. It reduces the land available for farming and grazing, undermining local livelihoods. Communities favor eradication, but this is difficult and costly. PENHA is working with IFAD and others to promote the use of *Prosopis* pods, which have a high protein content, in fodder production. The demand for fodder, from pastoralists and the livestock trade, is increasing as livelihoods change and diversify.





Republic of Somaliland
Ministry Of Environment
& Rural Development



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PENHA-Somaliland, in collaboration with IFAD-Somaliland, has conducted community-level training workshops with farmer cooperatives. Local people have shown that they are eager to tackle this issue. They have formed strong, cohesive cooperatives that could develop profitable enterprises, making use of *Prosopis* wood, for charcoal, carpentry and construction, as well as *Prosopis* pods for animal feed.

FAO is implementing a *Prosopis* control and use project in Somaliland, providing hammer mills to farmer cooperatives and supporting them to undertake commercial animal feed production. FAO has valuable relevant expertise. Significantly, the regional head of FAO's livestock program, Mr. Cyprien Biaou, has a strong understanding of pastoralism and the particular issues facing livestock production in semi-arid environments. He sees scope to strengthen and build on pastoral systems, boosting incomes and employment, promoting resilience as well as better environmental management.

The Ministry of Environment & Rural Development has made firm commitments to tackle the issue, and has made efforts to raise public awareness and understanding of the challenges posed by *Prosopis*. The Minister, Ms. Shukri Haji Bandere, initially as a pioneering civil society leader, was among the first to draw attention to the problems posed by *Prosopis*. She has long stressed the importance of sound environmental management, in a country where the majority of people depend directly on the environment for their livelihoods.

PENHA-Somaliland organized a workshop bringing these different policy and practice actors together, in order to refine and develop separate as well as joint efforts. The workshop also aimed to develop recommendations, building on PENHA-Somaliland's project experience, which will be presented and discussed at a forthcoming regional workshop in Addis.

The specific aims of the Hargeisa workshop were to:

- Share experience on policy and practice
- Share experience on *Prosopis* management in the Sudan, and the use of *Prosopis* to make animal feed.
- Produce recommendations for policy and practice in Somaliland
- Generate input for a forthcoming regional conference in Addis

A separate workshop was held for extension officers and practitioners, this one focused specifically on techniques for the production of animal feed using *Prosopis* pods. Dr. Nuha Hamed Talib demonstrated the methods promoted under PENHA-Sudan's project, with hand choppers and ingredients available to local smallholders.

Participants

There were a total of 51 participants. Participating organizations included:

- civil society organizations
- international development agencies with relevant programs - IFAD, FAO and ILO
- The Ministry of Environment & Rural Development
- The Ministry of Livestock, as well as the interior and labour ministries.
- The Tawfiq Farmers' Cooperative (executive members)



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Keynote Speech: Ms. Shukri Haji Bandere, Minister of Environment & Rural Development

Opening Remarks: Ms Amsale Shibeshi, Regional Programmes Coordinator, PENHA.

Policy Statement: Ms. Sadia Ahmed, Country Representative, PENHA-Somaliland.

Principal Resource Person: Dr. Nuha Hamed Talib, of PENHA-Sudan & the Animal Production Research Centre (APRC), part of the Animal Resources Research Corporation (ARRC) of the Sudanese Ministry of Animal Resources and Research Corporation.

Presenters & Facilitators:

- Dr. Nuha Hamed Talib, PENHA Sudan Office
- Abdirizak Bashir Libah, Independent Consultant
- Axmed Aydiid, FAO (Somaliland office)
- Hassan Hirsi Farah, PENHA-Somaliland
- Ahmed Diriye Elmi, Ministry of Environment and Rural Development.

Nina Mocior, coordinator of the Foundation for Somalia project, funded by Polish Aid, participated as an observer. (She also participated in follow-up meetings with cooperatives and women's groups in three villages.)



The workshop involved presentations by experts and practitioners, followed by moderated plenary and group discussions. A final session was dedicated to discussing and drafting recommendations.

The Tawfiiq Cooperative brings together farmers from three large villages, Dheenta, Diinqal, and Aw Barkhadle, in an area seriously affected by Prosopis invasion. PENHA has provided training and equipment for the cooperative. Strengthening cooperatives so that they can develop



Republic of Somaliland
Ministry Of Environment
& Rural Development



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profitable, and therefore, self-sustaining enterprises that make use of *Prosopis* is central to the approach shared by PENHA, IFAD and FAO. At the workshop, Tawfiq displayed a number of the products that they hope to commercialize, including police batons, traditional Somali spoons and other utensils.

A short film on *Prosopis* in Somaliland, produced by the Ministry of Environment a& Rural Development, was shown. The film, in Somali with subtitles, is part of the Ministry's efforts to raise awareness and understanding of *Prosopis*.

The local Horn Cable Television company (HCTV) covered the event and showed highlights in several news broadcasts. Local press, Foore News, also covered the even in some depth.

1.1 Summary of Discussions and Emerging Views (John Livingstone, PENHA)

Policy in Sudan aims at eradication, and sees *Prosopis* utilization as part of this - a temporary measure alongside a determined eradication effort that involves Draconian legislation (backed up by harsh penalties) and expensive chemical and mechanical methods deployed on a large scale. Some participants liked the idea of introducing and enforcing legal requirements. However, this approach is highly unlikely to be workable in Somaliland, where state capacity is severely limited and there is a very different attitude to government and its authority. (Even in Sudan, where the state is strong, it is doubtful that fining farmers who fail to uproot the plant will be prove to be a practicable policy.)

Still, participants were very interested in Dr. Nuha's discussion of the effectiveness of chemical methods, and it was suggested that a trial be attempted in Somaliland, in order to establish effectiveness, costs and feasibility. There was a consensus among participants that some degree of control will be necessary. It was pointed out that, where agricultural production is highly profitable, with good water supply and the planting of high-value crops, it makes economic sense for farmers to uproot *Prosopis* (and hire labourers to do so) and to use other control methods.

Participants enjoyed Dr. Nuha's demonstration on the use of hand choppers in preparing animal feeds, and her explanation of the composition of different feeds in the Sudan, using the inputs available there. But, it was noted that almost all of the inputs are hard to find in Somaliland. Elsewhere in the region, industrial by-products, such as molasses from sugar factories, are readily available, and an animal feed industry exists, even if it is poorly developed. Participants overwhelmingly preferred hammer mills – much more effective in crushing pods – to hand choppers. Few were convinced by arguments that (laborious) hand choppers are more suitable for smallholders in rural areas where there is no electricity supply. Many thought that the design of the hand choppers, with no guard to protect hands and fingers, presents a safety hazard. The use of diesel-fuelled generators to power hammer mills adds very significantly to costs, but could be economic, and workable, if a good product finds willing buyers.

Abdirazak Libah's presentation, and his engaging discussion of the practical issues, stimulated a lot of discussion. Perhaps the most interesting point he made was that women in pastoral areas are already commercializing the use of *Prosopis* pods – uncrushed – for animal feed. His



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Ministry Of Environment
& Rural Development



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field work, with photos of women transporting sacks of Prosopis pods on donkeys during the dry season, showed that women are actually making significant incomes from this trade. The problem being, as Dr. Nuha and others vigorously pointed out, that this commercialization of uncrushed pods radically extends the spread of Prosopis. Livestock, naturally, turn to Prosopis pods when “natural” forage is not available. But, the fact that pastoralists turn to the purchase of Prosopis pods in the dry season points to the potential of processed Prosopis feeds in managing dry season stresses and (recurrent) drought. The production of price-competitive feeds to scale, alongside water trucking, could make a significant contribution to drought management and resilience, diminishing the regular drop-off in livestock productivity and livestock losses. Also, women’s current involvement in trading pods suggests that women’s groups might be an appropriate focus for support. This point was taken up and addressed in some detail by IFAD staff, who gave some background on IFAD’s support for small-scale enterprise through organized women’s groups. In his presentation, Hassan Hirsi Farah of PENHA tried to place Prosopis in the overall context of animal feed requirements in Somaliland, arguing that Prosopis already plays a significant role, with the widespread use of raw pods, and will, in time, come to play a more important role.

The FAO project, and Axmed Aydiid’s engaging discussion of the issues, received a very positive response. Participants were, however, eager to see the project scaled up beyond the handful of participating cooperatives. The same criticism was made of PENHA’s project, with its very limited scale. These pilot projects aim to promote wider uptake of the methods employed, once success has been achieved and demonstrated.

Participants overwhelmingly backed the idea that farmer cooperatives, as well as organized women’s groups, could and should be supported to develop new enterprises that make use of Prosopis, in making animal feed, charcoal and other products. The discussion encompassed the overall economic context, and the challenges in enterprise promotion and efforts to enhance agricultural productivity – knowledge and information networks for farmers, technical and financial obstacles, and restrictions on regional trade and investment. Participants were able to sketch the outlines of an agenda for the way forward. They produced a set of recommendations, which are presented below. These combine control measures with utilization, and emphasize the need to raise awareness and understanding about Prosopis, combating certain myths and erroneous beliefs that actually promote the spreading of the plant.

2. Opening Remarks, Policy Statement and Keynote Speech

2.1 Amsale Shibeshi (Regional Programmes Coordinator, PENHA)

Thank you for coming. We are very happy to have you all here and delighted to have the participation of the Minister of Environment and Rural Development. We are glad to have a strong minister who understands these issues very well. This workshop is part of a 2 year regional project, funded by IFAD.

The project covers Somaliland and Sudan, and collaborates with PENHA Associates in Ethiopia. The project aims to share knowledge and experience across the three countries, and to promote alternative uses of *Prosopis*. The project also aims to help farmer cooperatives to



Republic of Somaliland
Ministry Of Environment
& Rural Development



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make profitable use of *Prosopis* pods as animal feed. PENHA-Sudan worked with the Animal Production Research Center (APRC Khartoum) to develop a feed mix using *Prosopis* pods. Cheap, locally made choppers (that do not require electricity) were provided for farmer groups in agro-pastoral areas, so that they could make nutritious feed for their animals, at the same time as controlling the spread of *Prosopis*, by crushing its pods.

We are happy to have Dr.Nuha, from APRC, and she will share with you her knowledge of *Prosopis* management and use in Sudan, as well as the specific techniques used under our project. In Somaliland we are working with farmer groups in three areas, Awbarkhadle, Dheenta, and Dinqal. We have helped them to form an umbrella cooperative –Tawfiiq - and we are very happy to have the executive members here. They have impressed us with their seriousness - they participated energetically in all our training workshops and they have taken the lead in developing their own initiatives. Some of Tawfiiq's products, made with *Prosopis* wood, are displayed here. In showcasing these products, we aim to attract support for the cooperative from the Ministry and other agencies. They need support, and business development services, so that they can improve the quality of their products and find markets for them.

In Ethiopia, Senior PENHA Associates helped to develop a model for Farm Africa based on farmer groups to set up profitable commercial operations. One PENHA senior associate heads a company - Ethio-Feed Plc - that produces a range of quality animal feed mixes, some of which use *Prosopis*. Ethio-Feed also provides training for farmers on how to use the new animal feeds, and works with farmer groups to identify problems. In November, PENHA will be holding a regional conference in Addis, to share experience and identify the next steps. We hope that this workshop will generate concrete recommendations for our regional workshop. This is a "Policy and Practice" workshop. We will focus on the policy issues - what are the kinds of things we should be doing and what are the challenges. In a separate workshop, with extension agents, we will focus on practice - the specific techniques for making *Prosopis* to make animal feed.

2.2 Sadia Muse Ahmed (Country Representative, PENHA)

Good morning everybody and I am happy to welcome you all today to this *Prosopis* policy workshop and your participation is highly appreciated. We are here to share information and knowledge about a species that is spreading faster than all other trees in this country, and whose associated problems are currently more obvious than its benefits. I will leave the details for our presenters but allow me to say a few words about PENHA and its work. PENHA was founded by a group of Horn of Africans in 1989 in response to a bid across the region by Horn of African governments to forcibly settle pastoral communities in their respective countries, without looking at pastoralism as an economy and neglecting its contribution for the livelihoods of our respective populations or whether certain parts of these countries can accommodate other economic activities, such as farming.

Many parts of the Horn are made up of arid or semi-arid land and only suitable for animal rearing. PENHA has long been engaged on issues of environmental management and livestock production and has developed certain principles. A fundamental principle for PENHA is



Republic of Somaliland
Ministry Of Environment
& Rural Development



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participation and we strongly believe that bottom-up approaches are more effective than top-down approaches. The most effective approaches to pastoral and agro-pastoral development involve constant interaction and feedback loops between all actors - asking people what works and what doesn't, and trying to address the problems that they identify, while using the opportunities available to us to help people to drive their own development.

Since we started our work in Somaliland in 2000, we have partnered with the Ministry of Environment as a line ministry, but we also work with other relevant ministries, including those of agriculture, livestock, fisheries and water. Currently we are lucky to have a minister who has solid knowledge and experience in this area and I am personally proud to work with a woman Minister, who is also a friend. Thank you Shukri for being with us here today. As for PENHA, the organization has been engaged on issues of environmental management and livestock production for a considerable time. PENHA is working with IFAD on this regional *Prosopis* project, in collaboration with our PENHA-Sudan and PENHA-Ethiopia chapters. PENHA is also working with FAO on its Land Tenure Initiative in Somaliland, providing training for civil society actors and contributing to policy development. We are also working with Polish Aid and FDS, a Warsaw-based NGO, with land reclamation, soil and water conservation and value chain programs. We are also collaborating with the USA-based AFF (Arsenault Family Foundation) and the Shuraako enterprise promotion project, on economic development with pastoral and agro-pastoral communities among other projects.

Pastoral production in Somaliland is effective - it serves local and export markets well. Pastoral production is also efficient - it makes very efficient use of the available resources. There is not that much scope to improve pastoral production. Pastoralism has also proved its resilience - its ability to withstand and recover from drought. But the future development of livestock production – export abattoirs, milk processing, moving beyond the niche markets of the gulf - will require improvements in animal feed produced. More nutrient-rich and protein-rich feeds will help to improve animal health. Better feed supplies could also bolster resilience. The challenges is to increase agricultural productivity - to produce more from the same area of land, and to do it in ways that are environmentally sustainable.

Efforts to control *Prosopis*, and, at the same time, to make profitable use of it (in animal feed and for other products) are part of a wider effort to increase agricultural productivity, and to safeguard the environmental upon which so many people depend for their livelihoods. In this effort, we need technical support - from valued development partners such as IFAD and FAO - and we need to strengthen the capacity of our own institutions. In all of this, we must support the people - the resource users, pastoral, agro-pastoral and farmer groups, cooperatives and local associations (both women's organizations and pastoralists' associations).

We hope that groups, associations and cooperatives, with the right kind of support, can develop profitable enterprises that make use of *Prosopis*.



Republic of Somaliland
Ministry Of Environment
& Rural Development



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2.3 Shukri Haji Bandere - Minister of Environment & Rural Development

My first encounter with *Prosopis* was in Bossaso in the late 1990s. I attended a workshop and before any of the presentations had started, we were served jam for breakfast. After we had finished eating, we were asked to guess what the jam was made from. Back then people had little knowledge about *Prosopis* and considered it poisonous and dangerous. After we made a couple of guesses, they told us the jam was made from the *Prosopis* tree. Everyone was in shock, thinking we were all poisoned! Fortunately, everyone was alright and surprised by how delicious the jam was. Thereafter, I started to think more about this tree and one of the first people I talked to about it, was the former Minister, Dr. Mohamed Muse Awale, in early 2000. Since then, I have been involved in efforts to control and make use of *Prosopis*.

I strongly suggest and urge for a national *Prosopis* utilization campaign. The MoERD has talked about *Prosopis* on many occasions in order to create awareness and a better understanding of the tree. As for NGOs and INGOs, we urge them to support this effort by bringing in the necessary machinery to grind *Prosopis* pods into livestock fodder and help farmers and pastoralists. As for the MoERD staff members who are attending today, I want you to study this tree seriously and participate actively, as you are the people's representatives in dealing with this task.





Republic of Somaliland
Ministry Of Environment
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2.4 Statement by Tawfiiq Cooperative

Tawfiiq Cooperative gave a prepared statement, which is presented below.

“As a member of Tawfiiq Cooperative, from Aw Barkhadle, I would like to thank PENHA who has organized this workshop to share and exchange knowledge, I would also like to thank the Minister of Environment and all the participants of this workshop. In short, PENHA approached us and made us aware of how we can utilize the prosopis tree. Before we saw this tree as an enemy to our community which has been planted by NGO's. After attending seminars and workshops for the three villages, we have acknowledged that this tree has benefits. When we were shown the benefits of this tree, we got creative and worked hard and came to realize we can utilize it. Truly, we have a good relationship with PENHA. We designed police sticks (batons) for security, traditional Somali spoons, a seasoning crusher (mortar and pestle), a *saab* (a traditional conical basket made from bent twigs), and made fodder for animals, as well as charcoal which the three villages currently use, and other tools and equipment shown here at the workshop.

One item we haven't brought here today, is a cooking oven we have made, in which you can use short wet Prosopis as charcoal. You only use three pieces for the three daily meals. We will soon display this as well, Allah willing. We completed its design this week. You use wet Prosopis branches as charcoal and it burns like normal firewood. This is a better quality compared to charcoal from other indigenous trees.

The only thing Tawfiiq Cooperative needs is support in terms of finance and training, which we seek from NGO's and relevant ministries. The project is on a good course, we thank the NGO's and ministries who have provided support thus far. I would like to conclude by saying the Prosopis tree has many benefits, therefore its benefits should be displayed to everyone and it should be utilized so we can save our environment. Peace Be Upon You.”

Q & A Session with the Minister

The Minister took part in a question and answer session, in which she took questions from the members of Tawfiiq Cooperative – a useful opportunity to engage directly with citizens.

Q: Minister, I would like to ask about how we can promote and fund the project in regards to the police stick

A: Truly, all thanks is due to Allah, I thank you for these products you have produced, the small and short police sticks which are really beautiful and have been molded perfectly to seem as if they have been manufactured abroad. Today, if we were to say let's get police sticks for the police from abroad, immediately people would say let's contract it to someone, but now we can



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contract it to our own people. Therefore, I urge the Ministry of Interior to replace the AK47 with these police sticks”.

3. Presentations & Discussion

3.1 Ahmed Diriye Elmi (Ministry of Environment and Rural Development)

***Prosopis Juliflora* – Policy & Interventions**

- The mission of the MoERD is to promote and develop the pastoral economy, as well as to conserve, protect and sustainably manage the environment and rangeland resources for national development.
- The government of Somaliland and MoERD identified *Prosopis Juliflora* as the second major invasive plant species in the country and declared it as a noxious weed for eradication through proper utilization.
- *Prosopis Juliflora* is spreading rapidly and widely, particularly in the riverine, coastal, sub-coastal and residential areas of Awdal, Maroodi Jeex, and Saahil regions. It is Invading large areas of suitable agricultural lands.
- Among the benefits of *Prosopis Juliflora* are that it conserves soil and its trunk is used for construction, firewood, charcoal making. Also, its flowers are good for honey production.
- The Ministry of Environment and Rural Development, in collaboration with Candlelight and CESVI, organized a number of trainings in charcoal production from *Prosopis* species in Odweine, Cadaadley and Burao districts, in which charcoal producing cooperatives based in those areas participated.
- At the national level, there is no clear policy or strategy on the control and management of invasive species in general, nor on *Prosopis* in particular.
- Nevertheless, *Prosopis* invasion has been recognized as an emerging threat to plant biodiversity. Strategies and action plans have to be developed and set in place.
- The Ministry of Environment is strongly recommending efforts to increase the proper utilization of *Prosopis*, rather than eradication.



Future Interventions by MoERD

- Develop national policy guidelines and strategy for the control and management of *Prosopis* species, with clearly defined roles and responsibilities at all levels.
- It will be necessary to prepare a detailed implementation guideline and to mobilize the stakeholders for its implementation.
- Promote the commercialization of *Prosopis* products, so that the plant can be widely harvested and used.
- Organized efforts in public education and public awareness-raising.
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- Promote the production and utilization of charcoal from *Prosopis* species and support local communities to do this, through the provision of hand tools.
- Organizing mass campaigns to clear *Prosopis* from pasturelands and cultivable areas.
- Establishment of proper coordination and networking for the national, regional and international institutions engaged in *Prosopis* control and management interventions.
- Train farmers and pastoralists in the utilization of *Prosopis* pods for livestock feeding and establish demonstration feeding plots to show pastorals and communities the benefits of the *Prosopis* pods.
- Conduct further studies on the usefulness and nutritional content of *Prosopis*, and map its expansion.

3.2 Hassan Hirsi Farah (PENHA Environmental Management Officer)

Prosopis Juliflora and Animal Feed Requirements

- In the Somaliland context, basic feed supplies are erratic and inadequate in relation to the size of livestock population.
- Currently available types of animal fodder include grass, hay, silage, and roots.
- Livestock rearing plays a significant role in Somaliland's economy, however, the production of livestock fodder has been neglected.
- The utilization of *Prosopis Juliflora* as a source of animal feed is much wider, as its pods have long been used as feed for animals. *Prosopis Juliflora* foliage is a high-quality fodder and it will, in the near future, become a very important and even essential item in agriculture.
- The high protein content of *Prosopis Juliflora* improves livestock production, and increases the quantity of milk, meat, and butterfat produced.
- *Prosopis Juliflora* as a livestock feed can serve as a basis for income generation by women's groups within impacted areas.





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3.3 Abdirizak Bashir Libah (Independent Consultant)

***Prosopis* Management and Utilization**

- *Prosopis Juliflora* is a perennial desiduous thorny shrub or small tree that can grow up to 12 meters in height. It is an evergreen plant, native to south, and central America and the Caribbean.
- In Somaliland, the plant is known as “Garanwaa”, literally meaning “the unknown”, which can be loosely translated as meaning exotic.
- *Prosopis Juliflora* and *Prosopis Chilensis* were first introduced in Somaliland as early as the 1950s, at Bulahar town, by a British forester, a Mr. Dawson, for use as shelterbelt and a windbreaker for a date palm plantation project.
- It began to replace palatable and nutritious indigenous vegetation on a large scale. It took over farm lands, in agro-pastoral areas, depleted browse and pasture, reduced water supply for both humans and livestock, and for farming activities.
- By aggressively out-competing other plants, *Prosopis* seriously reduces biodiversity.
- The tree can be utilized to produce valuable goods such as firewood, charcoal, animals feed, and construction materials.
- *Prosopis* can also be used, in a controlled way, to promote soil conservation, and the rehabilitation of degraded and saline soils.

3.4 Axmed Aydiid (FAO)

Policy interventions for Enhancing Feed Security in Agro-Pastoral Areas: Lessons from Somalia in the use of *Prosopis Juliflora*.

- There is increased global concern about *Prosopis* invasion, including in Somalia.
- *Prosopis* has invaded natural and managed habitats, reducing grazing and cropping lands.
- Methods to eliminate *Prosopis* such as chemical eradication and bush clearing are costly, time consuming, and beyond the capacity of poor people and governments.
- The processing of pods/seeds is a more suitable alternative being explored by FAO to reduce and control invasion.
- FAO in collaboration with Ministries and partners (including PENHA) initiated activities in 2013 to:
 - Support agro-pastoralists to process *Prosopis* pods as an alternative feed source.
 - Utilize the pod meal as marketable products, creating income and employment opportunities.
- Three *Prosopis* processing cooperatives were formed – these were later trained and supported with processing machinery and other inputs.



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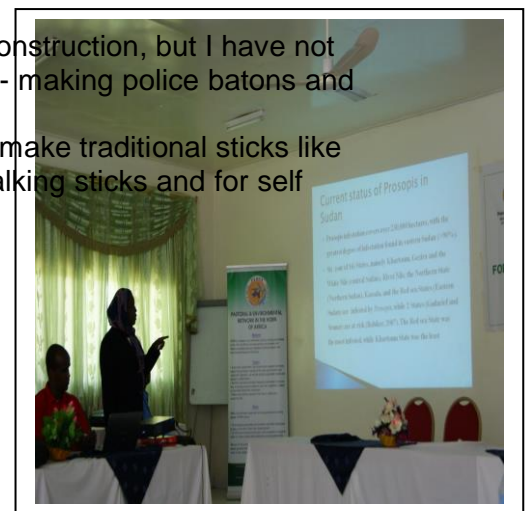
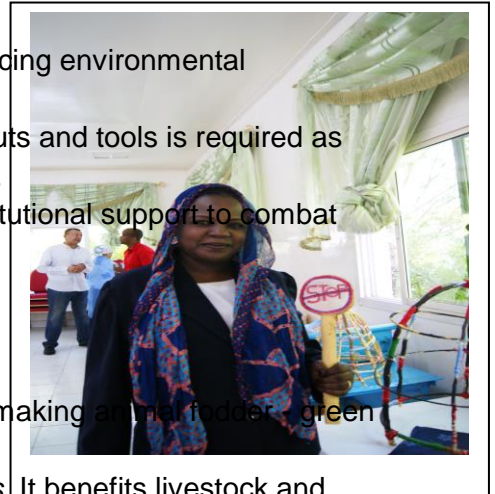
- *Prosopis* processing and crushing reduces the spreading of pods. One *Prosopis* plant may produce 90 kilograms of pods. Crushing 1 metric tonne of pods destroys over 2 million seeds, hence promoting environmental conservation.
- Marketing opportunities for the pod meal exists, but critical assessment of the fodder market value chain is needed for full integration.

Conclusions and Recommendations:

- Exploiting *Prosopis* improves livestock productivity while enhancing environmental conservation.
- Local capacity for producing, processing, and conservation inputs and tools is required as part of broader feed resource development strategy in Somalia.
- Complementary efforts are required, including government institutional support to combat *Prosopis* invasion.

Q & A

- Which type of leaves do you use to add to crushed pods when making animal fodder - green or dried ones?
- We use dried leaves to add to animal fodder made from *Prosopis*. It benefits livestock and helps to increase the weight and milk production of livestock.
- Do you plan on supporting other cooperatives?
- Our plan is to empower the three cooperatives that we have trained and supplied equipment to. We want them to become a leading model that other cooperatives can follow.
- Question from Tawfiiq Cooperative - have you seen other cooperatives utilize *Prosopis* the way we have? (This question is for all the presenters.)
- I've only seen *Prosopis* utilization in the form of charcoal and construction, but I have not seen the way Tawfiiq cooperative has utilized *Prosopis* before - making police batons and other useful tools and equipment.
- Downtown, near Masjid Calimataan, I have seen some people make traditional sticks like "bakoorad" from *Prosopis*. (Sticks used as farming tools, as walking sticks and for self defense.)





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(PENHA-Sudan & Animal Production Research Center, APRC)

Prosopis Management & Use in Sudan

- A *Prosopis* species (*Prosopis Juliflora*), in Sudan also known as “Mesquite”, was introduced in 1917 to Sudan (Khartoum, North-Shabat) simultaneously from both Egypt and South Africa by R. E. Massey. During the 1930’s it was used to stabilize sand dunes in south west of Khartoum, Sennar, Gezira Irrigation Agriculture scheme, Port Sudan, and then the Nile. In the 1960s, it was used for Khartoum’s green belt at Soba, Kassala, Gash, and New Halfa Agricultural irrigation scheme. And in the 1980s, internationally financed afforestation and reforestation projects (under SOS Sahel, a UK based NGO, and the Sudan-Finland Forestry Programme, SFFP) were established in Northern and Central Sudan.
- The reasons why *Prosopis* was introduced to Sudan include combating desertification, utilization of fast growing fuelwood and the fact that it is a fodder species that thrives in harsh arid and semi-arid conditions.
- However, since from the 1990’s onwards, government and popular opinion have considered *Prosopis* to be a noxious weed and a problematic tree species due, to its aggressiveness and ability to invade farmland and pasture, especially in and around irrigated agricultural lands.
- On the 26th of February 1995, a presidential declaration for its eradication was issued, which was followed by campaigning to execute the eradication.
- *Prosopis* infestation covers over 230,000 hectares, with the greatest degree of infestation found in eastern Sudan (more than 90% of the land area).
- Six (out of 16) states, namely Khartoum, Gezira and the White Nile (Central Sudan), River Nile, Northern State (Northern Sudan), Kassala, and the Red Sea States (Gadarief and Sennar) are at risk (Babiker, 2007). The Red Sea State was the most infested, while Khartoum was the least.
- Eradication efforts have included mechanical and manual methods, uprooting the plant, under the Federal Ministry of Agriculture in 1995, containment of *Prosopis* in New Halfa in 1996, a food-for-work program using community labour in Tokar Delta (conducted by Oxfam) and the Zeidab irrigated scheme.
- Chemical methods, herbicides triclopyr+picloram applied as aqueous spray to the foliage or in diesel formulation to the stem base, displayed excellent results.
- Biological methods have not been attempted very often and need a lot of research.
- In the case of Somaliland, I strongly recommend against using uncrushed *Prosopis* pods as animal feed, as this is one of the main reasons why this tree will spread rapidly.



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- Sudan and Somaliland are both facing identical challenges with *Prosopis Juliflora*. However, the Sudanese government's policy aims to eradicate *Prosopis* within 10-15 years. *Prosopis* utilization is seen as part of a progressive eradication of the plant.
- Sudanese regulation and legislation for *Prosopis* eradication in Kassala, Gezira, and Khartoum has a number of specific provisions:
 - It prohibits the planting of *Prosopis*, the possession of *Prosopis* seed unless for scientific reasons for which permission has been obtained by the state committee. It also prohibits the use of (uncrushed) *Prosopis* pods as animal feed and the use of *Prosopis* as a living fence.
 - The legislation permits local communities to issue permits for cutting *Prosopis* for charcoal making. Permits are to be issued without financial dues on condition that the trees are to be uprooted.
 - The legislation also demands that land owners and those having land on lease from the state eradicate *Prosopis* from their land. Otherwise they are liable to prosecution and the land will be confiscated and become state property. Residents are to eradicate *Prosopis* from homestead yards.
 - Governorates, sectors and village committees are to eradicate *Prosopis* from premises under their supervision and/or control.
 - Administrations from agricultural schemes, private or public, are to eradicate *Prosopis* on minor canals, and on un-assigned non-cultivated land and roads within the scheme.
 - The department of irrigation is to eradicate *Prosopis* on major canals, drains, and associated premises.
 - The national forestry cooperation is to eradicate *Prosopis* from reserved forests. Institutions, public or private, are to have special budget for *Prosopis* eradication.
 - Those who do not comply with the legislation are to be prosecuted. Prosecution entails i) A fine of 30 thousand SDG and/or one month imprisonment in Kassala state. In the Gezira state offenders are to be fined up to 100 thousand SDG and/or imprisonment for a period not exceeding three months.

The legislation also prescribes methods for *Prosopis* ("Mesquite") eradication:

- *Prosopis* seedlings are to be uprooted, trees are to be uprooted or cut, stumps of the tree are to be treated with a released herbicide. Biomass is to be burned and other effective methods could be used.



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Q & A

1. Why eradicate instead of utilizing prosopis?

- Eradication is the best approach because Prosopis invades agricultural land, it reduces water supply, reduces animal pasture and we recommend the same approach for Somaliland, to eradicate the plant, and strongly recommend against the plantation of Prosopis.

2. When you have eradicated Prosopis what will you replace it with?

- Farmers will grow more valuable agricultural products and the land will provide pastures for animals.

3. Are you also planning to eradicate Prosopis from dry and desert areas?

- Firstly, Prosopis does not, in the main, grow in dry and desert areas, but rather in areas with good water supply. We do not plan on eradicating Prosopis that has grown in dry areas.



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4. Discussions

What is the scale of the Prosopis problem in Somaliland?

- It is not known, but Prosopis is rapidly spreading to eastern regions including Burao and Odwayne and animals are rapidly spreading it.
- There is a need for a proper study on the scale of the problem. No one has yet made an accurate study on the scale of this problem.

What is the coverage of NGO projects?

- There are a number of projects - Candlelight, PENHA, with IFAD, DRC (Danish Refugee Council), and FAO are all working towards addressing this problem.
- The coverage of these projects is quite limited – each targets a small group of communities, and we do not have a good idea of their size in relation to the scale of the problem.

What percentage of the affected population has been targeted by interventions?

(those of NGO's, FAO & MoERD)

- Bulaxaar, Berbera, Abdigeedi, Agabar, Biyo Xidheen, Haleeya, Aw Barkhadle, Arabsiyo, Laasdhur'e, Beerato, Odwayne - all these areas have been targeted by interventions.
- The interventions so far are on a relatively small scale, but we cannot give a percentage for coverage.

How many villages/groups need interventions?

- There are a large number of villages that need interventions, including the villages and communities we have discussed.
- Without a comprehensive assessment, it is difficult to specify the number of villages and communities severely affected by Prosopis.





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How can we kick-start a self-sustaining process, and local initiatives?

- By creating awareness within affected communities. This will initiate a self-sustaining process as community members will be aware of new ways to utilize Prosopis, as well as understanding better the disadvantages of it and the characteristics of the plant.
- By providing local people with machinery to crush Prosopis pods. The villages will be able to reduce the rapid spread of Prosopis, feeding animals crushed pods rather than uncrushed pods.
- Pastoralists and farmers are the most affected groups - by training and supporting organized groups in these communities, we can start a self-sustaining process.
- Establish a coherent government policy on Prosopis.
- Train affected groups in various ways in which they can utilize Prosopis.
- Train and provide the necessary equipment to charcoal traders and harvesters, so that they can expand the utilization of Prosopis as an alternative charcoal, sparing the Acacia trees that are vital to the local environment.
- Create a marketing campaign for Prosopis as an alternative animal feed.
- Sponsor locally organized workshops by village heads and village committees members.
- Use the mass media to create mass awareness and understanding of Prosopis utilization and control.
- Dispel myths and erroneous social beliefs about Prosopis as an evil tree that cannot be utilized positively.
- Incorporate Prosopis awareness and education in village schools and throughout the educational system, and make Somali-language materials widely available.
- Initiate a program to use Prosopis charcoal in the cooking of school meals.





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5. Group Recommendations

Group 1

The PENHA-Sudan/APRC Approach - can the approach work in Somaliland?

- Yes, we can take it on. We can combine all efforts from PENHA, FAO, and the Sudanese approach.

What are the difficulties in trying to replicate the approach in Somaliland?

- Lack of financial resources and lack of capacity, skills and technology – as well as general economic conditions, and the general low level of economic development.

How could the approach be adapted to work in Somaliland?

- Establish clear policy, legislation, laws, and clear guidelines.

Group 2

- Yes - there is animal feed scarcity in Somaliland.
- We live in a semi-arid region (low rainfall). During dry seasons, we need modern feed that we can sell to livestock traders in quarantine/holding grounds before they are exported. For dairy farming, we need prepared livestock feed and we can also use this prepared feed during livestock transportation.
- There is not enough knowledge about qualified trade (awareness among the people). There is no machinery to process animal feed (cutting and grinding).
- Poor infrastructure to transport livestock.
- Lack of value chain facilitators, feed suppliers, marketing, and producers.
- Lack of community awareness and environmental education.



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- Lack of farmer field schools where farmers can receive training and education.

Group 3

What are the feasible options for Prosopis control?

- Utilize pods for animal feed.
- Use Prosopis as a source of charcoal.
- Create special areas to protect/control Prosopis.
- Make various products from Prosopis, such as utensils, jam,

What are the main obstacles?

- There is a need for resources and financing to harness the spread of pods.
- Lack of clear governmental policies to eradicate Prosopis tree.
- Lack of fodder value chain (development).

What are the main challenges in making and marketing Prosopis products?

- Lack of Prosopis fodder value chain interventions – need to focus animal feed development on customers, with tailored products for livestock traders, milk producers, livestock keepers.
- Lack of capacity – machinery, equipment, skills and knowledge.
- Lack of awareness, or understanding of plant characteristics.

What are the specific opportunities?

- Job creation and income generation for women's groups.
- Increasing household incomes in poor communities.
- Prosopis feed for animals.



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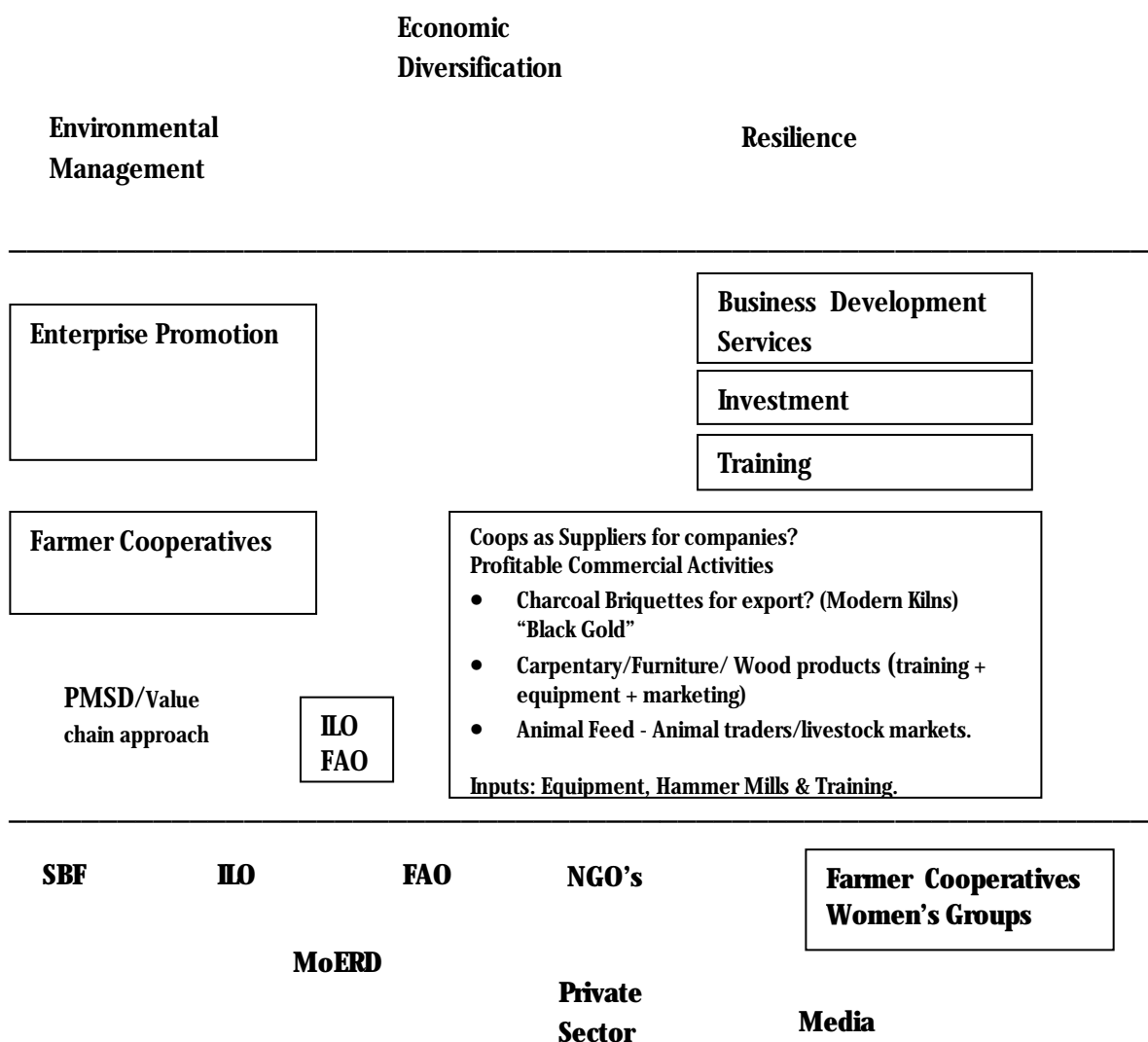
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6. Enterprise Promotion & Resilience:

A session led by Sadia Ahmed (PENHA Country Representative)



(Outline of issues and actors by John Livingstone, PENHA)



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The project aims to help farmer cooperative to establish profitable enterprises that make use of Prosopis. A range of development activities in Somaliland, and elsewhere in the region, are centred on local people's own organizations – farmer cooperatives, pastoralists' associations and women's groups. At the same time, there is a renewed focus on enterprise promotion, with the Somaliland Business Fund, established by DFID and Danida, which, implicitly, targets more sophisticated entrepreneurs, who might operate higher up value chains.

Local groups have the potential, with appropriate support to develop quite sophisticated operations. Alternatively, they could function as suppliers to bigger, more sophisticated commercial entities – supplying wood, leaves or pods.

IFAD has been working with women's groups, providing business skills training and group-managed finance, with a view to scaling up micro-enterprises. ILO and FAO, under DFID's "SEED" (Sustainable Employment and Economic Development) program, have been trying to promote job-creating enterprise in Somaliland. In 2012, with ILO and Practical Action, PENHA carried out a value chain analysis of fodder production in Somaliland and held workshops with market actors, using USAID's "Participatory Market Systems Development" (PMSD) approach. The PMSD approach pays attention to the policy context and the overall economic environment in which particular value chains lie. It seeks to identify the relevant market failures – why haven't people spontaneously taken profitable opportunities? A lack of knowledge and information? Lack of finance? Or is there a policy problem? Barriers to trade and investment?

Sadia Ahmed of PENHA gave a presentation on the overarching issues and the context for the present project, and led a discussion of the different actors and on-going programs in Somaliland, and how the current project fits in.

There are, clearly, opportunities to develop profitable enterprises that make use of Prosopis. High demand for charcoal offers, perhaps, the best prospects, with the potential to serve regional markets. It is less clear that there is a real demand for sophisticated animal feeds, and developing price-competitive Prosopis feeds, in the face of cheap or free (raw) Prosopis pods, is a major challenge.

However, the discussion revealed a degree of confusion about, and, perhaps, dissatisfaction with, existing enterprise promotion efforts. Few, if any, participants thought that Prosopis use could find financial or business development support through existing programs. This points to a need to think more carefully about how commercial approaches can be promoted, and what the obstacles are.

Beyond this, there needs to be a broader and deeper understanding of the role that improved animal feeds can play in bolstering resilience – the ability to withstand and recover from drought



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and other shocks. The links between Prosopis utilization and resilience are underlined by the fact that women are already marketing unprocessed Prosopis pods during dry seasons, meeting immediate needs, but aggravating the spread of Prosopis, and thereby reducing, over the longer term, the availability of water for animals and farming. It is clear, then, that the successful commercialization of Prosopis-using feeds could make a significant contribution to wider efforts to bolster resilience. Yet, at the same time, commercialization is hampered by general economic conditions that do not favor growth, enterprise and diversification, in spite of a strong Somali entrepreneurial culture. While the economy is in important respects internationalized, with remittances, livestock exports to the Gulf and Diaspora investment playing important roles, political uncertainties certainly contribute to a high degree of economic isolation and inhibit enterprise. These and other factors will have to be considered in promoting the commercialization of Prosopis-using animal feeds.



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7. Recommendations

In the final session, groups made presentations and a lively discussion took place on the way forward. There was a strong consensus that women's groups should be involved throughout, and should, perhaps, be the principal focus of interventions. Participants put forward the following points and recommendations:

PROMOTING THE USE OF PROSOPIS IN ANIMAL FEEDS

- Provide training for farmer cooperatives and women's groups in the use of Prosopis to make animal feed, as well as equipment (including hammer mills) – scaling up the current projects.
- Seek commercial partners who can help to test and market new animal feeds, working with local groups, pastoralists, milk producers and livestock traders.
- Encourage investors and entrepreneurs to venture into the animal feeds industry, and, perhaps, use local groups as suppliers.
- Pilot test Prosopis feed with livestock over a period of time, and conduct a scientific analysis on its impact (comparing performance with a control group of livestock not fed on Prosopis feed, and monitoring any impacts on livestock health over a period of time).
- Learn from practice in Ethiopia, where the animal feed industry is growing, and explore possibilities for collaboration and information sharing, perhaps through an exchange of visits with Ethio-Feed Plc which uses Prosopis in some of its feed mixes.

PUTTING WOMEN'S GROUPS AT THE CENTRE OF INTERVENTIONS

- It is vital that women's groups participate in decision-making processes on Prosopis control and management.
- Use women's groups in Prosopis projects as they are more consistent in attending meetings and more like to stick with the project throughout. In contrast, men are frequently unreliable, or attend meetings irregularly, in part due to the widespread practice chewing Qat (a mild stimulant).
- Provide training to women's groups so that they develop new skills for processing pods to make animal feed.
- Pursue the making and marketing of Prosopis feed by women's groups as a means of income generation – this makes sense as women are already earning incomes from the collection and sale of unprocessed pods.

UTILIZATION OF PROSOPIS WOOD, PARTICULARLY FOR CHARCOAL PRODUCTION

- Promote the use of Prosopis to make charcoal, as an alternative to the widespread, environmentally destructive use of Acacia.
- Provide training on Prosopis to charcoal harvesters and charcoal traders, as well as information on more efficient kilns and processing.



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- Promote more efficient and effective methods of charcoal production, with a view to producing higher quality charcoal that is price-competitive.
- Take steps on the demand side, perhaps through a program to promote the use of Prosopis charcoal in the cooking of school meals.
- Provide skills training – in carpentry and marketing - for community groups so that they can produce different products from Prosopis.

INTRODUCING PROSOPIS CONTROL MEASURES, ALONGSIDE UTILIZATION

- Pilot test the chemical approach to eradicating Prosopis.
- Introduce legal requirements for Prosopis usage and management (as in Sudan), with prohibitions and permissions.
- Conduct awareness raising and education about Prosopis, to increase knowledge and understanding in local communities.
- When Prosopis has been eradicated from a particular area, alternative seeds should be offered to farmers in order to prevent or limit the re-growth of Prosopis.

INCREASING AWARENESS & UNDERSTANDING OF PROSOPIS

- Support village committees and local groups to conduct their own workshops with local people.
- Work with the mass media (radio, mobile phone, television, film and internet companies) to raise awareness and understanding of Prosopis utilization and control, and counteract erroneous beliefs.
- Incorporate Prosopis awareness and education in the curricula of village schools, high schools and colleges, with suitable Somali-language materials.

FURTHER STUDIES – ASSESSING THE SPREAD & IMPACT OF PROSOPIS

- A study should be conducted to map the extent and nature of Prosopis spread across Somaliland.
- A research study should be conducted on the impact of Prosopis on wildlife, on the environment more generally, as well as on livestock. A broader socio-economic study should be conducted to assess the impacts on people, the economy and on social welfare.
- A study should be conducted to explore and research the potential medical uses of Prosopis, with a view to broadening its utilization.

ENHANCING COOPERATION & KNOWLEDGE SHARING WITH RELEVANT MINISTRIES

- Establish a research and documentation centre for knowledge sharing.
- Create an umbrella with all stakeholders under the production sector forum, which is a forum established by the government for similar purposes.
- Develop and disseminate guideline manuals, produced by MoERD and MoLS, on Prosopis utilization and control.

***Prosopis Juliflora* Management & Utilization: Policy Workshop**

Ambassador Hotel, Hargeisa, September 16, 2014

WORKSHOP SCHEDULE

Time	Activities/Topic	Facilitator	Remarks
7:30-8:00 am	Registration of Participants	PENHA	
	Welcoming Remarks and Introduction		
8:00	Introduction – PENHA's IFAD-funded Regional Program	Amsale Shibeshi, Regional Programmes Coordinator, PENHA	A description of project goals & approaches
	PENHA's Program – Linking Environment and Development	Sadia Muse Ahmed, Country Representative, PENHA	An overview, giving the broad context for the Prosopis project
	Official Opening	Minister of Environment & Rural Development, Shukri Haji Bandere	Opening Speech
8:30-9:00	Statement by the Ministry of Environment & Rural Development	MoERD Representative, Ahmed Diriye	An overview on Prosopis management
9:00-9:30	Animal Feed in Somaliland – where does Prosopis fit in?	Hassan Hirsi Farah, Environmental Management Officer, PENHA	
9:30-10:00	Prosopis Juliflora In Somaliland – Challenges & Opportunities	Abdirazak Bashir Libah	Independent Consultant
10:00-10:30	FAO Program, Prosopis Management & Use in Somaliland – Thinking & Practice	Ahmed Aideed FAO Somalia Office	
10:30-11:00	Tea Break		
11:00-12:00	Prosopis Management & Use in the Sudan	Dr. Nuha Talib Ismael Animal Production Research Centre, Sudan	
12:00-12:30	Group Discussions		

12:30-1:30	Drafting of Recommendations		
1:30-2:30	Lunch		
2:30-3:30	Wrap-up Session & Recommendations		

(15-20 minutes for each presentation, followed by 10-15 minutes for questions and answers.)

***Prosopis Juliflora* Management & Utilization:**

Policy Workshop

September 2014

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