Farmer Managed Natural Regeneration in a Somali context:

Practitioners' manual

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The information is based on knowledge and understanding at the time of writing. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check currency of the information with the appropriate agricultural or forest officer or an independent advisor.

Cover Photo: A field worker in Somaliland demonstrates FMNR practices.

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Content (including pictures) has been drawn from external sources such as FAO; CARE International's Manual on Participatory Monitoring, Evaluation, Reflection and Learning (PMERL) for Community-based Adaptation; the Farmer Managed Natural Regeneration (FMNR) Manual developed by World Vision Australia; World Vision's Local Value Chain Development (LVCD) Project Model Handbook for Practitioners; Farmer Managed Natural Regeneration in Kenya: A Primer for Development Practitioners by ICRAF; Farmers Training Entrepreneurship Manual by ICRAF; Organizing and Managing Farmers' Groups: A SMART Skills Manual by Catholic Relief Services (CRS) and Modernizing Extension and Advisory Services (MEAS); and Farm Enterprise Development Manual by Vi Agroforestry, among others.

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List of abbreviations and acronyms

AAR	*After-Action Review*
CNA	*Capacity Needs Assessment*
CCM	*Community Co-ordination Mechanism*
CSOs	*Civil Society Organizations*
GAP	*Good Agronomic Practice*
GIS	*Geographic Information System*
ICRAF	*World Agroforestry Centre*
ICT	*Information Communication Technology*
FBOs	*Faith-Based Organizations*
FMNR	*Farmer Managed Natural Regeneration*
MEL	*Monitoring, Evaluation and Learning*
M&E	*Monitoring and Evaluation*
NGOs	*Non-Governmental Organizations*
PMNR	*Pastoralist Managed Natural Regeneration*
PWDs	*Persons with Disabilities*
QIPs	*Quick Impact Projects*
SILCs	*Savings and Internal Lending Communities*
S4Ts	*Savings for Transformations*
SMART	*Specific, Measurable, Achievable, Realistic and Time-bound*
UNFPA	*The United Nations Population Fund*
VDCs	*Village Development Committees*
VSLAs	*Village Savings and Loan Associations*

Introduction

The Somali geographical area covers approximately 637,540 km² of land mass with an estimated population of about 12.3 million (UNFPA 2014). The country is food deficient with a high dependence on food imports. Rainfall is typically low and highly variable in most parts of the country, ranging from 63 mm on the northern coastal areas to just under 600 mm at higher elevations in the south and in the north-west. Livestock production forms the basis of livelihoods for over 60% of the country's population. Crop production is second to livestock and its contribution to household economics is growing in importance. Vulnerability to food crises and climate change has however diminished livelihood security and quality of life in the country.

The last few decades have seen a declining trend in recorded volumes of annual rainfall, a loss of arable soil fertility and the disappearance of forest cover and associated indigenous biodiversity resulting in region-wide food shortages and a population that is increasingly struggling to meet its basic needs. Irrigation potential in the country is low and is mostly practised along the Shabelle and Juba rivers, and in the middle and lower catchments of the Dur-Dur Watershed in the Awdal region of Somaliland. The level of irrigation exploitation has worsened since the start of the civil war in 1991 coupled with the collapse of the central government and its associated services, thereby further worsening the country's economy. The communities are encouraged to adopt sound natural resource management practices to help rebuild household resilience by reversing losses in forest cover, indigenous biodiversity and soil fertility.

Land degradation is a common phenomenon in the Somali area because of unsustainable land management practices exacerbated by ravaging droughts and floods. It manifests in unproductive cropland, grazing lands and forests due to soil erosion and/or fertility loss with vast tracts denuded. Land degradation is a key environmental issue in Somali, closely linked to desertification and drought, and to unsustainable livestock and agricultural practices. This phenomenon has an extremely detrimental effect on the lives of farmers, pastoralists and other community members who depend on land for their food and livelihoods. The need to restore such lands to a state of improved productivity is urgent if the country is to meet its poverty alleviation goals. While there are many approaches to restoration, re-establishment of trees is one of the most effective.

However, a focus on tree planting initiatives is expensive and presents high chances for failure associated with low seedling survival rates, given that most of the land is water-scarce (see other challenges in Annex 1). Therefore, a more reliable approach to land restoration, dubbed Farmer Managed Natural Regeneration (FMNR), is proving to be a better alternative to tree establishment for land restoration. FMNR is an agroforestry practice that relies on natural regeneration of trees from stumps and/or seeds that are stored in the soil to raise new trees. The regrown trees and shrubs help restore soil structure and fertility, inhibit soil erosion and soil moisture evaporation, rehabilitate springs and the water table, and increase biodiversity.

Natural regeneration of native trees as well as naturalized exotic species is not new in many

parts of the world. Farmers and pastoralists have always practised it, but the practice has received little attention from development agents in past land management initiatives, especially as an agroforestry regeneration practice. As an economic activity, FMNR can be adopted by farmers and pastoralists to restore multi-purpose indigenous trees in farmlands, pasturelands and community-managed forests by identifying regrowth from the stumps of felled trees and protecting the regrowth into new trees. This results in increasing income levels and the number of households with food self-sufficiency. Figure 1 shows regrowth of new trees from the stumps of felled trees, while plate 2 depicts FMNR champions demonstrating FMNR techniques.

Plate 1. (left) a community member pruning sprouts from a regenerating stump, and (right) a land parcel under restoration through sprouting tree stumps. Photo: ICRAF

Plate 2. FMNR champions demonstrating FMNR techniques to community members in Puntland. Photo: CARE Somalia

movement across the globe have embraced FMNR as a land restoration practice and are promoting it globally while learning to localize its scope in specific implementation geographies such as Somali. There is no fixed or prescriptive way to implement FMNR since farmers can apply what works best for them after understanding the general principles.

They can practise FMNR in several different ways depending on the local context of land ownership and use. They have freedom to choose which tree species they wish to grow and which ones they wish to remove. This implies that the practice of FMNR may vary from one ecological area, geographical location, community, household or landscape to another.

Forestry and agriculture extension agents, as well as other development facilitators will find FMNR a very useful land regeneration approach and feel motivated to promote it among the communities where they work, especially in this era of changing climatic regimes. They however need to have knowledge and skills on how to implement such an initiative to succeed through a realistic and implementable design. They need to know how to win trust and engage the community to make the initiative sustainable. A sustainable and potentially impactful approach to promoting FMNR has been emphasized in this manual. The manual builds on several others that have been developed in the past to support agroforestry initiatives in countries neighbouring Somalia and has been adapted to fit the context of Somalia.

This manual is for community development facilitators who wish to promote an FMNR initiative within their programming. The focus of the manual is to foster FMNR initiatives that lead to a successful uptake of the practice and enhance benefits that are felt at the community level. The manual contains modules on: understanding the FMNR concept; the context of FMNR practice in the Somali context; engaging and scaling up FMNR with communities; stakeholder engagement for FMNR scaling; gender inclusion; and monitoring and evaluation of FMNR initiatives.

> ***A quick note on Pastoralist Managed Natural Regeneration (PMNR) and FMNR.Given that pastoralism is the main livelihood activity in the Somali context, it might be preferable to highlight both pastoralism and crop farming when promoting FMNR in the country. You may therefore prefer to use the term Pastoralist Managed Natural Regeneration (PMNR) especially when promoting the practice in communal grazing lands. This manual uses the term FMNR in the main text but appreciates the pastoralist context and encourages trainers to use the term PMNR rather than FMNR where such a context applies, and where they judge PMNR as the more acceptable term. They can also use both terms where necessary.***

Module 1: Understanding the FMNR concept

1.1 What is Farmer Managed Natural Regeneration (FMNR)?

Farmer Managed Natural Regeneration (FMNR) is an approach by which a farmer/pastoralist can regrow trees on his/her land without direct planting. FMNR encourages farmers and pastoralists to identify regrowth from the stumps of felled trees and to protect and prune the regrowth into new trees. It is based on the systematic re-growth of existing tree stumps with the ability to re-sprout to new trees or self-sown tree seeds in the soil that can germinate into a forest. FMNR adapts centuries-old approaches of managing tree species that re-sprout after being cut to produce continuous harvests of trees for fuel, building materials, food and fodder without the need for frequent and costly replanting. Through FMNR, rapid and large-scale restoration of tree cover is possible.

FMNR does not necessarily require the establishment of tree nurseries, sourcing of superior seed, transportation of seedlings, planting out or special care. The farmer basically selects sprouts from the stumps of trees and decides how many stems will be allowed to grow on each stump. Excess stems and side branches are pruned off every 2–6 months, stimulating faster growth rates and producing straighter stems, which are more valuable than unpruned stems. Stems sprouting from tree stumps have considerably deeper root systems with which to draw up water and nutrients, than do newly germinating or freshly planted seedlings, thereby increasing their survival rate. A living tree stump represents a well-developed support system for tree establishment that only needs a little support (see Figure 1).

FMNR can lead to increased crop yields, provide building timber/poles and firewood, fodder/pasture and shade for livestock, edible (indigenous) fruits for nutrition and medication, increased incomes and living standards for families and the community at large while building resilience to climate extremes and maintaining soil fertility.

FMNR can be practised in all parts of the Somali geography ranging from sub-humid areas to semi-arid and arid lands, but its suitability in any area is influenced by ease of planting trees (and their survival), availability of tree seeds and seedlings, and culture (including the community's tree planting culture). FMNR is however more suitable for dry lands because the areas face severe shortages of water, food and pasture for animals, which is exacerbated by unsustainable natural resources management practices, including overgrazing.

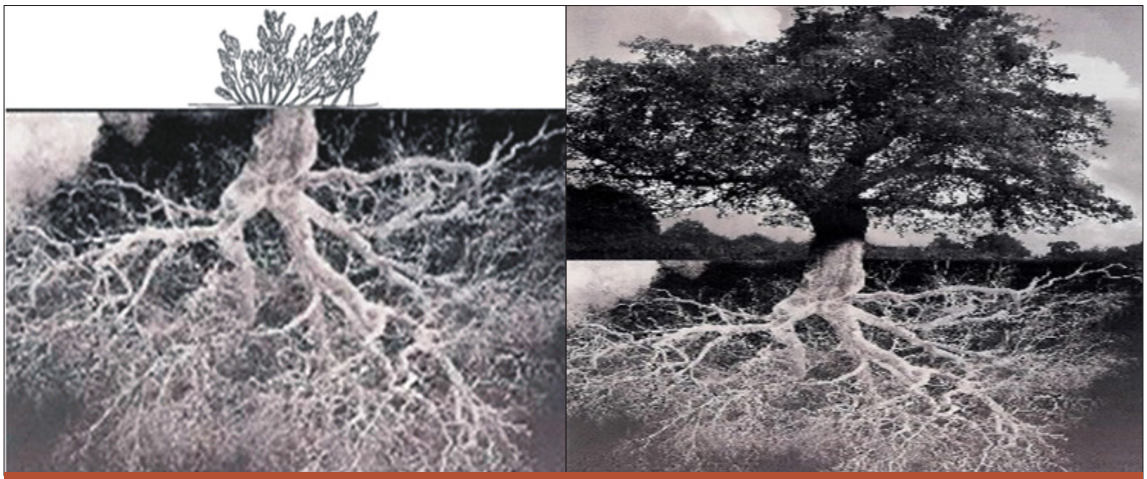


Figure 1. Regrowth from (left) a living stump to (right) a big canopy. Source: FMNR Hub

This approach requires a change in people's mind-sets (to conceptualize that trees do not always have to be planted from seedlings to be useful to people) and in land management practices.

1.2 Why Farmer Managed Natural Regeneration (FMNR)?

- *FMNR provides an opportunity to re-vegetate the land through management of trees that naturally sprout from living tree stumps and roots and/or from seeds that are stored in the soils. The regenerated tree species are mainly those that are adapted to the conditions of the area.*
- *FMNR is applicable to and useful for both croplands and communal grazing lands.*
- *FMNR helps overcome cultural biases that exist in some communities, such as those inhibiting some members of the community, especially women, from planting trees. FMNR provides the affected members with the opportunity to establish and benefit from trees on farmlands without directly planting trees.*

1.3 When is FMNR appropriate and for whom?

FMNR is more appealing to and appropriate for:

- *Landscapes whose revegetation is affected by low soil moisture, unavailability of tree seeds or seedlings for planting or where successful tree planting is a very expensive venture (because it might require big holes to be dug, watering, protection from livestock and/or other challenges);*
- *Land where there are tree stumps, roots or naturally growing wildlings that can be nurtured to regenerate into new trees;*
- *Community members when they recognize that their environment is deteriorating especially as trees disappear due to poor land management and when they are yearning to restore land productivity;*
- *Community leaders when they have an interest in mobilizing other members towards serving and managing natural resources for community survival.*

- *Community members and groups when they have a vested interest in and stand to benefit directly from improved agro-ecological conditions that they create over many years.*

Benefits of land restoration include improved flow of water; increased food production due to improved soil productivity; increased livestock fodder and pasture; and increased plant species diversity, which gives benefits such as medicinal value, honey and wild fruits, as well as wood products such as firewood, charcoal, gums, resins (myrrh and frankincense), timber and poles for house construction and other purposes.

1.4 What are the main advantages of FMNR?

- *FMNR respects local knowledge and builds on local assets – it starts with what many farmers/pastoralists already possess, such as land with tree stumps or stored seeds of trees that have known value and uses.*
- *FMNR is not expensive to implement, as locally available tools are used, although some form of tree protection may be necessary such as fencing off where free-range livestock grazing is pronounced. Costly physical fencing may not be necessary; however, use of community-level by-laws (e.g., xeer) and social fencing might be more effective in such cases.*
- *FMNR has great potential for spreading from farmer to farmer or from one pastoralist community to another over large areas under favourable policy arrangements around the environment and secure land ownership (tenure). This is mainly because, once established, the success can attract wider attention and spread using local resources and initiatives.*
- *FMNR provides a wide range of benefits from the same land unit to farmers, herders/pastoralists or communities.*

1.5 Practical aspects of tree establishment and management with FMNR

There is no fixed way of practising FMNR and/or PMNR since the land user has flexibility to adapt the practice to his or her land use context. In practice, however, FMNR generally involves the three steps listed below.

i) Selection of tree species and stumps.

ii) Pruning and management of regenerating trees.

iii) Maintenance and utilization of trees.

1.5.1 Selection of tree species and stumps

This step involves identification of tree species that farmers or pastoralists want to manage on their land, whether private farmlands or community-managed lands, based on their own objectives. Farmers usually keep species that provide products useful in their households, but in some projects, extension staff can negotiate for biodiversity objectives especially where benefits such as carbon credits can be tied to rehabilitation projects.

Tree species selection depends on:

- *Natural occurrence of the trees and shrubs species (which implies adaptation to the locality);*
- *Ability of the species to sprout from stumps (also called coppicing ability);*
- *Local beliefs and values ascribed to the species;*
- *Uses of the species (see Box 1 for quick guidance on some characteristics of trees for various uses;)*
- *Characteristics such as thorniness, competitiveness with crops and growth rate;*
- *Whether the species is invasive or not (invasive species may not be completely discarded, but a strategic management plan is needed to minimize adverse effects on the environment and local biodiversity vis-à-vis the benefits) – Annex 2 provides a list of some of the useful tree species in Somali agro-ecological areas that the community can keep in their landscapes.*

Box 1. Primary uses and characteristics of trees and shrubs for FMNR

Timber & firewood:

- *Have strong wood and/or high-energy content.*
- *Can withstand pruning of large branches and stems.*
- *Grow into long straight stems (poles) if timber is the desired product.*

Source of honey:

- *The tree or shrub flowers for a reasonably long period in a year, particularly when herbal bee forage is not available. These flowers are preferred by bees as a source of floral nectar for making honey.*

Fodder:

- *Easy regrowth after cutting.*
- *Can withstand regular pruning/browsing.*
- *Leaves, bark and/or pods are palatable and nutritious for livestock.*

Fruit & non-timber tree products:

- *Produce fruits or other known non-wood products that can be used at home or sold at accesible markets. These include medicines, gums, resins (frankincense and myrrh), fibre and others.*
- *Storage, transportation, or other value addition services are available for the products of the tree.*
- *Good form of tree for seed collection to qualify as good quality 'mother' trees where tree seed and seedling business is established.*

The following steps are useful to follow during the selection of species and stumps:

i) *Survey the field targeted for FMNR with the community and identify existing tree stumps – some might be difficult to identify if cut very close to the soil, so look out keenly for sprouts (Figure 2).*

ii) *Generate a list of preferred tree species based on the five aspects listed in Box 1.*

iii) *For each stump identified for management, choose and mark 3–5 of the most robust (tallest and strongest) shoots to protect.*

iv) *Where there is bush encroachment, select the desired trees and cut out the rest of the bushes. When dealing with dense thickets, you may need to make decisions on the species to keep as you go, because many useful trees will not be visible or accessible until you have removed some of the unwanted ones.*

1.5.2 Pruning and management of regenerating trees

- *Remove unwanted or weak stems (coppices) and side branches, leaving only those with potential for robust growth (Figure 2).*
- *Train the selected stems to grow into new trunks, usually by tying them together.*
- *Protect the remaining branches from livestock, fire and competing vegetation or weeds.*
- *Periodically return to the trees from time to time to cull any emerging unwanted stems and/or prune side branches.*

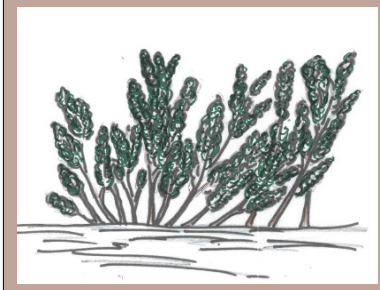
1. Select species and stumps of trees	*2. Prune and manage selected trees*	*3. Maintain and utilize growing trees*
		
1 .Survey land for sprouting stumps or seedlings and identify what species of trees are present. *2.Select the species and stumps to be regenerated.*	*1.For each stump, select 3 to 5 stems to keep and prune away the unwanted stumps.* *2.For each remaining stem, prune off-side branches up to halfway up the trunk.* *3.Protect the stems while they are growing.*	*1. Prune unwanted emerging shoots every 2 to six months as needed.* *2.Utilize tree for planned purposes: harvesting branches, portions of wood or the whole tree as necessary.*

Figure 2. Pruning and management of regenerating trees. Source: Rinaudo et al 2019.

1.5.3 Maintenance and utilization of established trees

i) *Thinning – This is the removal of poorly formed trees/sprouts to allow those that remain to grow vigorously and minimize chances of inbreeding where many seedlings of the same species have germinated. Seedlings that germinate naturally from the soil seedbank (also called wildlings) usually germinate as clumps of many seedlings growing very close to each other with some being weak (less healthy) or looking less desirable than others. It is necessary to remove the weak ones.*

ii) *Pruning – Pruning is the removal of undesirable branches starting from the lowest part of the tree crown to enhance better growth and yield (Plate 3). Pruning of trees is carried out with an objective to:*

- *Reduce competition for light between trees and crops/pasture;*
- *Stimulate rapid growth for taller, straighter and more useful tree trunks;*
- *Provide early harvest of branches – wood is used for fuel or other purposes;*
- *Enhance yields from crops because of more access to light.*

> ***When pruning, branches should always be cut upwards and as close to the stem as possible (as shown in Figure 3, the 'right way' diagram), while being careful not to damage the stem to avoid creating places where pathogens (disease-carrying organisms) can attack the plant.***

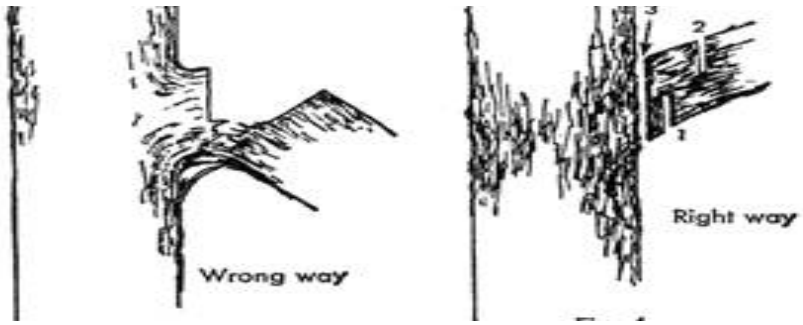


Figure 3. Tree pruning: wrong way of pruning – cutting from the top (left); and right way of pruning – cutting from the bottom (right). Source: ICRAF

The best results are obtained with regular pruning, but the frequency and extent of pruning depend on the desired use of the trees and the tree species. For instance, if firewood provision is the objective, it is desirable to retain more branches for periodic harvesting; hence, such trees are pruned less frequently than those grown for timber. When the cutting is done to harvest the wood, the most mature and desirable stem is cut, leaving the rest to grow to maturity. In this case, another stem should be selected to be groomed as a replacement for the cut stem.

*Plate 3. An FMNR farmer pruning trees correctly in his FMNR field (left); and pollarded **Acacia polyacantha** in a field under FMNR (right). Photo: ICRAF*

Plate 4. An FMNR farmer propping up a sapling (left); and a farmer tying together stems of a coppiced acacia with a rope in an FMNR plot (right). Photo: ICRAF

iii) *Propping – Means supporting thin and weak stems or young trees to prevent them from falling by either tying the stem to a strong adjacent tree or by use of props (firm poles or stakes used as temporary support to keep the weak trees in position; see Plate 4). Propping protects the growing trees or saplings from wind damage and helps them to grow into straight trunks.The practice is especially necessary after a thinning exercise has been done, to enable remaining saplings or stems to gain the sturdiness necessary for fast establishment.*

1.6 Land management practices enhancing success of FMNR

Although FMNR's primary pillar is regeneration of trees in the landscape, the success of the practice is interdependent on other sustainable land management practices. These practices may or may not be implemented as part of FMNR, depending on the land use type, state of land degradation and/or desired tree products and services.

1.6.1 Site enclosure and livestock management

Site enclosure involves fencing off the field set aside for FMNR from any human activities that could slow or reverse restoration gains, especially livestock grazing. The enclosure accelerates natural regeneration of grass, herbaceous plants and trees.To minimize pressure and attempts to access the enclosed areas, especially those arising from scarcity of pasture, members of the community are encouraged to cut grass from the enclosed area and carry it to feed tethered livestock or for other uses during the period of restoration. Site enclosure is usually achieved through social fencing such as through xeer or community by-laws but may sometimes involve physical barriers (fences) where resources are available and social fencing is ineffective.

Site enclosure is effective:

- *In communal land arrangements where strong community governance structures exist;*
- *Where individuals own large tracts of land, some of which they can enclose for FMNR as they continue with farming activities on other land parcels;*
- *On degraded public lands that the community has shown interest in conserving and restoring. In such cases, community members develop and agree among themselves and with local administration officials on ground rules for bringing such lands under restoration.*

Community leaders might also need to apply to the appropriate state or national authority through their registered associations to participate in the conservation and management of public land.

1.6.2 Enrichment planting

Sometimes even after going through the three steps of FMNR implementation (Section 1.5), the land parcel to which FMNR is being applied may not achieve adequate tree cover or have all species likely to meet the farmer's or community's needs. Planting of high-value tree species is therefore encouraged as a way of improving species mix (tree diversity) and tree density on the field being restored. This practice is called enrichment planting and it is enabled by the better land condition resulting from the FMNR practices already under way.

Enrichment planting (Figure 5) is recommended where:

i) There may be no living stumps remaining in cropland, or existing stumps may be only barely sufficient to meet the owner's other objectives;

ii) The diversity of species and density on the land is low or none of the species identified meets the land user's primary needs or enterprise plans adequately;

iii) Farmers wish to plant more of the species regenerating naturally on-farm to increase their density and quality – they may also want to plant better varieties of the tree species.

The list of species to be introduced into FMNR fields through enrichment planting can be identified at the beginning during the species selection process outlined in step 1 under section 1.5 and/or continuously as per the community action plan and/or the enterprise plans that the community develop.

Plate 5. Enrichment planting of Commiphora trees from cuttings in an FMNR field in Puntland Photo: CARE Somalia

Enrichment planting requires procurement of good-quality tree seedlings. These can be produced in a tree nursery established by the community group or purchased from an existing nursery. In any case it is imperative to build the capacity of the farmers to recognize and/or produce good-quality seedlings that will fulfil their plans.

If the community wishes to establish a nursery, there are many manuals available to guide them on production of good-quality tree seedlings. Some of the manuals are as follows:

- *Tree Nursery Management Guide for Land Restoration Planners (Carsan and Munjuga 2020).*
- *Good Tree Nursery Practices: Practical Guidelines for Research Nurseries (Jaenicke 1999).*
- *Establishing a tree nursery in Kenya (FAO and ICRAF 2015).*

1.6.3 Rehabilitation of denuded lands

Denuded[1] lands are lands that are depleted of vegetation cover to the extent that the surfaces are hardened by soil physiochemical processes leading to negative change in bulk density, porosity, pH, and soil organic carbon. Some fields are completely eroded to the extent of developing rills and/or gullies. Denuded areas are often abandoned by farmers and pastoralists because there is little hope of recovery through natural processes. Such fields can however be rehabilitated by application of some of the methods listed here:

a) Grass reseeding/improving ground cover -This involves sowing grass seeds on the denuded lands at the beginning of the most reliable rain season (Plate 6). The denuded land's surface may however be too hard for any vegetation to grow naturally in, which case hand hoes or ox-drawn ploughs are used to loosen or scarify the soil before reseeding.

1 According to the Merriam-Webster dictionary, denudation is the act or process of removing surface layers (as of skin) or an outer covering, in this case land.

Plate 6. Grass reseeding of FMNR site provides enough pasture for livestock. Photo: CARE Somalia

b) Scarification - increases the success of reseeding with suitable fast-colonizing grass species. Grass reseeding is encouraged to hasten restoration of pasture, which can then be cut and fed to livestock off-site or sold to other livestock keepers. Reseeding can use native grass species or other high-value and fast-growing pasture varieties such as Africa fox tail grass.

c) Soil erosion management - One of the main causes of denudation is erosion of soil by water manifesting as splash, sheet, rill and gully types (Thomas 1997). This process not only destroys remaining vegetation but also dampens efforts at natural revegetation by washing away seeds that are deposited on the bare land by dispersal agents. Undertaking some soil conservation work helps to accelerate restoration of the denuded field and is thus a good foundational practice for FMNR (Plate 7). The extent (and cost) of soil conservation work that is necessary depends on the level of degradation. It is therefore necessary to engage the local agricultural engineering technical staff to assess the area and provide guidance on which practices to undertake on the specific site. Annex 3 has a brief description of a few soil conservation approaches that can be applied to denuded lands.

Plate 7. Men digging terraces in a field marked for restoration. Photo: CARE Somalia

Module 2: The context of FMNR in Somali

2.1 Main land ownership categories in the Somali context

The Agricultural Land Law of 1975 abolished private ownership in the country and embarked on major conversions to leasehold from the state. The law vested all the land to the government and required cultivated land to be registered with the government before the occupant could obtain a 50-year leasehold. The fall of the central government, however, saw customary xeer law take centre stage in governing relations between clans.

Livestock production largely dominates the country's economy with crop production being practised along sections of the rivers. Livestock herds are moved according to seasons or availability of water and pasture. Water resources are scarce, but pastoralists have an economic interest in raising big herds, which means that clans and sub-clans often compete over the same resources with the potential for conflicts.

Aspects of land management and use are largely addressed with a focus on pastoral land use, which views rangelands as a collective clan asset. However, these clans allow other clans to graze on the land in times of need. Current land ownership arrangements prohibit building enclosures or permanent settlements on pastureland. A new formal legal framework on land has been created by developing hybrid institutions that blend aspects of customary and formal land tenure and has been well documented. This has created a means of transferring some land into private hands whereby private citizens can be granted ownership, especially for urban and agricultural land.

Within community-based tenure systems, access and rights to, and/or control over, land is most often dependent upon one's social identity. Land can be acquired by an individual clearing the land, inheritance, request from the village council, by purchase or by gift. Transactions do not entirely matter and are done between the parties involved, and may require approval by community/clan elders, especially if the land is being transferred to an outsider.

Landholdings have many of the characteristics of private property, and as a result, tenure security provided by communal recognition of land ownership has been high. Community-based tenure varies with land quality; oftentimes land suitable only for grazing is overseen by the clan, while land that is cultivated regularly for food production is controlled by individuals to whom use-rights have been allocated.

2.2 Production systems in the Somali context

About 46–56% of the Somali land area is permanent pasture, while 20% is classified as forest and 13% is suitable for cultivation. The remaining land is not economically exploitable (UN Habitat 2006). In the rain-fed agricultural areas in the central and southern parts of the country, local farmers continue to rely on customary land tenure. Community elders and clan leaders have the authority to allocate plots of land to individual households and households enjoy rights over land they have historically owned.

2.2.1. Crop production

Cropland is mainly rain-fed, with irrigation practised in some areas. Rain-fed production is characterized by low input and unreliable agricultural production and is mainly subsistent in nature, with farmers aiming to meet the needs of rural households. Such farming occurs throughout the country except in the coastal sandy plains and high limestone areas. The major crops grown in Somalia under rain-fed systems are sorghum, cowpea, and some limited maize.

Prior to the civil war in Somalia, it was estimated that about 200,000 ha of land were under irrigation. This was mostly along sections of both the Juba and Shebelle rivers. The irrigation occurs through gravity by sourcing water directly from the rivers to the farms or through a series of canal systems, i.e. primary, secondary or tertiary canals. This is mainly applicable along the Shebelle River, particularly at the lower end of the river catchment. An example of an irrigated

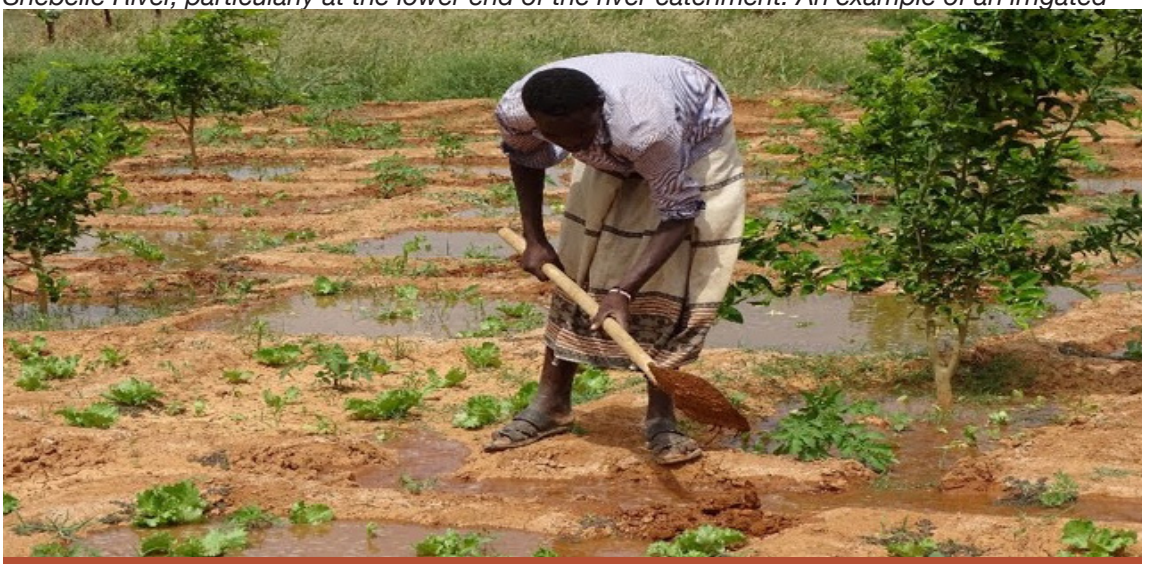


Plate 8. Irrigated farm in Puntland. Photo:Regreening Africa project

crop is shown in Plate 8.

2.2.2. Rangelands

Rangelands are areas classified as arid to semi-arid and are subject to frequent droughts, characterized by scarcity of rainfall. These areas are mainly used for livestock production. The areas are occupied by the nomadic pastoralists who move about in the rangelands in search of green pasture. The collection and export of tree resin products (frankincense and myrrh) from rangelands employs large numbers of people and is a major foreign exchange earner. This is especially true in the Bari and Sanaag regions, where gum-producing Commiphora and Boswellia trees are privately owned. Indigenous vegetation is still widely used by Somalis for a

Plate 9. Goats grazing in the rangelands (L); and rangeland resources (R).

variety of traditional medicines and other important local uses.

2.3 Somali land management context and FMNR

Based on the main land ownership categories and production systems in the Somali context described above, the land management context where FMNR practice can best fit in has been classified into two types. These are (i) croplands, and (ii) common grazing lands. The practice of FMNR in each of the two contexts is discussed in detail in the rest of this section. An outline of the kind of tree species that farmers and pastoralists find a priority to grow is first given to guide the selection of species to regenerate through FMNR in the two contexts. Although a tree species may be identified with one category of use, many species have more than a single role in meeting household needs and are therefore referred to as multi-purpose tree species. Three important categories of trees for farmers and pastoralists in the Somali context are outlined below.

2.3.1 Multi-purpose tree species for FMNR

1) *Fodder trees: Many tropical trees and shrubs are traditionally known and used for their fodder. It has been suggested that technologies based on permanent feed supply from fodder shrubs could transform pastoral production systems into settled agro-pastoral systems.*
2) *Fuelwood trees: Many woody species have been identified as fuelwood crops. The term 'fuelwood crops' refers to plants suitable for deliberate cultivation to provide fuelwood for cooking, heating and sometimes lighting.*

3) *Fruit trees:The indigenous farming systems of many developing countries often include several fruit- and nut-producing trees. These trees are well adapted to local conditions and are extremely important to the diet, and sometimes even the economy, of the people of the region, but they are seldom known outside their common places of cultivation.*

2.3.2. FMNR in croplands

Cropland is the area on a farm (whether on private or communal land) that is used to produce crops on a continuous basis and comprises both land under cultivation and fields usually left fallow for some time. Trees grown alongside crops have a major impact on crop performance, as trees can buffer climatic extremes that affect crop growth such as air and soil temperature, wind and solar radiation. Southern Somalia and some parts of Awdal and Sanaag in the northern regions of Somalia together with the Juba and Shabelle river systems constitute the major crop production zones. To optimize crop production, farmers usually remove trees from croplands, aiming to minimize competition between trees and crops for light, moisture and nutrients. Removal of trees, however, exposes the land to soil erosion by wind and water, as well as to a decline in fertility due to low soil organic matter, which in turn leads to a decline in land productivity.

Plate 10. Trees raised through both planting and natural regeneration in Somali cropland. Photos: Regreening Africa Project

Adoption of FMNR can reverse this condition by allowing a reasonable number of compatible trees and shrubs to regrow on the land and restore soil structure and fertility while reducing erosion and loss of soil moisture by evaporation. Trees are trimmed and small branches regularly pruned to provide fuelwood, poles and other products. FMNR also promotes more favourable growing conditions for crops by providing increased water infiltration and retention, reduction in wind speed, a reduction in local temperatures due to dispersed shading, and additional organic matter from leaf fall and litter, as compared with when trees are cut down. An example of crop land with trees raised through FMNR is shown in Plate 10.

The following are steps involved in the successful implementation of FMNR on cropland

Step 1. Encourage natural regeneration of trees on the farm

Unless continuous cutting back of stumps has happened for several decades during cultivation, a forest of living tree stumps and dormant seeds remain buried in cropland soils. Farmers can convert this resource into a community of new tree species as follows:

- *Fence off the farm (if not already well fenced) to minimize disturbance by external agents such as animals, thus allowing tree seedlings to germinate from the soil seed bank.*
- *Avoid burning of trash in the cropland, whether crop residue or other cut vegetation including pruned or cut trees.*
- *Avoid uprooting tree stumps and instead nurture all sprouting vegetation including shrubs and tree species – from both the seed bank in the soil and stumps – especially those with known uses.*
- *Carry out careful weeding to allow emerging tree seedlings to grow.*

Box 2. Characteristics of the tree and shrub species that can be good for croplands

- Relatively open canopy that minimizes shading of crops (this can also be managed through pruning and lopping).
- Crops around the tree normally look healthy and produce better yields than crops far away from the tree Most roots grow vertically and below the crop root zone.
- Is not allelopathic (it does not produce chemicals that inhibit growth of other plants near it).
- Grows well with food crops.
- Sheds leaves preferably towards the end of the dry season especially those whose leaves provide good mulch
- Re-sprouts faster upon pruning, coppicing and/or pollarding.
- Good at fixing nitrogen.
- Has leaves that can easily decompose.

Step 2. Carefully select tree and shrub species to retain in cropland

- *Walk across the farm, and identify and generate a list of all tree species that are regenerating on the farm (be extra observant not to dismiss as weeds, shoots of tree stumps that are cut very close to the ground and note that leaves of small shoots may look slightly different from leaves of the mature trees).*
- *Further refine the list by considering the compatibility of the species with crops and how the species are likely to affect farm work (e.g. thorniness), as shown in Table 1 (see also Box 2).*

Step 3. Tree management in croplands

- *Carry out enrichment planting if desirable species are not in the regenerating list.*
- *Undertake pruning, pollarding, etc. during dry season to reduce competition with crops.*
- *For trees that have horizontally spreading roots near the crop root zone (and for some reason have been retained), ensure root pruning.*
- *Maintain an average density of about 100 trees per hectare or more depending on average size of tree crowns.*

Table 1. Some indigenous tree and shrub species that can be established in croplands

Local name	*Scientific name*	*Characteristics in croplands*	*Current use in the area*	*Potential uses*	*Restrictions on use*	*Management action to reduce restriction*
Sunut (Garad)	*Acacia nilotica*	Grows in riverine areas, cultivated as a shade tree, tolerates seasonal flooding and withstands drought	Intercropping, honey, nitrogen fixation, shelterbelt, edible leaves and fruits	Making carts, boats, furniture, roof support. Twigs can be used as toothbrushes, soil erosion control or shelter	Paired thorns, sharp, straight, slender, directed slightly downward	Pruning lower branches that could restrict farm work
Yagcar	*Boswellia frereana*	Palatable leaves, highly valuable for its gum resin extracted from its bark. Small tree with peeling bark. Very sticky and aromatic Grows well with food crops. Crops beneath its canopy look healthy	Gum resin,fodder, intercroping and soil improvement	Fruit, honey, people shade, medicine, insecticide and tannins	Native habitat in the northern Somali mountains where rain falls in winter (January–February)	Use vegetative propagation for enrichment planting in non-native areas in Somali
Yagcar	*Faidherbia albida (Acacia albida)*	Palatable leaves, bark and seed pods. Grows well with food crops, good livestock shade	Nitrogen fixing, fodder, protective fencing, wood fuel and fibre	Edible leaves, edible boiled seeds, honey production, fuelwood	Thorny	Pruning lower branches that could restrict farm work
Galool	*Acacia bussei*	Nitrogen fixation, intercropping and soil improvement	Charcoal, honey production, fodder, poles, insecticide, edible leaves, fruits, edible gums	Bark is fibrous and used for making mats and ropes	Fairly small brown pods and paired thorns	Pruning lower branches that could restrict farm work

2.3.3 FMNR in the common grazing lands

This context deals with lands where interest in them goes beyond a single household and for which community governance structures are very instrumental in bringing them to sustainable management. Usually, these lands are used by the community for grazing and other livelihood benefits (including cultivation) without any management whatsoever. They suffer from what is referred to as the 'tragedy of the commons', which implies 'used by all but cared for by none'. As a result, they become degraded, bare and denuded and are then abandoned. However, they can be converted to a productive state by employing a combination of FMNR and soil management practices if they are managed through grassroots institutions (Plate 11).

The community needs to develop community (enforceable) by-laws to facilitate access and benefit-sharing modalities as incentive for management of lands within this context. Such benefits may include harvesting of pasture, honey, fuelwood, charcoal, gums and resins, medicinal and aromatic products, and other production opportunities such as cottage industries.

Plate 11: Management of trees under FMNR in common grazing fields in Puntland State. Photo Care / Somalia

The following stepwise guidance will help in maintaining successful FMNR practices in common grazing lands:

Step 1. Facilitate community governance to restrict access to the FMNR field at early phases of regeneration

- *Ensure a community co-ordination mechanism is in place and effective.*
- *Facilitate agreements on access and benefit sharing. This includes negotiations between the community and absent landowners and/or with government, depending on land ownership, before carrying out any activities on these sites. Agreements should be made with landowners, to avail the land for a specific period which can assure the practising community group of fair access to benefits.*
- *Facilitate preparation of by-laws and registration of same with authorities.*
- *Control access to the land by either physical or social fencing.*

Step 2. Encourage natural regeneration of trees in the field

- *Fence off the land (if it is too large such that physical fencing is not feasible, use social fencing) to minimize soil disturbance and to allow tree seedlings to germinate.*
- *Assess the land for any signs of erosion or denudation to determine if soil conservation structures are necessary and lay out the ones deemed necessary.*
- *Carry out careful clearing of thickets to allow emerging tree seedlings to grow.*
- *Nurture every type of vegetation springing up from the land, including grass, herbs, shrubs and tree species, especially those with known uses. A wide variety should however be managed to increase biodiversity, provide organic soil cover and improve soil productivity.*
- *Allow sprouts to grow from stumps.*
- *Conduct grass reseeding.*

Step 3. Carefully select tree and shrub species to retain in the common grazing field

- *Walk across the land, and identify and generate a list of all tree species that are regenerating in the farm.*
- *Use the selection criteria listed in Section 1.5.1 as an initial guide on the species to retain in the grazing fields.*
- *Rank the species you want to manage depending on the priority and the species utility, but ensure that you maintain a high diversity of species to capture ecological benefits.*
- *As far as possible, record the trees that were regenerated in the record book as indicated in Table 2. Such records can help the community link up with carbon benefits or other ecosystem-based reward schemes.*

Table 2. A guide for selecting tree and shrub species suitable for common lands

Local tree and shrub species available at the site		*Potential use (products and services)*	*Restriction on use*	*Remarks (manage or remove)*
Common name	Scientific name			
e.g. Badan (Borana)	*Balanites aegyptiaca*	Fodder (fruits and leaves), seed pods and fodder for livestock *Food:* edible fruits (fleshy pulp) and vegetables (leaves and young shoots), edible gum and vegetable oil *Wood fuel;* timber and furniture making Soil protection and conservation	None	Manage under FMNR Fast-growing trees and shrubs to recover depleted soil nutrients Hardy; tolerant of drought and neglect Easy to establish

Step 4. Tree management in common grazing lands

- *Carry out enrichment planting if desirable species are not on the regenerating list.*
- *Undertake pruning, pollarding, etc. during the dry season to improve the desired end products or carry out early harvest – at least the lower branches and thickets ought to be cleared to facilitate growth of good-quality grass underneath.*
- *Note that the average density can exceed 100 trees per hectare, depending on the proportion of large canopy species, use of undergrowth as pasture, etc.*
- *Undertake grass reseeding with good-quality grass and introduce other enterprises such as beehives on the trees to improve economic productivity of the land.*
- *Create micro-water catchment structures around the trees to sustain growth such as half-moon and micro-basin (Plate 12).*

Plate 12. Creating micro-water catchment structure under FMNR practice by communities in Marsabit, Kenya
Photo: CARE Somalia

Module 3: Community engagement for FMNR introduction

Once the context of FMNR has been identified and mapped, the next step is awareness creation or mobilization of the community to adopt FMNR. Adoption requires a holistic change of the community members' mind-set to view FMNR as a low-cost land restoration option that can transform their livelihoods. Mind-set change is a gradual process and, although it begins with a few communities' thought leaders, it can be frustrated by others' laxity. Therefore, community mobilization should carry every subgroup aboard, including the young, the elderly, women and men, as well as community leaders and children. Once on-board, the community only requires clear guidelines to implement and manage the change at their own pace, by learning, innovating and adapting.

Community mobilization for FMNR can be undertaken (through community and stakeholder meetings) combined with other approaches such as workshops, use of local radio stations, community theatre (in the form of drama and songs, which are powerful tools for mass awareness) in village centres or markets, schools, mosques, etc., and reaching out to and meeting community leaders to win their support (Plate 13).

The aim is to make sure that the community should, or is able to:

- *Understand the FMNR initiative, its goals and relevance to their challenges;*
- *Get to know what is required of them;*
- *Give insights for further capacity needs assessment and capacity building;*
- *Outline the laws and by-laws relevant to the initiative.*

Plate 13. Community engagement meetings, Photo: Regreening Africa Project

3.1. Community engagement actions

1) Hold preliminary community meetings to introduce FMNR concepts

The aim of these meetings is to introduce the FMNR concept and link it to the community's problem context. Communities usually understand their problems and constraints but tend to expect help and solutions from elsewhere. They therefore need to own their problems and understand that the solutions are within their reach and asset base.

2) Conduct community assessments to map priorities and identify leaders

During the community assessment survey[2] identify the leaders of the community who have the necessary influence to ensure FMNR take-off. Leaders are instrumental in identifying the most effective methods for reaching out to communities. The community leaders can help speak on behalf of the members and show the importance of community participation at the assembly meetings. The local leaders invited may include chiefs, clan elders and religious leaders, among others.

3) Convene a community co-ordination mechanism (CCM)

Community capacity-building activities such as long-term community development planning and FMNR project formulation and execution are led through and carried out by the community. Where there is an existing community convening mechanism such as village development committees (VDCs), they should be engaged to ensure FMNR is integrated in existing natural resources-based development plans. These community representatives will co-ordinate the initiative at the local level, follow up with the project team and represent the collective views of the community. Where a convening mechanism does not exist, encourage the community to nominate and choose their representatives through the most culturally acceptable method. The community can alternatively be encouraged to elect change agents who are then in FMNR and work with the community to accelerate uptake.

2 Community assessments can be light or intense depending on the resources at the disposal of the facilitating organization. The FMNR Global Manual prepared by World Vision has gone into detail about community assessment approaches and provides some tools for the exercise that can be adopted (Rinaudo et al. 2019).

The selection process for the community representation should ensure that vulnerable groups participate within the community co-ordination mechanism and have an active voice. The goal is to build a critical mass of community capacity to enable communities to take ownership and put them in the driver's seat.

The basic characteristics required of community representatives include:

- *Being accountable for the community's FMNR-based decisions and actions;*
- *Being knowledgeable about the community's socio-cultural practices but also appreciating that cultures change;*
- *Being able to mobilize local human resources, through locally adapted or traditional forms of access and management;*
- *Being better positioned to represent local interests and preferences in an FMNR context;*
- *Having been influential in mobilizing people and resources for collective gain.*

4) Facilitate the community leaders to prioritize and select quick impact projects (QIPs) to solidify support and galvanize local participation

It is important that within your initial community engagement meetings, the community is facilitated to select a project that can provide tangible benefits to the members in the short-term to complement the long-term benefits of FMNR that come from trees. Such a project can be honey production, grass production for pasture or for broom making for sale, or a rural financing activity, for example, table banking. Such projects are called quick impact projects (QIPs) and help build the enthusiasm at the project's start-up before the project can go on to undertake related projects such as the digging of terraces and traditional water reservoirs (berkerds) that have more tangible benefits.

QIPs allow several things to happen simultaneously from the outset. These include:

- *Build CCM members' confidence as community leaders and facilitators.*
- *Help to convince initially reluctant members.*
- *Enable the FMNR project team to evaluate CCM capacity and begin to identify training needs.*

5) Hold a general community meeting for consensus

Present the results of the initial community assessment and the proposed QIPs during the community assembly meeting so that members can agree and rank community priorities. Allow community members to add additional priorities and to discuss and reprioritize amongst themselves. Thereafter facilitate the community to select (by the most culturally acceptable method) the first activity that sets the stage towards achieving the prioritized community objective.

It is important to get the community's trust and excitement during your first meetings. To build agreement and trust with the community you need to do the following:

- *Be inclusive of everyone, regardless of their role, gender and age.*
- *Respect and encourage thoughtful debate on issues concerning the community.*
- *Discuss every person's concerns and together find solutions that help everyone. There is nearly always a locally appropriate solution. Give people the opportunity to suggest it.*
- *Always start with the assumption that each person has positive intentions and respond to misunderstandings and mistakes gently.*
- *Whenever possible, invite people who are already practising FMNR to share their experiences and knowledge with your community.*
- *Listen and learn. By listening you will develop the knowledge necessary to support the community to introduce FMNR. Listening will help you become aware of threats to success. Ask questions with genuine curiosity.*
- *Exhibit humility and vulnerability, and admit when you do not know the answers. Share what you know and what you do not know. Acknowledge that everyone knows something unique and useful about the community.*
- *Talk about values. Do not lecture or preach, just share your values, listen to others, and walk your talk. And when you make suggestions, connect them to shared values.*
- *Make sure everyone knows that they can try FMNR in their own way, on as much or as little land as they are comfortable using.*
- *Interact as much as possible with farmers who will attend the meeting to gain a sense of trust and to take ownership of FMNR practice.*
- *Keep your word. If you promise things you cannot do, people might like you, but they will not trust you.*

3.2. Principles of community engagement

Community engagement is a very critical step as it affects the community's wish to 'accept" or 'decline' FMNR. To enable community participation and their embrace of the FMNR, prioritize as follows:

1) Encouraging community involvement – Ensure that all community groups with interest in land use are involved when making decisions on restoration approaches. Having interested stakeholders from all backgrounds enables sharing of their experience and collaboration to conserve the environment, thereby improving the chances that the FMNR initiative being successful. These stakeholders include:

- *Women and men, the elderly and the youth, children, people with disabilities, those who may not directly work on the land, and any minority groups in the community;*
- *Other important stakeholders such as herders, community leadership (clan elders, local administration, religious leaders, political leadership and technical staff in various sectors), among many other interest groups;*
- *Local leaders, from the village to the local council level;*
- *Educational and religious institutions.*

2) Building community agreement and ownership – This is necessary for the following reasons:

- *Land users need to broadly agree on how to manage the regenerating land and trees.*
- *Members need to agree on necessary changes in practices, such as fencing off some areas and moving from free grazing to cut (grass)-and-carry approaches.*

3) Involving the community in project activities – Some examples follow:

- *Encourage members to collect data (using simplified tools or training of local youth to undertake more complicated tasks) and provide feedback on performance.*
- *Form a local management institution (such as a project management committee) with good demographic representation (gender, vulnerable groups, etc.).*
- *Encourage use of community assets as much as possible.*

4) Building relationships and trust – Reasons why this is important:

- *Trust is the expectation that arises within a community of regular, honest and co-operative behaviour, based on commonly shared norms, on the part of other members of that community as well as outsiders.*
- *Practices such as FMNR that do not give quick rewards and require action beyond individual land holdings can best succeed when community members trust each other and are united to realize their shared goals.*
- *The community should also not be given a reason not to trust project interlocutors.*

3.3 Ingredients of success in community engagement

1) Community visioning

For the community to feel part of the project, ensure that they give their insights at every stage of the project and that their inputs are incorporated into the project. You can employ shared community visioning (Box 3) and action planning, principled by:

- *The community coming up with a vision of how they would like their land or livelihoods to look in future because of adopting FMNR;*
- *The vision being in the form of a short vision statement (e.g. reversed land degradation and sustained increase in pasture production and water availability), or even being visualized as a drawing or a map of their area, showing how they would like their landscape to look in the future.*[3]

3 The FMNR Primer for Kenya (Wanjira et al. 2020) has gone into more detail about community visioning, while the FMNR Global Manual has a detailed procedure on evaluating the situation with the community that can help the project officer develop this skill (Rinaudo et al. 2019).

Box 3. Some tips on visioning

- *Identify the group to be involved in visioning depending on the problem of interest and include all important stakeholders.*
- *Ask participants to express what they want to see in the future regarding their village, local environment or lives.*
- *Give them time to reflect on this vision and to discuss it among themselves.*
- *Facilitate them to use key words or indicators that are clearly understood by all, to explicitly describe the current situation and the required change for the desirable future.*
- *Guide them to identify possible hindrances to, and opportunities for, attaining the desirable future.*
- *Ask them to imagine how the vision can be brought about, what will need to change and what implications of the change might be, e.g. to restore degraded pasturelands, some fields might need to be closed, and livestock might require to be stall-fed, which might imply reducing stock numbers, among others.*
- *Facilitate them to begin identifying and planning their actions and how they may monitor and learn from the outcomes of these actions, based on the reflections and discussions in bullet points 2 to 6 above.*

(Adapted from: Vanclay et al. 2006)

2) Project implementation skills that enhance community participation

To succeed in implementing FMNR, community participation is key. The community must be made to feel they have liberty in determining what they want, including training sessions that should be in line with their needs and priorities.

Perhaps there may be no perceived need to plant trees where people are only herders. In this case, enrichment planting may not be a priority and the project team may have to delay introducing the concepts despite the anticipated excitement of seeing tree nurseries and trees planted in a project area.

3) Team and community reflections

Community reflections are necessary to test the success of an FMNR initiative and to adapt implementation approaches for enhanced success. The community reflections on FMNR should be as participatory as possible involving all target community groups involved in the FMNR interventions. This manual does not provide best fit approach to community reflections but suggests a few questions which are important and the community can reflect on. These include:

- *What did the community expect to happen?*
- *What occurred?*
- *What went well and why?*
- *What can be improved and how?*

4) Community by-laws

By-laws are rules or laws established by a community or group of people, for self-regulation. Different communities have different by-laws binding their land use practices; for example, by-laws for herders and crop farmers are different.

By-laws are essential for the success of FMNR since the practices involve actions by everyone, such as in making soil conservation structures, and sometimes restraint, or when the FMNR field is enclosed and cannot be accessed for grazing. By-laws need to be formulated by the community for the success and sustainability of the FMNR initiative because they prescribe penalties. The process of making by-laws should build on the findings of the community capacity needs assessment.

The most effective by-laws should be:

- *Developed through community-wide consultation, so that everyone who uses the land understands how the changes required for FMNR implementation will affect them;*
- *Updated occasionally, by community members to reflect prevailing context and needs;*
- *Connected to the cultural structures such as the xeer system.*

Plate 13. Reflection meeting for community groups. Photo: Regreening Africa Project

Module 4: Scaling up FMNR with communities

Scaling up means [deliberate efforts to increase the impact of interventions successfully tested in pilot or small projects so as to benefit more people and to foster policy and program development on a lasting basis] Scaling in the context of this manual implies the plan that project officers adopt to ensure that more farmers or land users are reached and benefit from adopting FMNR.

Honouring local wisdom is key to the success of FMNR, as farmers can play a central role in experimenting, innovating, communicating potential benefits and advocating behaviour change. Winning the support of opinion leaders and authorities is important in tackling farmers' initial resistance.

This module gives a list of options that can be implemented in scaling up, but usually none of them is singly successful. Project officers will select the bouquet that best suits their context. It is important to note that use of these approaches follows the initial community engagement efforts outlined in Module 3. Scaling-up approaches as outlined in this module assume that the targeted beneficiaries live in a similar context and are thus able to learn easily from the pilots that may have been successfully implemented or introduced.

4.1 Strengthening existing (or putting in place) farmer organizations for FMNR promotion

Communities are usually organized in various groups and associations of various levels, ranging from small informal groups to bigger umbrella organizations. Of primary importance to FMNR scaling are the grass roots community organizations that attract members at the local community or village level. Such groups are very common in Somali community and have been a useful vehicle for delivery of most community development initiatives.

Some of the common organizations that are useful vehicles for promoting FMNR among the communities include:

- *Agricultural associations (village-level associations)*
- *Agricultural committees (regional-level committees)*
- *Agricultural co-operatives (state-level co-operatives)*
- *District pastoral committees*
- *Natural resource management committees*
- *FMNR champions*
- *Community women's organizations (village, district, regional and state level)*
- *Environmental committees (village, district, regional and state level)*
- *Savings groups (referred to by different terminologies such as village savings and loan associations (VSLAs); savings for transformations (S4Ts); savings and internal lending communities (SILCs), etc., depending on the development support agencies involved)*
- *Common interest groups (CIPs) established for natural resource management, tree nursery establishment, etc.*
- *Any other groups existing for the purposes of mutual support and collective action with an interest in FMNR.*

In rare cases where the target community may have no existing groups that can participate in taking up FMNR, the FMNR facilitator can work with the community members to organize groups based on community needs and visions, as discussed in Module 3.

The following six steps may be considered as the key entry point for scaling FMNR with community groups:

- *Identify the existing community groups or organizations.*
- *Discuss with the group to understand their goals, visions, current activities, the assets that they possess and the constraints that bar them from reaching their goals.*
- *Introduce the FMNR approach to the group.*
- *Jointly identify areas where the FMNR approach can help achieve the group's goals and visions.*
- *Support the group to develop an action plan that includes FMNR as an empowerment approach.*
- *Build capacity of the community on FMNR to increase skills, practitioners reach and accelerate uptake.*

4.2 Use of FMNR change agents (champions/lead practitioners)

FMNR change agents are women and men who have adopted and are successfully practising FMNR. They are passionate advocates for the practice in their communities. While many farmers may successfully adopt practices such as FMNR, local change agents are distinguished in their passion to:

- *Share their knowledge and experience*
- *Teach others how to practise FMNR and obtain related benefits*
- *Encourage and advise other land users*
- *Help monitor the practice and troubleshoot problems by facilitating collaborative learning*
- *Work with their communities to resolve conflicts, create by-laws, and advocate with leaders and government to change policies to gain better support of FMNR.*

Potential FMNR champions are easy to spot during early community engagement events, but development facilitators should work with community groups to select the champions to work with and avoid the risk of elite capture (Plate 15). It is also important to diversify the number of lead practitioners in a group so that a kind of specialization can be enhanced while strengthening leadership capacity at large in the community.

For example, in a single community group, there can be an FMNR lead practitioner, enterprise development leader, leader on tree nursery practices, a fruit grafting specialist, a water terrace mapping specialist, etc. To ensure a good gender and youth mix, more than one lead practitioner (preferably a man and a woman) may be selected for each skill targeted. Annex 4 provides additional information on characteristics to look out for when identifying FMNR change agents, lead farmers or FMNR champions.

FMNR champions are usually motivated by access to more benefits from the practice they promote and from offering specialized services that the practice may yield. Taking them through a specialized training course such as 'train the trainer' or 'facilitation' is useful, especially when they actively engage in the FMNR rollout.

In providing such training, specialized skills on good agronomic practices (GAP) and financing approaches such as village saving, and loaning associations (VSLAs) can be imparted to enable them to become key community resource persons. Ideally, FMNR change agents should not be paid for their work because that is likely to negatively impact community cohesion, but they should be reimbursed any costs they may incur while sensitizing and training community members.

Plate 15. Community engagement with community members in Somaliland. Photo/Abdihakin Mahamud

4.3 Training extension workers from government or development organizations interested in FMNR

Many extension staff have been in agriculture, forestry and other natural resources management disciplines, but have experienced challenges in the field. They are therefore likely to be looking for novel solutions and would be attracted to FMNR once they understand the approach.

It is therefore important to train (retool) all interested staff by offering extension services from related national and local government departments as well as civil society organizations. Workshops and seminars may be sufficient for retooling local extension staff, but where resources allow, exchange visits can lead to great transformation.

The extension workers can become excellent FMNR change agents if they are passionate and dedicated to going beyond the call of duty in training and supporting communities to practise FMNR. Where they reside and own land within the community, encourage extension staff to set aside fields for their own FMNR practice. This will increase momentum in FMNR scaling, both at farm and community levels.

4.4 Setting up FMNR demonstration/model sites and innovation hubs

An FMNR demonstration site (also commonly known as a model site) is a field that shows the aspiration of the community about the positive change they desire. It displays sound management of FMNR in terms of appropriate tree density, right tree diversity, sound FMNR practices (such as pruning, coppice management – especially for stump regrowth, enrichment planting where necessary, etc.) and below-canopy vegetation (grass, annual crops, etc.) performance. It is a site where community members can come and learn about FMNR and replicate the same on their own land.

The best results are achieved when the community learning site is established by a farmer group with facilitation by project officers, for proper management. Setting up model sites at the lowest community level (village) and entrusting them to the local community co-ordination mechanism in the target areas will accelerate skills development and knowledge sharing among community members, with the least travel costs and ensuring ownership of the entire project. The management of the site, as well as sharing of the benefits from the site, should be agreed upon before commencement of activities. Box 4 provides some guidelines on establishing model sites and innovation hubs.

Box 4. Some guidelines in establishing model sites and innovation hubs

- *Conduct feasibility study. Diagnose the information and training needs of the community.*
- *Raise awareness amongst farmers and identify 'champions' for promoting FMNR, i.e. utilize organizations already involved in some farmer training and agricultural extension activities.*
- *Train lead agents on technical aspects of FMNR and on adult learning and communication.*
- *Create demonstration plots and a training approach based on identified needs – you may include a tree nursery where enrichment planting is necessary.*
- *Organize demonstrations, training, field visits, etc., for interested farmer groups; and update and refine extension knowledge to remain relevant.*
- *Establish links and partnerships with other institutions to increase the scope of the intervention.*

4.5 Organizing exchange visits/study tours for community members to learn about FMNR

The main barrier to adoption of FMNR is that mindsets are fixed on tree planting as the main approach to tree establishment. This is also confounded by a sense of inferiority of local tree species that are more likely to be established through FMNR. These mindsets become a 'box' that needs to be dealt with for a new community vision that appreciates the value of FMNR. One way to deal with this 'box' is to conduct study tours so that participants can interact with the vision of FMNR. Community members are keen and more likely to believe their peers. Study tours are one of the most important components of a scale-up strategy and can happen in the same community, area, or country or in a different geographical area. These tours are also called exchange visits when a return trip is conducted by the group earlier visited such that both groups visit each other.

Tours allow the visiting group and their hosts to forge friendships and to understand the FMNR concept and its benefits as experienced by the hosts, while the visitors can query the approach as well as share their experiences in land management; this allows them to see how FMNR will fit in their context and to make commitments. The visitors can perceive real benefits as well as become more aware of their own skills and capacities, which contributes to attitude change and ultimately adoption. Practical demonstrations make it easier to understand the concept and stimulate action. Box 4 gives some guidelines to observe when organizing study tours.

Box 5. Some guidelines on organizing exchange visits

Before the visit

- *Plan to visit a location that reveals a true picture of the envisioned change as well as the pathway to the change (challenges and how they were tackled). Consult from your networks within the project or beyond your community of practice to identify the most appropriate place to visit. Remember that remote areas could reveal a better picture (including challenges of access) than very accessible sites.*
- *Consider seasonal calendars of both sites (visitors and hosts) to avoid visiting when agricultural labour pressure is intense or nomadic movement disrupts the intended picture. Keep in mind that dry seasons may be convenient but may not reveal much of the necessary picture. Consider this early so that it is factored into budgets to ensure timely release of finances.*
- *Select a visiting team that represents all community subgroups (men, women, youth, extension staff, minority groups, community leaders, etc.) who have a stake in FMNR uptake. The team should be homogeneous enough to share community concerns but heterogeneous enough to capture different perspectives from the visit.*
- *Involve the community group that will undertake the visit in defining the visit objectives to create ownership. This may depend on their earlier experience with FMNR, or the success of the sensitization events already conducted.*
- *Keep expectations relatively low and emphasize dialogue between the visitors and hosts to promote the trust that enhances practical learning from experience.*
- *Work out a plan to report back by the travelling team to the community members who will not travel because this creates an incentive for paying attention and making a deeper analysis of issues – encourage use of pictures, and carrying of sample seedlings (this would be difficult in cross-country visits because of phytosanitary procedures), posters, artefacts, etc. These also help in preparing for the return visit by the community they are visiting should it be considered desirable.*

During the visit

- *Use a facilitator who has the attitude of a resource person rather than an instructor to facilitate interactions and mutual learnings.*
- *Do not just demonstrate physical facilities such as tree nurseries and demonstration plots but also social institutions and incentives that enhance success, such as survival of trees (community by-laws, social fencing, watering schedules, etc.).*
- *As much as possible, organize for learning-by-doing sessions – pruning of trees, planting of seedlings, selecting trees to remove or keep from the identified FMNR plot, etc., to deepen learning.*
- *Planned visit sites (different stops) should be close enough to avoid spending a lot of time travelling between sites. Always keep in mind that 'less is more' – it is better to see fewer sites and explore in-depth the interventions found there than to visit many sites that are only shallowly explored.*

> ***Abraham Lincoln said that "a child is a person who is going to carry on what you have started….He/she will assume control of your cities, states, and nations. He/she is going to take over your places of worship, schools, universities, and corporations. ……..The fate of humanity is in his/her hands (Lincoln, n.d)".***

4.6 Scaling up FMNR with schools

Schools can play an important role in influencing FMNR uptake by communities if exposed to the practice. Working with schools is beneficial to FMNR uptake for the following reasons:

- *Children exposed to benefits of FMNR take the knowledge and skills into adulthood where many will be in positions of influence.*
- *Children are also powerful advocates of FMNR to parents and adults in general; hence, school projects on FMNR can help shape the whole community.*
- *Children will grow to be additional practitioners of FMNR.*
- *Environment clubs or FMNR lessons can increase opportunities for children and youth to learn, and to use their knowledge to improve their lives.*
- *Schools may have open space available that can benefit from FMNR and related projects and can provide space for community discussions or even act as FMNR demonstration sites. This is most applicable to schools in the rural areas where FMNR is most needed. Schools in major towns may have no space for FMNR demonstration sites, but knowledge transfer and attitude change are also important.*

4.7 Lobbying and advocacy for a favourable environment for FMNR scaling

Government policies and institutional arrangements at various levels can act as incentives or disincentives to FMNR adoption depending on the effect they have on a community's access to FMNR benefits. FMNR adoption is facilitated by, among others, government policies that:

- *Give land managers ownership or user rights to natural resources including land and trees;*
- *Allow for organizational structures such as co-operatives and development groups to exist and self-regulate with a defined set of by-laws created and agreed on by all stakeholders;*
- *Facilitate community participation in value chains of their choice by creating financing options that are friendly to rural communities as well as developing accessible infrastructure to address challenges of product collection/delivery in remote areas;*
- *Empower the community leadership to enforce by-laws that have been developed consultatively.*

Favourable policies are important whether FMNR is practised in private or on community or public lands, but these contexts are impacted differently by government instruments. During the community engagement events, project officers should review and identify policies that are likely to impede FMNR adoption and empower the community to advocate for change.

Creation of enabling environments includes advocating for integration of FMNR in government's plans, programmes, strategies and budgets to ensure the continuity of the practice beyond the project's life cycle. In areas where the right policies exist but community members do not know their rights, awareness creation needs to be done by project officers. It is also essential to deposit the by-laws created by the community with those local government departments (local councils or regions) in charge of social service.

4.8 Facilitating formation of FMNR networks

As adoption of FMNR increases and institutions take shape, it will be important to create networks that provide support for addressing any bottlenecks to further adoption and that also serve as platforms for sharing lessons and learning from each other. The networks could comprise different producer groups or community groups including those dealing with specific FMNR-based enterprises or value chains. Their existence, strength and robustness will play a significant role in increasing the gains of FMNR at the community level and beyond. Such networks contribute significantly to the promotion of FMNR as well as to policy and regulatory reforms, among other roles.

4.9 Strengthening and promoting FMNR-based value chains or enterprises

The majority of households in rural areas, especially those in dry areas, struggle to make ends meet and often get involved in practices that accelerate land degradation when the benefits of conserving the environment are not very perceivable. To attract more community members to adopt FMNR and to sustain the practice for generations, an important early step is to identify and prioritize potential value chains for development. People will be more willing to invest in FMNR if they know that they will earn a good income from it.

4.10 Providing adequate follow-ups and encouraging co-learning at the community level

FMNR promotion may likely encounter numerous challenges, both in its practice in croplands and rangelands and when implemented by individual farmers, herders/pastoralists or community groups. It may take time for community members to embrace the practice, especially before actual benefits of FMNR are evident in their landscape even though such benefits as pasture regeneration can be experienced after a relatively short time. However, the practice may also face resistance if some pasturelands need to be closed. Therefore, adequate follow-up on adoption and the encouragement of farmer and pastoralist co-learning groups is important during the formative stages of uptake. Follow-up sessions provide opportunities to clarify concepts and approaches, to streamline the process of adoption and to encourage lead champions.

Sharing feedback and learning may create excitement as results are observed and fears allayed (such as those on negative effects of trees on crops). As community members share these experiences (including what works well, what does not, enabling factors for success, key 'brags' or some outstanding issues they are especially proud of, etc.), more community members may become interested and want to try FMNR.

Module 5: FMNR stakeholder mapping and analysis

A stakeholder in an FMNR promotion initiative is an individual who, or an interest group or organization that may affect, be affected by, or perceived to be affected by a decision, activity or outcome related to FMNR activities. Stakeholders are critical to the success or failure of an initiative and influence decisions such as where and when to plant trees and which species and should always be prioritized to avoid inflaming conflicts when implementing FMNR activities. Stakeholder analysis is therefore a critical part in implementation and management of an FMNR initiative as it will help to identify stakeholders' potential roles in, relationships within, and power and influence over FMNR activities.

The importance of a stakeholder is understood in terms of their role in achieving anticipated results. Their influence is judged in terms of the power they can exert over tree planting/ regeneration processes and outcomes. The two types of stakeholders are as follows:

- *Primary stakeholders – People or groups that will be directly impacted by the FMNR project. They can either be positively or negatively impacted.*
- *Secondary stakeholders – All other entities that have an interest in the proposed project and are also somehow impacted by the project.*

Authorities and opinion leaders such as chiefs, traditional land custodians and religious leaders are important stakeholders, and it is important to win their support. Other stakeholders in FMNR include individual farmers, farmer groups and associations, development partners, civil society organizations (CSOs), government institutions/extension officers and NGOs, among others. The government institutions, FMNR practitioners, CSOs and NGOs will provide inputs of various kinds, and train, guide and mobilize farmers during FMNR activities. Some stakeholders have higher degrees of power and can decide the course of action and approve or reject decisions on the project activities. There is another set of stakeholders who can help provide expert opinions in the FMNR project implementation process.

Also a few other stakeholders are interested in knowing the progress of FMNR work, as the project may be directly impacting their own projects, such as where there is leveraging between project activities. FMNR agents therefore need to know how to engage with different types of stakeholders and this engagement is best planned following a stakeholder analysis.

Stakeholder analysis

Below are the processes of stakeholder mapping and analysis.

1) Begin with a brainstorming session, stakeholder mapping and prioritization for FMNR scaling with your project team

In a team, brainstorm and list all the people who may be affected by the project once implementation is underway. The best techniques for gathering information are workshops, focus group discussions and one-on-one interviews. The following are basic questions to guide FMNR agents and facilitators to successfully conduct stakeholder mapping and analysis.

- *Who are the stakeholders who have most influence on your initiative?*
- *Which stakeholders will be the most affected by your initiative?*
- *How should you handle important people who are not considered as stakeholders in the initiative?*
- *Who controls the resources?*
- *What are the top motivations and interests of your stakeholders?*

Box 6 provides key points that should be considered when conducting a participatory stakeholder analysis for an FMNR initiative.

Box 6. Key points to consider when conducting a participatory stakeholder analysis for an FMNR initiative

- *Ask the FMNR participants to identify the stakeholders in the community who manage or use trees and land resources.*
- *Encourage them to think of different groups: small and large farmers, livestock owners, landless people, the less privileged and so on.*
- *Ask the FMNR participants to list the key characteristics of each group, and how they use land and trees, such as for wood and grazing.*
- *Invite the FMNR participants to think of people or organizations that influence trees and land in some other way, for example, absentee landowners, and government organizations that must give approval for major changes.*
- *Ask the FMNR participants to think of other people who are affected by land and trees. Examples include women and youth, people living with disabilities, traders, etc.*
- *Ask the FMNR participants to think of the characteristics of such people and how they interact with, use, depend on and influence the land and trees in question.*
- *Ask the FMNR participants how each stakeholder they have named influences land and trees and management improvements. For example, a local authority has influence because it can determine how the land may be used.*

Adapted from CRS and MEAS.2015

Suggested questions to stimulate discussion on participatory stakeholder analysis include:

i) *Who owns the land? Who manages it? Who grows crops on the land? Who grazes their livestock or collects wood?*
ii) *What is the land tenure system in this area? How does land change hands? Where do the landowners or caretakers live? Do men and women manage different areas of land? Are there any significant land use change patterns?*
iii) *Is the land shared by more than one village? Is there any conflict over ownership or sharing? Do the affected households have access to alternative lands for agriculture or for grazing?*
iv) *What local or national regulations affect the use of the land, water and trees in this area?*
v) *Which organizations are involved? What are the existing relevant laws and by-laws, or policies? (For example, are there by-laws against cutting trees? Does the government provide subsidies?) Are the local regulations being enforced or ignored? How, and by whom?*
vi) *What other organizations or projects are active in the area?*
vii) *Are farmers organized in any type of local group? What types of groups (watershed committee, savings and internal lending group, farmers' co-operative, etc.)? What are their main strengths and weaknesses?*

During this step, it is important to begin thinking about how each stakeholder is important to the FMNR initiative and to record this information on a sheet as shown in Table 3. Next to each stakeholder, make a note of the interest and level of influence of the stakeholder (i.e. high, medium or low) and the proposed strategy for engaging the stakeholder in the initiative. Once you have identified the larger pool of stakeholders, now it is time to get out into the community and consult directly with as many stakeholders as possible – both primary and secondary stakeholders.

Table 3. Stakeholder identification and mapping in FMNR project

S/No.	*Stakeholder*	*Location*	*Level of interest in FMNR initiative (high/low)*	*Level of power/ influence in FMNR initiative (high/low)*	*Engagement strategy in the FMNR initiative*
	Example: *Government environment department*	*Regional headquarters*	*High*	*High*	• *Joint working groups* • *Meetings and workshops* • *Brainstorming sessions*

2) Develop a strategy for engaging different stakeholders

It is important to know how to present the FMNR projects' related information to the stakeholders and how to maintain a relationship with them. Identify how to make each contact, what message you will communicate and how you will follow-up. Mapping stakeholder's information needs is a good way of making stakeholders recognize the value of being involved in the FMNR initiative and the value of other groups represented.

Once many information needs have been collected, they need to be prioritized. It is important to ensure that most information needs of each stakeholder are met. This is likely to improve confidence and trust by stakeholders of the project, which will eventually have a positive effect at the community level. Prioritization of information needs for each stakeholder identified for the FMNR initiative can be done through participatory ranking following a checklist such as the one shown in Box 7.

Box 7. Prioritization of stakeholder information needs

- *Who are the different stakeholders that can add value to the FMNR project in the area?*
- *What kinds of information would they need?*
- *How can different information needs be co-ordinated?*
- *What information is already being collected?*
- *How can we build on this?*
- *Does the final list of information needs include those of the least powerful groups?*
- *Which information needs relate to FMNR project outcomes?*
- *Which information needs relate to tracking different contexts where FMNR has been adopted?*

Adapted from PMERL Manual by CARE International (CARE International, 2014)

Collate and prioritize information needs by noting when and how each stakeholder should be involved in the initiative using the stakeholder participation matrix outlined in Table 4. Next to each stakeholder name, indicate if the participation should be in regular meetings with community groups, during budgeting/implementation/monitoring or in connection with other implementation roles.

Table 4. Summary of a stakeholder participation matrix

Type of participation/stage in FMNR	*Inform*	*Consult*	*Actively involve*	*In charge*
Budgeting				
Planning				
Implementation				
Monitoring and evaluation				

The different levels of stakeholder involvement in FMNR initiatives outlined in Table 4 are elucidated as follows:

- *Informed: The stakeholder is kept abreast of activities through occasional visits, phone calls, copies of reports, etc.*
- *Consulted: The stakeholder is more actively solicited for input (e.g. information, knowledge and decisions) but is not directly involved.*
- *Actively involved: The stakeholder has a strong voice in decision-making and works in partnership with the farmer groups.*
- *In charge: The stakeholder is responsible for managing part of the process and/or performance of the farmer groups.*

Module 6: Gender inclusion in FMNR promotion

In Modules 3 and 4, much emphasis is placed on ensuring all community subgroups are engaged during FMNR promotion. Creating and sustaining competitive and equitable FMNR that helps smallholder farmers, especially women, will require a clear examination of gender issues and integration of relevant gender components into FMNR and development strategies. When FMNR programmes are designed with gender-equitable principles, they can foster both competitiveness and gender equity goals and enhance poverty reduction. Ensuring that both men and women can participate equally in, and benefit from, FMNR is fundamental to programme success.

Across countries and over time, studies show correlations between gender equality and economic growth, where gender inequalities are seen to affect competitiveness by restraining productivity, growth and output and thereby indirectly hindering project performance. In Africa, women are often disadvantaged by conservative social norms and denied the entitlements or rights that the society theoretically provides.

In the Somali context, the social norms in most areas have some negative effects on women's socio-economic position and gender relations regarding resource ownership and control. Socio-cultural norms and practices of different communities/clans in the Somali context confer men and women with differential rights over land (private land, forest land, rangelands and trees). For example, in some communities, women do not make significant decisions on land use.

Even where women have minimal rights to tree use, their access to some tree products may not be ensured. For example, they may only collect firewood but cannot fell the tree for sale or other use. In some communities, women cannot even extract medicinal products from some tree species. This is because the minimal rights conferred to them do not imply ownership and control of trees and different tree products. Therefore, it is necessary to explore a little more the actions that project officers can undertake to win on gender inclusion in FMNR.

6.1 Characteristics of gender-equitable and competitive FMNR promotion

To effectively ensure gender-equitable and competitive FMNR promotion in the community, there is need to do as follows:

a) Understand men's and women's roles and relationships in FMNR

Men and women have different roles and responsibilities in relation to natural resource management and utilization. Therefore, FMNR promoters need to understand how men and women participate as natural resource managers and use this information in the design and implementation of their programme activities.

b) Foster equitable participation in FMNR activities

To ensure equitable participation in FMNR activities in the community, there is a need to create the conditions necessary to involve both men and women in associations and groups, and participation in training and in public–private dialogues on FMNR activities.

c) Address the needs of women in FMNR

Like in all other value chains, women are actively involved in FMNR programmes as unpaid household workers, wageworkers, entrepreneurs, and leaders. The constraints facing them may differ from those faced by men. Therefore, gender equitable FMNR promoters need to recognize these differences and design activities that meet the needs of both men and women.

d) Support women's economic advancement in FMNR

Gender-equitable FMNR promoters need to consider how to empower women as lead champions in FMNR activities, i.e. by setting an example for other women, and by contributing to upgrading and leading systemic change in natural resource management and utilization through FMNR. As stated in Module 4, there should be change agents for different skillsets needed to promote FMNR in a single community group. For example, there can be an FMNR lead practitioner, enterprise development leader, leader on tree nursery practices, a fruit grafting specialist, a water terrace specialist, etc. A first intervention therefore is to ensure a gender and youth mix in the selection of change agents such as by ensuring that more than one lead practitioner (preferably a man and a woman) is selected for each skill targeted.

e) Promote gender-equitable FMNR-driven solutions

The community, local leadership and private sector entities can be a catalyst in promoting gender-equality goals when they understand the FMNR potential for doing so. Gender-equitable FMNR promoters facilitate an understanding of how to address gender issues in FMNR activities and support the development of solutions that create equal opportunities for men and women in natural resource management, conservation and use.

f) Design equitable benefit-sharing mechanisms in FMNR

FMNR promoters should consider men's and women's participation in FMNR activities and how they will benefit from their participation. There is need for an understanding of the gender issues in benefit-sharing mechanisms related to the distribution of returns, earnings and non-monetary gains, and ensuring that men and women are adequately rewarded for their contributions to and participation in the FMNR activities.

g) Include men in defining the 'gender problem' and the solution in FMNR activities

FMNR promoters should include both men and women in identifying the gender issues that constrain their abilities to improve productivity and increase their returns. FMNR programmes can bring both men and women to the table to clarify their roles in undertaking the FMNR activities, i.e. to define the governance criteria in FMNR programme activities.

6.2. Starting point for gender inclusion in FMNR

Gender aspects need to be included in FMNR planning, at demonstration sites as well as in the project's capacity development, implementation and knowledge exchange activities. Having a facilitator who has a prior experience in gender mainstreaming in the project (or at least is available for consultation on a needs basis) is advantageous because it helps to ensure that budgetary allocations for addressing gender issues can be kept at reasonable levels.

The following tips can be considered for gender inclusion.

1) Create a list of the tree-based strategic and practical needs for men and women, both those directly involved in the FMNR initiative and those in the surrounding communities. The questions below can be adopted as a checklist to help collate the gender issues in the community to ensure that both men and women benefit equitably from the initiative.

- *What tree products are of critical need for women and men? Do women collect tree products that are important to them (nuts, fruit, firewood, grass) from the land that is to be set aside for FMNR, and will they lose access to it?*
- *Do women and men rely on this land as an important foraging area for their animals?*
- *Will women and men have to spend more time on fodder collection for stall-feeding or on grazing their livestock at more distant locations for some time? Which locations are these?*
- *Do women and men differ on species to be established on the community land, e.g. through enrichment planting?*
- *Are women likely to be the main labourers in FMNR? If yes, what tools are comfortable and efficient to use by women and/or men?*
- *What is women's time availability like on a daily and seasonal basis? Does tree management conflict with women's time requirements for other essential activities?*
- *Do women or men express strong interest in first obtaining other critical services/ facilities (e.g. drinking water) before providing their labour or otherwise co-operating in FMNR operations?*

2) Consider whether all men and all women can be considered as a group, or whether you need to divide them into subgroups (this will be the case if you determine that some subgroups have different needs and aspirations depending on the culture). If so, you can consider having a training group mainly for women and another for men. This will enable you to obtain much information, especially from the women, as some women may fear talking in the presence of men in some cultures as is the case in many pastoral communities.

3) Examine whether there are barriers that must be addressed in implementing the FMNR initiative, such as differences in land ownership and labour between men and women, as well as access to technologies. During promotion of FMNR, it is important to assess the rights of men and women as regards access and control over resources in their area, including land and trees, seed, livestock, equipment, markets and income, so as to anticipate and resolve any conflicts that may hinder smooth project implementation.

4) Conduct FMNR activities in a participatory and gender-inclusive manner. Ensure that in any FMNR-related demonstration or field visits, both men and women (as well as any critical subgroups) are represented. Also, expose groups of women and men to other communities where gender-equitable development is taking place.

5) Ensure that gender issues are addressed in the FMNR capacity-building and training initiatives. For example, address any by-laws that may hinder women in gaining land access and ownership or men in getting involved in some manual work. Provide training to women and men on different skills, including FMNR-related business management. Also, have a clear understanding of the division of farm labour and adoption of technologies in the specific target community to help shape the training approach, and know how to put emphasis on specific groups, depending on the activity they engage in.

6) Work with women's groups to build their capacities and develop their skills and knowledge on FMNR to improve their participation. You can include them as partner organizations and implementers. Establish a realistic minimum target for women's participation, for example 40%. Adopt FMNR value chains that ensure both men and women benefit from the business. Consider whether women's voices, decision-making experience, and confidence to express their views in the public sphere tend to be weaker than men's, due to cultural norms and women's lack of skills.

6.3 General guidelines for gender inclusion in FMNR project implementation

- *Build in checks to make sure gender relations are considered specifically at the planning and implementation stages of FMNR. Programmes should assess the implications for women and men of any planned action. This might require allocation of adequate resources in the FMNR project budget to support gender mainstreaming, e.g. for recruitment of expertise, additional meetings, travel (e.g. travel of women to meetings and exchange visits), training for key participants, etc.*
- *Assess the roles, responsibilities, constraints and opportunities for men and women in the proposed FMNR intervention site. Put a specific focus on barriers to equal participation and benefit sharing within FMNR, for example, unequal participation in forums that make community laws and/or decisions. Information gathering for this element should include participatory appraisals (focus groups and/or surveys or interviews).*
- *Identify specific actions that will be taken, based on the localized information collected, to reduce barriers to equitable participation in project activities. These actions can include involving both men and women in discussing matters such as access to FMNR products and community by-laws, among others.*
- *Put in place a gender-sensitive monitoring and evaluation (M&E) framework that collects sex-disaggregated data where the impacts of FMNR data are collected in terms of men and women. Incorporate these data into the final reporting of the FMNR project and share lessons learned with other FMNR promoters to help in gender mainstreaming among FMNR projects.*

Module 7: Monitoring and evaluation and learnings from the FMNR initiative

FMNR is still a developing concept in the Somali context as well as in various parts of Africa. It is necessary to conduct informative monitoring, evaluation and learning in every initiative promoting FMNR in the Somali context so that adaptive management and contextualization can be included in subsequent initiatives to make them more responsive to community needs.

Monitoring[4] involves keeping track of the progress being made on the plan's tasks and activities and checking if they are going ahead as planned and meeting the community's shared goals and visions. On the other hand, evaluation[5] involves making decisions on whether the plan worked and whether the goals were achieved (with adaptive management[6]), using the data and information that have been collected. It is about mapping the evidence of what has been achieved on the theory of change and against the set targets. This basically informs the stakeholders/decision-makers on the most successful impact pathways that can be essential for future programming.

Monitoring and evaluation (M&E) of community FMNR initiatives should be as inclusive and participatory as possible so that the stakeholders involved may understand its significance. It also enables stakeholders (especially at the community level) to share control over the content, the process and the results of the M&E activity, and to engage in identifying and/or taking corrective actions. This participation enhances ownership of the FMNR initiative. To have a successful M&E for FMNR, the M&E plan should be designed at the beginning of the initiative and represent the interests of all stakeholders in the target community.

4 Monitoring is defined as the set of actions that provide information on where an initiative is at any given time (and over time) relative to planned activities, inputs, outputs, targets and outcomes.

5 Evaluation (E) is defined as the process of generating evidence on why and how well the outputs, targets and outcomes of an initiative are, or are not, being achieved.

6 This is an intentional approach to making decisions and adjustments in response to new information and changes in context.

When designing an M&E plan, it is crucial to consider the following:

- *What is the evaluation for (target audience)?*
- *What will be evaluated/what indicators are we tracking?*
- *What is the purpose of the evaluation?*
- *Who will/will not be involved?*
- *When should the evaluation be conducted?*
- *What is the availability of resources (funds, skills of FMNR staff – in-house/outsourced, etc.)?*
- *The monitoring and evaluation plan for FMNR will serve two functions: the primary purposes are to 'prove' and 'improve.'*
- *Periodic assessment should be undertaken of project implementation and performance progress of activities (Prove).*
- *Evaluation should be undertaken of their results in terms of relevance, effectiveness, efficiency, impact and sustainability (OECD 2021) in promoting the adoption of FMNR.*

7.1 Making monitoring and evaluating FMNR participatory to include the community

Conducting FMNR M&E data should be as participatory and as inclusive as resources can allow. The interval at which monitoring is carried out should be agreed upon by all stakeholders involved in the initiative. This is realistic when community stakeholders engaged in an FMNR project are empowered to engage in the M&E process, have control over project activities and results, as well as engage in identifying and taking corrective actions.

Participatory monitoring, evaluation and learning enable stakeholders to:

- *Track the spread of FMNR in their communities;*
- *Identify factors that influence the spread of FMNR in different contexts and for different groups of people;*
- *Share evidence of successes or impacts of FMNR at the community level;*
- *Identify successful FMNR-based enterprises for value chain development;*
- *Identify opportunities for improvement in the initiative;*
- *Demonstrate the effectiveness of different methods of promoting FMNR;*
- *Document the success of FMNR in different contexts and conditions;*
- *Demonstrate the contribution of the initiative to national and global targets and, where applicable, provide evidence for ecosystem-based benefits;*
- *Provide the necessary data for reporting to donors the outcomes of their investments (such as impacts on income, food security, water availability and other critical outcomes) and for policymakers to make informed decisions.*

To ensure monitoring, evaluation and learning are relevant to stakeholders, it is important to consider stakeholder's information needs. Table 5 shows a sample of how to capture the information needs of the various stakeholders for the enhanced M&E process.

Table 5. Extract from map of stakeholder information needs for the participatory monitoring, evaluation and learning (PM&E) system in the FMNR project

Stakeholder	*Information needs*	*Role in FMNR project*
For example, *Farmers*	• *What changes will the FMNR project make on the land?* • *What changes will the FMNR project make to farmers' livelihoods?* • *How is the project supporting the community to achieve their goals?*	*Target group*
FMNR project staff	• *Are project activities being undertaken on time?* • *Are they reaching the target group?*	*Project implementers*

Adapted from the PMERL Manual by CARE International (CARE International, 2014)

7.2 What can we monitor and evaluate in an FMNR initiative?

In an FMNR initiative, we may need to monitor and evaluate short-term, intermediate and some long-term impacts. Some of the examples of the likely measurable impacts are shown in Table 6. The results of immediate effects monitored in the first column can be used to determine the intermediate and longer-term impacts of the FMNR initiative.

Table 6. Examples of measurable impacts in an FMNR project

Short-term impacts	*Intermediate impacts*	*Long-term impacts*
• *Awareness creation activities, such as cross-community meetings and farm visits.* • *Resources: for example, time and money used to raise farmers' awareness of FMNR-related activities.* • *Participation: for example, involvement of men and women and marginalized people in FMNR activities.* • *Reactions: for example, farmers' views about their involvement in FMNR activities.* • *Lead farmers identified and on FMNR.* • *FMNR model sites identified and developed, etc.*	• *Number of individual community members (men, women, youth, persons living with disabilities (PWDs)), and different community groups reached with the FMNR message.* • *Area of land committed to restoration through FMNR by the community or individual farmers who have already been reached.* • *Number of individual farmers and community groups who have already started practising FMNR on their farm.* • *Number of tree species planted for enrichment in FMNR fields.* • *Social, economic, and environmental impacts including carbon and other ecosystem-based benefits.*	• *Number of individual farmers (men, women, youth, PWDs), and different community groups that have adopted FMNR practice.* • *Area of land (hectares) under restoration through FMNR.* • *Tree nursery enterprises formed or facilitated to support FMNR activities in the area.* • *Number of producer groups formed, and FMNR enterprises started to sustain the practice and improve livelihoods of the community members.* • *Social, economic and environmental impacts, including ecosystem-based benefits such as carbon benefits, ecotourism.* • *Number of village saving and loaning groups formed or facilitated in the project and possibly linked to other financing options.* • *Attitude, skills and knowledge, both in technical aspects of FMNR and entrepreneurship, among others.*

7.3 Undertaking participatory monitoring and evaluation in an FMNR initiative

The following activities are necessary for an effective FMNR project featuring monitoring, evaluation and learning (MEL):

1) Identify different stakeholder groups to be engaged in FMNR MEL

Participants should be representative of the target community, with gender and social inclusion in consideration. They should have shown interest in FMNR. Some of the community groups and leaders that can be involved include:

- *Community members such as farmers and herders/pastoralists;*
- *Community groups such as farmers, pastoralists and/or business organizations (such as gums and resin traders' associations, etc.);*
- *Government leaders at the grassroots level (both local and regional) and village elders, among others;*
- *FMNR change agents, lead farmers or champions;*
- *Policymakers and civil society organization representatives;*
- *Project staff, for continuous improvement in project design and delivery, and for reporting;*
- *Partner organizations such as non-governmental organizations (NGOs), faith-based organizations (FBOs), among others;*
- *Women and children;*
- *Relevant regional and national government departments and ministries (e.g. Departments/Ministries of Agriculture and Livestock, Water and Environment).*

2) Build the capacity of community members, community groups and other stakeholders identified to be engaged in FMNR M&E

This can be done through workshops and community meetings where the stakeholders are in:

- *Importance of M&E in the FMNR initiative – For example, you can discuss how FMNR practitioners normally monitor their crops or livestock periodically, and ask what they usually check on and why. They can then slowly get to internalize the need for the monitoring and evaluation exercise in their livelihoods and apply it easily to the FMNR initiative.*
- *The monitoring and evaluation process – Let the community know what they are going to monitor, evaluate, and how and when (Box 8). Discuss what they need to measure when and how for them to assess the impact. Listen to the ideas they give and adjust your M&E plan accordingly.*
- *How to select the indicators for the MEL process – Train the community members on the variables they will consider in monitoring and evaluation. FMNR will directly affect the community members, so let them share what they will consider worth measuring and ensure that they are Specific, Measurable, Achievable, Realistic and Time-bound (SMART).*

Box 8. Plenary session on community-level monitoring

Put the community members in a group and discuss what changes they have observed so far – (before and after FMNR). Go back to the goals that they listed during initial engagement events and discuss if these goals have been met and how. Encourage them to give stories and record the stories while deriving best practices from their stories to duplicate in other areas. Be objective and comprehensive. Guide the community in linking the stories they have shared with M&E. Inform them that they can document any other best practices, challenges, and what has been achieved and what has not, through reflection as well.

In their discussions, they can draw tables and fill them in, for example:

Goal/Target	*FMNR practice implemented*	*Output*	*Outcome*	*Impact*

3) Agree on what to monitor and evaluate and develop measurable indicators as a team

An indicator is a variable, measure or criterion that measures one aspect of a programme/project. Simply stated, an indicator verifies whether an intended change occurred. It is important to involve all stakeholders in deciding what indicators are to be used for measuring the progress of FMNR. When selecting a community M&E indicator, consider:

- *Examining locally relevant factors, and those that can be applied more widely among other stakeholders that are involved;*
- *Capturing tangible as well as intangible changes, particularly in enhancing the social development part of the FMNR, for example, women's access to land.*

The indicators created for monitoring FMNR should be SMART, as elaborated here:

- Specific: *Be clear about what they are measuring. For example, the number of women farmers practising FMNR, the number of tree stumps regenerated.*
- Measurable*: The data should be easy to collect, such as by measuring or counting. For example, it would be illogical to ask people to count the number of blades of grass that have sprouted per hectare. Seeking sensitive or confidential information should also be avoided.*
- Achievable*: The indicators should be realistic in that participants are able to reach the targets based on resources available or the project and time for the project.*
- Relevant*: Indicators should be linked to the community's goals and objectives, expected results and activities. For example, you do not need to measure the amount of water buffered if the FMNR was meant to provide livestock feed.*
- Time-bound: *Indicators should relate to the correct period. Choose a time and only measure data during that period.*

Some guiding notes to develop FMNR indicators

i) *Start with developing a long list of indicators for every outcome developed, either in community group meetings or during focus group discussions with a small group drawn from the village mapped for the FMNR initiative. In the meetings it is important to ask the following questions:*
   - *How will we know that change has happened in this outcome?*
   - *How will we know success when we see it?*
   - *What will be the evidence of this change?*

   Example: A community brainstorming session on the criteria to use in monitoring performance of their crops or their livestock could be facilitated with questions such as:

   - *How do you determine if your livestock are healthy?*
   - *How do you determine if in this season your crops will produce well?*
   - *How do you determine if your honey business will flourish this season?*

ii) *Let the community note down the indicators they use to determine the answer to the above questions as the facilitator guides them to bring in the FMNR aspects with that better understanding.*

iii) *Shortlist the indicators (at most three) for each outcome. Other indicators can be added later. See Annex 5 for some indicators that the community can monitor and evaluate in FMNR projects or programmes as well as some of the tools they can use.*

iv) *Agree on a baseline value that describes the situation regarding the specific indicator at the beginning of the FMNR initiative.*

v) *Be flexible and adaptive. The project team should be able to accommodate the monitoring and evaluation indicators that the community will be comfortable with as long as they fit the SMART characteristics explained in this section. You may at some point be required to change the approach or the implementation technique following the community's view.*

vi) *Agree on data collection approaches, methods and tools for each indicator.*

5) Undertake data collection

Data collection can include the use of both quantitative and qualitative methods and tools. Quantitative methods can include community surveys, interviews and observations. Qualitative methods can include various participatory learning methods using visual, interviewing and group tools and exercises.

The approaches, strategies, methodology and tools to deploy in M&E should be simple, easy and conformable to use by stakeholders. Tools for collecting, analysing and documenting the data should be selected and agreed upon by the community and other stakeholders in a participatory manner.

Data can be collected through:

- *Written or oral questions (key informants, checklists, questionnaires and focus group discussions)*
- *Graphics, using scenes from the farmers' daily lives*
- *Measurements, for example, directly measuring crop yields or rainfall amounts*
- *Pictures taken before and after showing the impacts of FMNR*
- *Observations determined by what you see, and stories communities tell*
- *Participatory impact diagrams*
- *Resource maps and social maps*
- *Simple registers, records, minutes, notes*
- *FMNR-related journals and literature materials*
- *ICT tools such as the Regreening Africa App (ICRAF n.d.),Geographic Information System (GIS) tools*
- *Planting and cropping seasons and management.*

An example of a graphic representation for participatory community monitoring is shown in **Figure 4**.

Figure 4. Participatory M&E tool used by the community. Source: Gonsalves et al. 2005

Stakeholders should also agree on:

- *How sampling will be done*
- *Who should collect and analyse information on which indicators*
- *How frequently data collection will be done*
- *How the information will be shared.*

Data logbooks can be designed for farmers to be continuously filled in to show the impact that FMNR is creating. The purpose of the logbooks is to provide information on farmers' practice of FMNR, the number of trees under regeneration, the management practices undertaken on the trees, the harvesting practices and any other important information.

The records in the books can be verified by FMNR agents, government extension staff, and where necessary, independent auditors for measurement of carbon benefits or other ecosystem services and to show contribution to national commitments to global restoration targets.

Agents at the village level can guide farmers in filling in the logbook tables and support verification of the information provided periodically, such as after every six months. Sample logbook tables are provided in Annex 6 (a, b, and c).

Ensure that the data collected for monitoring and evaluation of an FMNR initiative are disaggregated in terms of gender specificity: men, women, youth and the marginalized for an inclusive conclusion and recommendations.

The type of data to be included may cover:

- *Number of women, men, youth and marginalized people in FMNR;*
- *Number of women, men, youth and marginalized people adopting FMNR;*
- *Amount of land accessed or owned by men and women after and during FMNR promotion;*
- *Benefits that men, women, youth and marginalized people derive from participation in FMNR;*
- *How much time, on a daily basis, do women, men, youth and marginalized people take to implement the project?*
- *What characteristics do women and men prefer pertaining to tree species?*
- *Number of individuals not in but adopting FMNR (male, female, youth, marginalized people).*
- *Value chains developed and participated in by the community in terms of men, women and marginalized people.*

5) Analyse the data collected from FMNR promoters

M&E should be an opportunity for all FMNR project stakeholders to get involved in the analysis of successes and constraints and the formulation of conclusions and lessons learned. The community can perform simple analyses on their data (for example, attendance data to demonstrate trends) under community facilitators' guidance, whereas the M&E experts later conduct an in-depth analysis of the data to tease out information that may not clearly come out from simple data analysis such as constraints and opportunities, among others. Table 7 is a sample guide on how an M&E matrix can be filled in by the community.

Table 7. A progress monitoring plan by the community

Activity	Undertaken by whom?			When?		
	Planned	Actual	Comments on results	Planned	Actual	Comments on results
e.g. FMNR value chain development	World Vision	CARE		Jan–June 2019	March–July 2019	

Who benefits?			Any anticipated impacts?			Responses		
Planned	Actual	Comments on results	Positive	Negative	Comments on results	Shortfalls	Opportunities	Comments on results
40 women	25 women		- Reduced household poverty level	- Fear of delayed benefits thus affecting participation				
- on value chain (VC)	10 youth		- Economic empowerment					
- Market access	5 men		- Sustained increase in tree cover					
	- on VC		- Restored degraded lands					
	- Market access		- Reduced crime rate					
	- VSLA group formed		- Reduced school drop out					

6) Conduct forums for stakeholders to share and reflect on the results of the participatory monitoring, evaluation, and learning

Not all stakeholders can be involved in M&E data collection and analysis, and therefore, the results need to be shared with other stakeholders for discussions on appropriate actions to be taken. The sharing can be done through community project reflection meetings or workshops.

The information-sharing workshop allows the community and other stakeholders to:

- *Reflect on the progress of FMNR practice towards achieving goals;*
- *Adjust activities as required and where deemed necessary;*
- *Exchange and evaluate information;*
- *Systematically review and look back to the start of their activities, comparing it with where they currently are and to understand what has changed;*
- *Reflect on what needs to be carried out for each result or activity and its indicators, one at a time.*

Some useful questions to consider during reflection include*:*

- *What have we achieved this season/this year, etc.?*
- *What worked well? What did not work well?*
- *What do we need to change? What have we learned?*

The reflection exercise results are used to make decisions and adjust activities when need be, so that monitoring and evaluation is a learning process. Therefore, it may be important to invite community members who have successfully implemented FMNR on their land to these meetings to elucidate how FMNR has impacted their livelihoods. Reflection meetings should take note of necessary changes and resolutions and then implement them. They should also replicate scaling approaches that have worked and FMNR enterprises that have demonstrated success.

References

CARE International, 2014. Participatory monitoring, evaluation, reflection and learning for community-based adaptation: A revised manual for local practitioners. CARE International UK. 52pp. https://careclimatechange.org/pmerl/

Carsan S, Munjuga M. 2020. Tree nursery management guide for land restoration planners. ICRAF, Nairobi, Kenya. 38pp. https://regreeningafrica.org/wp-content/uploads/2021/06/Tree-Nursery-Management-Guide-For-Landscape-Restoration-Planners.pdf

Catholic Relief Services (CRS) and Modernizing Extension and Advisory Services (MEAS). 2015. Organizing and managing farmers' groups: A SMART Skills manual. Catholic Relief Services, Baltimore, MD, and Modernizing Extension and Advisory Services project, University of Illinois at Urbana-Champaign, https://www.crs.org/sites/default/files/tools-research/organizing-and-managing-farmers-groups-smart-skills-manual.pdf

ExpandNet. n.d. Our definition of scaling up. Accessed 10 December 2021. https://expandnet.net/scaling-up-definition/

FAO (Food and Agriculture Organization of the United Nations) and ICRAF (World Agroforestry Centre). 2015. Establishing a tree nursery in Kenya. FAO and ICRAF. http://www.fao.org/3/CA3116EN/ca3116en.pdf

ICRAF (World Agroforestry Centre). n.d. The Regreening Africa app user guidelines. Regreening Africa project, ICRAF. https://regreeningafrica.org/wp-content/uploads/2020/01/Regreening_Africa_App_User_Guide_English-1.pdf

Jaenicke H. 1999. Good tree nursery practices. Practical guidelines for research nurseries. Nairobi, Kenya: World Agroforestry Centre (ICRAF). https://vtcommunityforestry.org/sites/default/files/pictures/tree-nursery-practices-eng.pdf.

Lincoln A. n.d. AZQuotes.com. Accessed on January 03, 2022, from AZQuotes.com Web site: https://www.azquotes.com/quote/1404377

OECD (Organisation for Economic Co-operation and Development). 2021, Applying Evaluation Criteria Thoughtfully, OECD Publishing, Paris, Accessed on 20 December 2021. https://doi.org/10.1787/543e84ed-en.

Rinaudo T, Muller A, Morris M. 2019. Farmer Managed Natural Regeneration (FMNR) Manual. A resource for project managers, practitioners and all who are interested in better understanding and supporting the FMNR movement. Melbourne: World Vision Australia.

Thomas DB. 1997 (Ed.). Soil and Water Conservation Manual for Kenya. Soil and Water

Conservation Branch, Ministry of Agriculture, Livestock Development and Marketing, Nairobi, Kenya. p 232.

Wanjira EO, Muriuki J, Ojuok I. 2020. Farmer Managed Natural Regeneration in Kenya: A primer for development practitioners. Nairobi, Kenya: World Agroforestry Centre (ICRAF). http://apps.worldagroforestry.org/downloads/Publications/PDFS/B20069.pdf

WHO (World Health Organization) 2019. Guidance for after action review (AAR). Geneva, Switzerland: World Health Organization. https://apps.who.int/iris/rest/bitstreams/1212880/retrieve

UNDP (United Nations Development Programme). 2006. Capacity Diagnostics Methodology: User's Guide. Capacity Development Group Bureau for Development Policy. https://www.asia-pacific.undp.org/content/rbap/en/home/library/kic/capacity-diagnostics-methodology-user-guide.html

UNFPA (United Nations Population Fund). 2014. Population Estimation Survey 2014 for the 18 Pre-war Regions of Somalia. United Nations Population Fund, Somalia Country office. UN-HABITAT (United Nations Human Settlements Programme). 2006. Somaliland, Puntland State of Somalia. The land legal framework: Situation analysis. Kenya: UN Habitat. https://www.globalprotectioncluster.org/_assets/files/field_protection_clusters/Somalia/files/HLP%20AoR/Land_Legal_Framework_2006_EN.pdf

Vanclay JK, Prabhu R, Sinclair FL. 2006. Bringing shared visions to life. Brisbane, Australia: University of Queensland. https://core.ac.uk/reader/14984330

Further reading

Evans J. 1992. Coppice forestry—an overview. In: : Buckley G.P. (eds) Ecology and management of coppice woodlands. Dordrecht: Springer. 18–27. https://doi.org/10.1007/978-94-011-2362-4_2

FAO (Food and Agriculture Organization of the United Nations). 2019. Somali Water and Land Information Management: Land use. http://www.faoswalim.org/land/land-use

FAO (Food and Agriculture Organization of the United Nations). 2011. Farm Business School: Training of Farmers Programme-South Asia, Manual. Bangkok: Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific.

FAO (Food and Agriculture Organization of the United Nations). 1996. Agro-ecological zoning guidelines. FAO Soils Bulletin 73. Rome: Food and Agriculture Organization of the United Nations.

FAO (Food and Agriculture Organization of the United Nations) and CARE. 2019. Good

practices for integrating gender equality and women's empowerment in climate-smart agriculture programmes. Atlanta: FAO. 108pp. License: CC BY-NC-SA 3.0 IGO

Francis R, Weston P, Birch J. 2015. The social, environmental and economic benefits of farmer managed natural regeneration (FMNR). http:// fmnrhub.com.au/wp-content/uploads/2015/04/Francis-Weston-Birch-2015-FMNR-Study.pdf

GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit),ed. 2003. Guide to rural economic and enterprise development. Working paper edition 1.0, November 2003. Eschborn, Germany: GTZ. 138pp.

Gurung B, Thapa MT, Gurung C. 2000. Briefs/guidelines on gender and natural resource management. A report for the International Centre for Integrated Mountain Development (ICIMOD), Nepal.. https://wocan.org/sites/default/files/icimod_-_gender_and_nrm.pdfHardin G. 1968. The tragedy of the commons: the population problem has no technical solution; it requires a fundamental extension in morality. Science, 162(3859):1243-1248.

Kumar D, Ahmed N, Srivastava KK, Singh SR, Hassan A. 2013. Micro-catchment water harvesting and moisture conservation techniques for apple (Malus domestica) production under rainfed condition. Indian Journal of Agricultural Sciences 83(12): 1322–1326.

Liniger HP, Mekdaschi Studer R, Hauert C, Gurtner M. 2011. Sustainable land management in practice – Guidelines and best practices for Sub-Saharan Africa. TerrAfrica, World Overview of Conservation Approaches and Technologies (WOCAT) and Food and Agriculture Organization of the United Nations (FAO).

Luyayi F, Karanja E, Ngocho E, Oduol J, Muriuki J, Mowo J. 2014. Farmers' training entrepreneurship manual. Nairobi: World Agroforestry (ICRAF).

Mainnah L. 2016. A brief overview of the Community Land Act No. 27 of 2016. An overview of the Community Land Act and its rights and restrictions. Nairobi: Published by the National Council for Law Reporting with the Authority of the Attorney-General.

Mganga KZ, Nyangito MM, Musimba NK, Nyariki DM, Mwangombe AW, Ekaya WN, Muiru WM, Clavel D, Francis J, von Kaufmann R, Verhagen J.2010. The challenges of rehabilitating denuded patches of a semi-arid environment in Kenya. African Journal of Environmental Science and Technology 4(7): 430–436.

Montagnini F, Eibl B, Grance L, Maiocco D, Nozzi D. 1997. Enrichment planting in overexploited subtropical forests of the Paranaense region of Misiones, Argentina. Forest Ecology and Management 99(1–2): 237–246.

Rinaudo T. (2019). Global – Farmer Managed Natural Regeneration (FMNR, 1983): Factsheet. https://www.worldfuturecouncil.org/wp-content/uploads/2019/01/Global_Farmer-Managed-Natural-Regeneration-FMNR-1983-Factsheet-OPA-2019.pdf

Rowlands C, Norell D. 2016. Local Value Chain Development (LVCD) Project Model Handbook for Practitioners, FY2016. Melbourne: World Vision Australia.

Ruto G, Odhong C. 2016. Farm Enterprise Development Manual: A training manual on farm enterprise development. Nairobi: Vi Agroforestry, Regional Office East Africa.

Sawadogo P, Toure S Rufino M. 6 July 2015. How climate-smart is the Farmer Managed Natural Regeneration method? News blog by World Agroforestry Centre (ICRAF) and Climate Change, Agriculture and Food Security (CCAFS) West Africa.

Tengnas B. 1994. Agroforestry extension manual for Kenya. Nairobi: International Centre for Research in Agroforestry.

Warner K, Shallon D. 1995. Selecting tree species on the basis of community needs. Community Forestry Field Manual. Rome: Food and Agriculture Organisation of the United Nations (FAO).

Weston P, Reaksmey H, Carolyn K, Christian AK. 2015. Farmer managed natural regeneration enhances rural livelihoods in dryland West Africa. Environmental Management 55(6): 1402–1417.

Whalen MP. n.d. Agri-Entrepreneurship Training Manual. Truro, Nova Scotia, Canada: Nova Scotia Agricultural College.

Annexes

Annex 1. Obstacles to tree planting and protection in the Somali context

1. Environmental constraints

- *The erratic nature of annual precipitation is usually not adequate for tree establishment and timing of planting is challenging due to the unreliable nature of rainfall and frequent droughts in the rangelands.*
- *The poor texture of the surface layers of the soil may require ground preparation techniques that could be time consuming and expensive so as to conserve the limited precipitation and make it available to the tree crop.*

2. Technical obstacles

- *It is difficult to obtain seeds or other planting materials of many tree species.*
- *Little is known about correct seed handling for most species that are suited for the drylands.*
- *Technical and managerial tasks to undertake the design, management and evaluation of tree planting programmes is a challenge due to inadequate extension services.*
- *administrative and technical staff are limited; policymakers may not fully perceive the severity of the problem.*

3. Land tenure, pastoralism and nomadism

- *There is a lack of incentive to invest in tree planting and protection under the communal land ownership that characterize most rangelands.*
- *The mobile nature of most pastoral households is a major hindrance to tree planting and protection.*
- *Livestock raising is the principal source of livelihoods and is the basis of the economy; it overrides any other form of livelihood mainly because of the harsh ecological conditions and limited production capacity of the land.*

4. Economic, social and institutional problems

- *The demand for trees and their products, especially fuelwood, fencing and construction materials outstrip supply in the Somali ecosystem.*
- *The increasing human population has occasioned escalating demand for energy, which is dominantly wood fuel. In fact, more trees are cut than planted in rural drylands.*
- *The high human and livestock populations also make it difficult to protect planted seedlings from grazing animals.*

5. Cultural practices and gender biases

- *Some observers suggest that the perception of wood as a free product by pastoralists inhibits tree-planting and protection efforts, since people do not perceive wood as being scarce.*
- *Many pastoral societies have gender-specific rights and prohibitions regarding planting trees and exploiting tree products.*
- *In many pastoral communities, land and trees on the land, are a productive resource owned primarily by men.*
- *These rights may apply not only to a husband's land, but also to land and trees owned by kinsmen. Women may plant trees only with a man's permission.*

Annex 2. Local tree and shrub species that can preferably be regenerated through FMNR in the Somali context

Local name	*Scientific name*	*Potential use (products and services)*
Arrad	*Acacia etbaica*	Firewood, timber, medicine
Haraz	*Faidherbia albida (formerly Acacia albida)*	Soap, edible boiled seeds and fruits, fodder, intercropping in farmland, soil improvement
Galool	*Acacia bussei*	Charcoal, fodder, fruits, edible leaves, shade for livestock, bark is fibrous and used to produce mats and ropes
Tugaar	*Acacia nilotica*	Fuel and timber, fodder, shade for livestock, fruits, intercropping, nitrogen fixation, shelterbelt and hedge
Mango	*Mangifera indica*	Shade for livestock, fruits, honey, shade for people, shelterbelt
Yagcar	*Boswellia frereana*	Gum resin extracted from its bark, honey, medicine, edible fruits, nitrogen fixation, intercropping
Hashab	*Acacia seyal/ senegal*	Adhesives, fruit and seed edible to humans if boiled, using cuttings for fencing, erosion control, nitrogen fixation, intercropping
Qurac	*Acacia tortilis*	Fuelwood production, planting along farm boundary to serve as fence (live fence), charcoal, honey, fodder
Sisaban	*Acacia tortilis*	Fodder, edible leaves, intercropping, nitrogen fixation, soil improvement
Balsam	*Commiphora myrrha*	Fuelwood, fodder, fruits, soil improvement

Annex 3. Soil and water conservation approaches to enhance FMNR on denuded lands

Digging trenches: A trench is a shallow excavation dug across the slope to reduce erosion by surface run-off. It encourages infiltration of water in the denuded field, moistening the soil and accelerating growth of the ground cover plants such as grasses, herbs and eventually shrubs and trees.

Mulching: Mulching is the practice of covering a bare soil surface with organic matter from plants such as leaves, branches, grass and sometimes small branches. The purpose of mulching is to increase soil organic matter accumulation, control splash erosion, conserve soil moisture and improve the general condition of the denuded land to accelerate colonization of the area by plants.

Gully treatment: This involves placing of gabions, check dams, and sandbags across a gully to prevent its further spread. Gabions are wire woven baskets filled with stones and placed across the gullies as shown in Plate 16. Sandbags are bags or sacks filled with soil or pebbles; hence, they are cheaper and easier to construct than gabions but are equally effective in controlling gullies. Where gullies are small, vegetation can be planted in strips across the gully to slow the velocity of water, trap silt and prevent further erosion.

Plate 16. Sandbags (left) and a gabion (right) constructed across a gully.

Use of micro-catchment water harvesting techniques: Micro-catchments are common water harvesting techniques used in agriculture and agroforestry to trap surface run-off and make soil and water settle down and feed the plant at a microsite. They are often dug in the enclosures of plants or around trees/saplings. They include half-moons or semi-circular stone bunds, micro-basins, V-shaped bunds, and Zai pits among others (Plate 17). These structures are usually made by hand.

Plate 17. Halfmoon (left), Zai pits (centre) Micro-basins (right) .Source: Regreening Africa Project/Niger.

Contour stone lines/bunds: Lines of stones placed along the contour and referred to as stone bunds when built up to a height of 25 cm and about 35–40 cm wide. Bunds are permeable, allowing water to flow through them but at reduced run-off speed.

Retention ditches: These are trenches dug at the highest boundary of the land parcel to collect run-off coming from outside the field, including that from roads. The ditches are usually about 50 cm deep, 50 cm wide and constructed along the contour.

Retention basins: Retention basins collect the run-off from roads, footpaths, sharp hills or transient streams. They differ from retention ditches in that they are not continuous trenches but may be rectangular or square, and surrounded by small earth bunds.

Annex 4. Qualities of good FMNR change agents

An FMNR practitioner can become an FMNR change agent if s/he has the charisma and other necessary people skills to influence other people. They should additionally be passionate about change and demonstrate a natural communication ability. Community members usually know who these people are and can help point them out through a participatory process. The following qualities can be a guide when selecting FMNR change agents:

i) *Excellent FMNR practitioners, who monitor their progress and experiment to solve problems with their land and trees.*

ii) *Good citizens who have earned trust and respect in the community because of their behaviour and moral standards.*

iii) *Passionate about spreading FMNR, and about seeing people succeed. When they are practising FMNR or teaching others, they get energized, especially by what they are doing with little show of weariness.*

iv) *Natural teachers, who communicate patiently and clearly, willing to guide those who may not be practising in the right way, who encourage learners when they struggle and who celebrate with them when they succeed.*

v) *Willing and able to regularly visit with community practitioners and participate in meetings and discussions about practicing FMNR.*

vi) *Able to inspire others. Some are extroverted and comfortable leading a crowd, while others, in their own quiet way inspire one or two people at a time – both are effective, they just work differently.*

vii) *Patient and persistent. They understand that people may take time to adopt a new idea and are willing to continue the dialogue without getting discouraged or weary.*

viii) *Forgiving and tough skinned, when they are the object of jokes and derision, sometimes even abuse, as they practise and promote what may seem to some unusual at first.*

ix) *Leaders who take initiative. Not waiting for others to tell them what to do but testing out new ideas and making use of opportunities.*

Annex 5. Examples of core indicators to measure in an FMNR project

FMNR core indicators		*Method*	*Data collection tools*	*Timeline*
1	Number of people in FMNR (male, female, youth, PWDs)	Community training meetings/workshops	Document reviews, ICT tools	
2	Number of individuals adopting FMNR (male, female, youth, PWDs)	Participatory monitoring – use of lead farmer's FMNR logbook	Document reviews, ICT tools	
3	Number and proportion of households that have adopted FMNR in the target area	Participatory monitoring, project baseline, uptake, midterm & endline evaluation surveys	Document reviews, household data tools	
4	Coverage of FMNR in the target area (in hectares)	Participatory monitoring – lead farmers' FMNR logbook/ record book	Document reviews, remote sensing, ICT tools, farmers' FMNR logbook/ record book, Regreening Africa App	
5	Average tree density changes in the target area (defined on a per hectare basis and differentiated between cultivated land, grazing land, forest land, other (specify)	Lead farmer's FMNR logbook/record book – geospatial tree cover mapping (advanced)	Lead farmer's FMNR logbook/record book, Regreening Africa App	
6	Number and proportion of households with year-round access to sufficient food	Participatory monitoring, project baseline, uptake, midterm & endline evaluation surveys	Household data tool	
7	Number and proportion of households with access to forest products (firewood, timber, and non-timber forest products, including honey, fruit, nuts, livestock feed, etc.)	Project monitoring reports, baseline, mid-term & endline evaluation survey	Household data tool	
8	Proportion of women who have access to tree products	Participatory monitoring, project baseline, uptake, midterm & endline evaluation surveys	Household data tool, focus group discussions	
9	Average household income (from crops, livestock and FMNR-related products)	Project baseline, midterm & endline evaluation surveys	Household data tools, focus group discussions	
10	FMNR enterprises promoted and participated in by the community	Project monitoring reports Project baseline, uptake, midterm & endline evaluation surveys	Household data tools Key informant interviews, focus group discussions	

Similarly, the following additional tools can also be adopted for use in data collection where necessary:

- *Pictures taken before and after showing the impacts of FMNR.*
- *Participatory impact diagrams.*
- *Resource and social maps.*
- *Simple registers.*

Annex 6. Sample farmer logbook record tables

A. Tree cohort registration

Date	*Cohort[8] ID* *e.g. TK-0347*	*Common/ local name of tree species*	*Size class* *Sapling (<1.3 m)* *3–30 cm* *30.0–60 cm* *60.0–90 cm* *>90.0 cm*	*Type of regenerant (wildling or coppice*	*Estimated year of regeneration of trees*	*Number of individuals in the cohort*	*Date commenced management*

8 A cohort is made up of trees of the same species, size and age classes that you plant or select for managing with FMNR at one specific period making them of roughly the same age

B. Tree management practices and observations

Date of practice	*Cohort ID e.g. TK-0347*	*Tree species*	*Practice done*	*Number of individual trees in the cohort managed*	*Observations/ comments*

C. Trees uses and harvest records

Date of harvesting	*Cohort ID e.g. TK-0347*	*Tree species*	*Type of product/use*	*Sections used*	*Amount of harvest*	*Units*

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