



Innovative ways of managing *Prosopis juliflora* trees in Somalia

Safeguarding agricultural and pastoralist livelihoods by transforming a longstanding threat into a sustainable resource for women and youth

Context

Climate, conflict and economic shocks are the main drivers of food insecurity in Somalia. The 2017 drought affected pastoral communities and the urban poor, with unprecedented numbers of internally displaced pastoralists choosing to scale down their livestock rearing and/or to drop out of livestock-based livelihood alternatives. The **rate of youth** unemployment remains very high. As highlighted in the [Economic Recovery Plan for Somalia](#), youth unemployment is one of the greatest obstacles to the country's economic recovery.

The **livestock** sector is the largest contributor to Somalia's Gross Domestic Product (GDP), livelihoods and economic growth. Yet a number of factors undermine its performance, including poor animal nutrition, cross-boundary diseases, eroded genetic resources and poor natural resource management, along with institutional weaknesses. Another detrimental factor for the livestock sector is the expansion of the fast-growing *Prosopis juliflora* (hereafter referred to as *Prosopis*) tree species. If left unmanaged and uncontrolled, *Prosopis* can quickly take over vast areas of grazing and farmland, out-competing native vegetation preferred by livestock and depleting water sources - with the potential to devastate **pastoralism** altogether.

Challenges

Prosopis is a thorny, dominant and thirsty tree species that has invaded the main grazing areas in many countries in the Horn of Africa, posing a major threat to rural livelihoods. Widespread planting of *Prosopis* in Somalia took place in the 1980s as a response to deforestation during and after the Ethio-Somali war and subsequent droughts. Since then it has spread vigorously, invading at least 550 000 hectares in Somaliland alone. However, the *Prosopis* expansion in Somalia is at a relatively early stage compared with other countries in Horn of Africa and there is an opportunity to introduce management before it is too late.

Key facts



Geographic coverage

Berbera, Odweyne and Togdheer districts, Somaliland



Conforms to UN Somalia map, December 2011



Gender

Women have been involved and consulted throughout the project, from planning to implementation, and have participated in skills training and in enterprise development.



Youth

Sixty-five percent of the cash for work beneficiaries were unskilled and unemployed youth at risk. The project helped to deter them from undertaking criminal activities, embarking on irregular migrations known as *Tahriib* or joining terrorist groups.

How does management of *Prosopis* contribute to resilient livelihoods?

The sustainable management of *Prosopis* can help pastoralists, agro-pastoralists and dryland farmers **adapt to climate change** through the processing of drought-resistant *Prosopis* tree parts into a variety of products, including livestock feed supplements and charcoal. Therefore, *Prosopis* can be defined as a multi-purpose crop. By controlling its harmful effects and diversifying local incomes, communities and local economies become less vulnerable to climate-related disasters in contexts where severe drought episodes are recurrent.

In addition, the management of *Prosopis* serves local communities while promoting enterprise development and economic growth. It enables local groups, focusing on **women and youth**, to establish a range of commercial activities – from pod collection and milling to charcoal and feed production – that are profitable and self-sustaining. This further promotes **linkages between local entrepreneurs and bigger, upstream market actors**.



Prosopis plant.

Methodological approach

Between 2016-18, the Food and Agriculture Organization (FAO) in Somalia collaborated with the non-governmental organisation (NGO) the Pastoral and Environmental Network in the Horn of Africa (PENHA) to develop a project in Berbera, Odweyne and Toghdeer districts of Somaliland with two main aims. Firstly, to **create entrepreneurial and employment opportunities for women and youth in the effective management of *Prosopis***, and secondly, to **foster livestock feed processing cooperatives and create market linkages**. This project was a component of the Joint Programme on Youth Employment (YES) between the Federal Government of Somalia (FGS) and United Nations (UN).

The main methodological pillars of this intervention are:

- 1. Awareness raising and capacity development on *Prosopis* management and utilization:** *Prosopis* beans and thorns are thought to be poisonous and it is not possible to eradicate the trees, therefore awareness raising, demonstrations and training are essential at all levels, from pastoralists to policy makers. Pastoralists, farmers and agropastoralists organized in groups and cooperatives were taught to manage *Prosopis* trees.
 - Selected youth involved in *Prosopis* management through CFW activities have become community **trainers of trainers (TOTs)** to coach other youth in the communities. **Community trainers and ministry staff** attended **ToT events** on *Prosopis* management and its value chain.
 - Rural and peri-urban youth groups were trained in **business skills**, calculating costs of production, and in hammer mill operation and maintenance.
 - Members of **cooperatives, traders and value chain actors, as well as representatives of ministries, local universities and NGOs**, were **trained on the uses and value of tree products**, especially milled pods, such as animal feed and human food.



A survey later conducted identified a gap in the links between cooperatives and external markets. It found that cooperatives which produce livestock feeds were facing challenges in accessing markets.

2. Processing of Prosopis into livestock feed blocks and charcoal:

- The intervention trained community-based cooperatives in animal feed production from *Prosopis* pods and the trained cooperatives were provided with hammer-mills and other equipment. The commercial **production of animal feed** from *Prosopis* is one of the best ways to control its spread and multiplication because it destroys the seeds that are otherwise propagated by animals and water flows.
- Beneficiaries, including selected youth groups, were also trained and advised on how to **produce charcoal from *Prosopis***. Since charcoal production through burning *Prosopis* is an emerging local practice, trained project beneficiaries are learning slowly how to make charcoal and generate significant incomes, with tools provided.

3. Development of market linkages enabling cooperatives to grow:

Private sector engagement and market expansion for *Prosopis* products such as charcoal and animal feed are important in Somalia in order to realize economic, commercial, utilization of *Prosopis*. Cooperatives can become suppliers of semi-processed products to more sophisticated upstream market actors, serving broader markets. The intervention has involved collaboration with **multiple market actors along different value chains**.

For animal production, pod collectors, local cooperatives, livestock traders and the big livestock exporters at Berbera Port have been important collaborators. The Ministry of Environment and Rural Development has been an active supporter throughout. Local government and civil society actors (notably village development committees) have also participated in and supported the project.

Youth, gender and cash for work interventions



Management and utilization of *Prosopis* trees opens up opportunities for youth employment across Somalia and supports young men and women in being drivers of positive change. Youth participated in cash for work (CFW) activities involving thinning and pruning dense *Prosopis* thickets, and processing *Prosopis* trees into charcoal and firewood as well as *Prosopis* seeds into fodder. Additionally, vulnerable beneficiaries who could not participate in CFW activities — including nursing mothers, the sick and disabled — received monthly **unconditional cash transfers (UCT)**. This intervention built on women's dominant role in small-scale agriculture and in micro-enterprises in rural Somaliland and placed them at the centre of commercial *Prosopis* use. **Community mobilization** was a vital aspect of the CFW program. Inception meetings were public (*Baraza*) and everybody attended and contributed ideas. “*We can't do anything without calling all the people into a public meeting and ask their opinion on the issue at hand. Otherwise the community members will protest against us,*” said the chairman of Beer village, one project location.

Impacts

This intervention saw the following impacts:

One of the most encouraging land use changes after reclaiming land from *Prosopis* was **garden farming in Ceel Gerde, Berbera district**. Beneficiaries formed small farmer groups, dug shallow wells for irrigation and started growing cash crops such as melons, tomatoes and onions. Farming on reclaimed land also reduces the chance of *Prosopis* regrowth and increases livelihood diversifications among beneficiaries.

- 1. Clearance of land for agriculture:** Many hectares of *Prosopis* were cleared across the three districts covered by the project. By controlling the spread of *Prosopis*, the practice **brought new areas of land into productive use** and enables the recovery of indigenous plant species preferred by livestock. Access roads, water canals and farming land were reclaimed from intensive *Prosopis* infestation.
- 2. Environmental benefits:** *Prosopis* management has had a positive environmental impact, according to 90 percent of interviewed households in a FAO impact assessment. This includes **saving indigenous trees from destruction**, improved land utilization for the purposes of settling internally displaced people, flood control and the creation of livestock trekking paths. **There is evidence that two million *Prosopis* seeds are destroyed for every tonne of pods milled, thus reducing future spread.**
- 3. Economic and domestic uses of *Prosopis*:** Business skills training enabled beneficiaries to produce and market charcoal and animal feed, and extract construction material:
 - A first order of five tonnes of *Prosopis* **livestock feed** was followed by another order of 50 tonnes after six months, paving the way for the cooperatives to become significant and sustainable enterprises, and boosting commercial viability.
 - Communities confirmed the importance of **charcoal business training**, which was followed by the substantial emergence of new *Prosopis* charcoal production, especially in Odweyne.
 - Target communities started using *Prosopis* wood for several additional domestic uses, including **local shelter construction, and fencing plots.**
- 4. Creation of temporary employment for unskilled idle youth at risk of joining irregular migration, known as *Tahriib*, and recruitment by dterror groups:** Unskilled youth were engaged in temporary CFW employment on the management and utilization of *Prosopis* for at least three months. Short-term jobs and cash transfers ensured that 1 000 youth (including 432 women) were able to meet their food needs while engaging in productive activities. New skills for income-generation shift long-term perspectives.



“Before the *Prosopis* cutting project I was planning to migrate to Europe through *Tahriib* because I was jobless, I had no skills and I was frustrated. When I was registered in the CFW project I was happy. I worked in the project, burnt charcoal and sold it, so I had the means to get married. Even when CFW is finished, I will continue producing charcoal from burnt *Prosopis* and get income, I am not going anywhere.”

– *Abdirahman Farah*, 20-year-old CFW beneficiary in Beerato, village of Odweyne district



“I used to travel over 40 kilometers to ‘burn’ charcoal from acacia and transport it to Odweyne, but now I burn it from *Prosopis* here in Odweyne. I make more than 100 USD per month from the *Prosopis* charcoal only because I don’t spend money on transport and logs are available here.”

– Project beneficiary



Sustainability

The breakthrough with the introduction of this new practice comes from a **change in attitudes among affected communities, as well as local leaders and policymakers**. Initially, *Prosopis* was seen as a serious threat to the livelihoods of farmers and pastoralists because of its spread, taking over farms and grazing lands. Communities, including government and NGOs alike, demanded total eradication, which is not possible once the spread has taken hold. However, now communities perceive the invasive species as a potential source of income and valuable resource, rather than a threat. Once *Prosopis* is cleared and land is reclaimed, it is important to put land under farming or under controlled grazing to manage the reoccurrence of *Prosopis*.

This intervention enhanced the capacity of ministry staff, traders and value chain actors, representatives from local universities and NGOs. Pastoralists, farmers and agropastoralists, organized in groups, now see the potential to control the spread of *Prosopis* by clearing trees for charcoal production, milling pods and selling the flour for use as a feed supplement. This shows **how effective systems of partnership between pastoralists and farmers, NGOs, FAO, government bodies and local authorities can promote agricultural innovation processes.**

Replicability and upscaling

- 1. Potential for Somalia’s livestock sector:** Somalia’s livestock exports are valued at 500 million USD and the industry accounts for a substantial share of employment. Given that the livestock sector dominates the local economy, it is worth exploring the potential of *Prosopis* management to safeguard the sector. The commercial demand for animal feed is commensurately large, as is the possibility for this intervention to scale up.
- 2. Potential for alternative energy:** In Somalia, charcoal is the main source of household energy. It is produced using native *Acacia* trees, which are vital to pastoralists, making charcoal production both environmentally destructive and a risk to pastoral livelihoods. Alternative substitute sources of charcoal from *Prosopis*, which has an efficient high-heating potential, could therefore generate positive environmental and economic effects on a very large scale. This could also be supported by changing government policies – for example by providing favourable tax treatment and regulation to promote charcoal made from *Prosopis* over the charcoal made from native *Acacia*.

In Djibouti, FAO, in collaboration with the Ministry of Agriculture, assessed the economic potential of processing *Prosopis* woody biomass into a more efficient fuel in a way that also provides a source of income for the host community, a safe energy source for refugees, and environmental protection on the ground. The example of Djibouti can inform the use of *Prosopis* as an important energy source and it could be replicated throughout the Horn of Africa region.



3. **Potential for *Prosopis* as a cooking flour:** Flour made from *Prosopis* (known in North Americas as *mesquite* or *mezquite*, derived from the Aztec-era *mizquitl* and commonly in South America as *algarrobo*) contains more nutrients than grain-based flours. It has the potential to provide sustainable, slow-digesting energy, but still needs refinement. Overwhelmingly sweet, *Prosopis* flour would also need to be mixed with other types of flour to be attractively edible and marketable. PENHA has already started work in this area, and with more testing, training and techniques, the production of *Prosopis* cooking flour could be expanded and scaled up.

4. **Potential for upscaling in the region: enterprise promotion and lessons learned from country replication:** This innovation can be easily extended to all areas where *Prosopis* is an invasive weed, especially in the **Greater Horn of Africa** where there is an estimated five million hectares affected. The successes seen in Somalia in 2017 led FAO to fund a second phase, expanding to additional beneficiaries in Berbera and Baki districts using this experience as a model. The intervention has involved collaboration across the different political entities in Somalia. In May 2018, 40 FAO partners from across Somalia were trained in *Prosopis* management, utilisation and lessons learned from the pilot, and they now plan to scale up the concept in all regions of Somaliland.

In addition, in Somaliland, the German NGO Welthungerhilfe has taken up the project concept and established a new programme, aiming to extend it to Ethiopia's Afar Region with support from Gesellschaft für Internationale Zusammenarbeit (GIZ). In the **Sudan**, PENHA has collaborated with the International Fund for Agricultural Development (IFAD) and the University of Kassala on similar work. Collaboration and information sharing with PENHA partners in **Ethiopia** has also been important. FAO and a private company, Ethio-Feed Plc (a commercial operation established by PENHA Associates), during the last major drought, provided animal feed that saved breeding stock and pastoral livelihoods.

A successful scaling up of this project across the whole Horn of Africa region could generate benefits on a very large scale, but will need to address broader regional enterprise promotion issues as well as market failures and the business environment. **The intervention can readily be adapted and replicated across the Intergovernmental Authority on Development (IGAD) countries.**

The implications of COVID-19 on *Prosopis* management in Somalia

COVID-19 impacts on vulnerable smallholder livelihoods are multiple and are likely to be protracted, particularly as it is unlikely the pandemic will end soon and containment measures may be eased or reintroduced depending on the progression of the virus. Within this context, *Prosopis* management can help: 1) boosting the recovery of affected livelihoods by supporting innovative, efficient and regenerative agricultural production, income generation and livelihood diversification and/or 2) protecting smallholders and stabilizing incomes through scaled up risk-transfer mechanisms, such as shock-responsive social protection mechanisms and cash-transfers.



Key learning

- The evidence and testimonies displayed in this good practice are mainly the result of a desk analysis of articles, project documents and impact assessment reports conducted by FAO in October 2018 using focus group discussions and key informant interviews in nine project locations in Somaliland. **All the participants in the impact assessment affirmed the benefits of this joint FAO-PENHA intervention**, and 45 percent of households interviewed indicated that *Prosopis* was beneficial as a source of food for livestock, a source of charcoal, and a source of income.
- Sustainable management of *Prosopis* can help pastoralists, agropastoralists and dryland farmers **adapt to climate change** through the processing of drought-resistant *Prosopis* plants into a variety of products, including livestock feed supplements and charcoal. In addition, the management of *Prosopis* serves local communities while **promoting enterprise development and economic growth**.
- Management and utilization of *Prosopis* trees opens up **opportunities for youth employment** across Somalia and supports young men and women at risk of **joining irregular migration and terror groups** in being drivers of positive change.
- For any future *Prosopis* management project implementation to be sustainable, **intensive community mobilization is a prerequisite**. To guarantee a more sustainable impact of *Prosopis* management it would be important to **engage youth in longer-term income generating activities of at least a one-year timeframe**.
- Community mobilization should include **local government engagement** to fully participate in **community selection and monitoring**. Effective communication from the top level to the beneficiary level improves participation and subsequently enhances the sustainability of specific interventions. It also improves the development and use of complaint mechanism and its adoption by implementing partners in the field.
- **Continuous training and improved capacity development** on the use of *Prosopis* and in-land use activities after reclaiming areas from *Prosopis*, should focus on enhancing human skills (crushing of pods, uprooting of the tree, entrepreneurial skills, land clearing and GAP) and infrastructure like (pod crushing machines and better tools for uprooting the plant).

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Partners

Stakeholders

- Food and Agriculture Organization of the United Nations (FAO)
- Ministry of Environment and Rural Development
- Pastoral and Environmental Network in the Horn of Africa (PENHA)

Financial partners

- Joint Programme on Youth Employment between the Federal Government of Somalia and United Nations (YES)

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