



Regreening Africa

FARMER MANAGED NATURAL REGENERATION (FMNR) MANUAL

January, 2021
Addis Ababa

FARMER MANAGED NATURAL REGENERATION (FMNR) MANUAL



TABLE OF CONTENTS

Figures	
ACRONYMS	I
Acknowledgement	II
I. INTRODUCTION	1
2.1 FARMER MANAGED NATURAL REGENERATION (FMNR) PRACTICE	4
2.1.1 What is FMNR and how does it work?	4
2.1.2 Principles of FMNR	6
2.1.3 Who can do FMNR?	8
2.1.4 When and where to practice FMNR?	8
2.1.5 Tree species selection	12
2.1.6 Taking stock assessment (TSA)	19
2.2. BENEFITS of FMNR	21
2.3. COMBINING FMNR WITH OTHER PRACTICES	23
2.4. FMNR INTEGRATION WITH OTHER PROJECTS FOR IMPROVED LIVELIHOOD	26
2.5. COMMUNITY ENGAGEMENT IN SUSTAINABLE FMNR PRACTICE	30
2.6. BUILDING COMMUNITY AGREEMENT AND OWNERSHIP	33
2.7. CAPACITY BUILDING	36

2.8. COMMUNITY ACTION PLANNING ON FMNR	36
2.9. SUSTAINABILITY	37
2.9.1 Developing and agreeing on bylaws	38
2.9.2 Reviewing and changing bylaws	40
2.10. CONFLICT MANAGMENT	41
3.1. FMNR IMPLEMENTATION CHALLENGES	43
4.1. MONITORING AND EVALUATION	45
4.1.1 FMNR monitoring and evaluation	45
5.1. CASE STUDY	52
5.1.1 Humbo community managed natural regeneration	52
5.1.2 Lessons learned	54
5.1.3 FMNR implemetation challenges:	55
Annex 1:	57

Tables

Table 1: Shows land use types and tree management	11
Table 2: Tree species primary use and characteristics	14
Table 3: Common FMNR indicators & means of measurements	47

Figures

Figure 1 Tree pruning/copies reduction system to reduce competition	16
Figure 2: Over pruning effects on growth (left) and normal pruning support for growth (right)	17
Figure 3: Golden rules for tree pruning	18
Figure 4 Zero runoff for moisture retention and soil erosion reduction	25
Figure 5 Enrichment planting by community mobilization	30

Acronyms

CA	Conservation Agriculture
CDM	Clean Development Mechanism
CRS	Catholic Relief Service
EU	European Union
FMNR	Farmer Managed Natural Regeneration
GPS	Geographic Positioning System
Ha	Hectare (unit of measurement)
M & E	Monitoring and Evaluation
REDD+	Reducing Emission from Deforestation and forest Degradation and enhance carbon stock
TSA	Taking Stock Assessment

Acknowledgement

Tony Rinaudo, Alice Muller and Mary Morris produced manual on Farmer Managed Natural Regeneration (FMNR) in 2019, the best document to guide technical implementation of the approach. After discussion with the authors, consensus was reached to editing and revising the manual to Ethiopia context. For most, the team would like to express sincere gratitude to the authors for their heartfelt support in allowing the revision of their product, FMNR manual to Ethiopian context.

Special thanks should go to European Union (EU) for funding the preparation and printing of this manual through the project named reversing land degradation in Africa by scaling up evergreen agriculture (Re-greening Africa). Without EU support it may not be possible to revise and print this manual.

The editing team would also like to thank re-greening field staff for their contribution in sending different photos to demonstrate FMNR practices.

CHAPTER 1

I. INTRODUCTION

The world has experienced severe land degradation due to deforestation and unsustainable use of natural resources. Consequently, the productivity and land health is severely affected. Agricultural production, forest and pastoral lands are depreciated, which in turn worsened individuals and community livelihood. More prominently, many rural populations in sub-Sahara region suffer from drought, flooding, malnutrition, loss of opportunity for better life, increased vulnerability and poverty.

According to REDD+ strategy 2017, Ethiopia has already suffered from the impact of climate change due to deforestation and land degradation. To reverse this situation, the government of Ethiopia has taken the bold step of shifting from a carbon-intensive to a carbon-neutral and climate-resilient development pathway. It is very clear that business as usual (BAU) will not work and that there is a need to think and act differently to minimize the adverse impacts of climate change and sustain economic growth.

Ethiopia has made strong voluntary commitment in the context of the Bonn Challenge—it seeks to implement Forest Landscape Restoration (FLR) on 15 million hectare (ha), Forest 2017. In the context of rural Ethiopia, forest establishment and restoration provide a promising approach to reverse the widespread of land degradation. Accordingly, the government of Ethiopia produced different policies, strategies, programs and initiatives to support all actors working in the area of reversing land degradation in the country. Some of these policies and strategies are:

- Environment Protection Policy (EPP)
- Biodiversity Policy (BP)
- Climate Resilient Green Economy (CRGE) Strategy
- Growth and Transformation Plan (GTP)
- Ethiopia Environmental and Climate Change Policy (EECCP)
- Land Management and Administration Policy (LMAP)

- National Conservation Strategy (NCS)
- Sustainable Development and Poverty Reduction Program (SDPRP)

The policy documents indicated above have created conducive environment for forestry sectors and agriculture system to make efforts in land rehabilitation and improvement of land productivity and livelihood. Some of the major efforts made to improve tree cover and its contribution to national economy, are indicated below.

1. **Plantation Forest:** The government exhorted efforts to increase tree cover and rehabilitate degraded landscape through soil and water conservation measures and large and small scale reforestation and afforestation projects, industrial forest and community forest respectively. Currently, the Green Legacy Initiative (GLI) created movement for tree planting in Ethiopia where 350 million seedlings were planted within a single day in 2019. This practice requires professional skills and high management cost (from seed collection to planting, intensive management and protection law/bylaw enforcement against intruders etc.
2. **Participatory Forest Management (PFM):** participatory forest management is natural resource management approach of forest management through social guarding. This approach grants user right to the communities managing the forest resource. At present, many regional governments have adopted this principle to sustain the remaining natural forest. This approach needs high commitment of the community and all stakeholders, technical capacity for sustainable management and close monitoring and support from the government.
3. **Agroforestry system (AFS),** AFS is an indigenous practice in Ethiopia. The practice integrates trees and shrubs into agriculture crop and pastureland by land owners as a means to support sustainable wood production and soil fertility improvement. Moreover, biomass transfer, organic inputs and nutrient cycling services from on-farm trees in the traditional agroforestry systems is playing a significant role in sustaining the agricultural productivity. The system is fruitful in many parts of the country, communities are aware of the benefits such fuel wood, fodder and shade in dry periods. Hence requires more attention of all partners for expansion.
4. **Farmer Managed Natural Regeneration (FMNR):** FMNR is the systematic regeneration and sustainable management of trees and shrubs growing from living tree stumps, roots and/or seeds. It is simple, cost effective, and easy to exercise by farmers and benefits all kinds of

environmental, social and economic aspects. FMNR can be practiced on farmland, forestland, and grazing land. It involves allowing tree seedlings to regenerate from stumps, sprouting root systems or seeds already in the soil. and practicing pruning and thinning of stems and branches and the protection of regrowth from threats such as fire, livestock or human damage. Communities are empowered to gain control over the resources and nurture a sense of hope that comes through this approach. Restoring ecosystem health also builds resilience of people to environmental shocks such as drought, flood, and extreme storms. The system fixes the environment relatively quicker with simple technical practice.

The objective of the manual is to make Farmer Managed Natural Regeneration (FMNR)/Re-greening handbook available for field staff and government extension agents that will equip them with skill and knowledge of degraded landscape restoration and benefiting the community, socially, economically and environmentally. The manual is designed with special consideration of FMNR techniques and case studies for better understanding and achieve best results.



Transporting seedlings by local community

CHAPTER 2

2.1 FARMER MANAGED NATURAL REGENERATION (FMNR) PRACTICE

2.1.1 WHAT IS FMNR AND HOW DOES IT WORK?

FMNR is the systematic regrowth and management of trees and shrubs from tree stumps, sprouting root systems and/or seeds in the soil bank or in woody thickets. FMNR technique varies according to context as the actual species chosen, the number of trees per hectare, the number of stems selected per stump and the degree of stem pruning as well as the objective of the landowner. In any case, FMNR practice includes the following three steps:

- 1) **Select:** - Select desired tree stumps and for each stump, select number of the tallest and straightest stems to grow into trees
- 2) **Prune and manage:** - Remove the unwanted stems and side branches. Manage any threats to remaining branches from livestock, fire and competing vegetation or weeds
- 3) **Maintain:** - Cull emerging lower stems to reduce competition and prune side branches from time to time that might be used as firewood.

FMNR can be practiced on grazing and cultivated agricultural lands as well as degraded forests or landscapes. Regrown trees and shrubs help restore soil structure and fertility, reduce soil erosion and soil moisture loss through evaporation, rehabilitate springs and the water table and enhance biodiversity services. Some tree species also fix nutrients such as nitrogen into the soil. Depending on the owner's goals and the species being regenerated, tree can fulfil myriad of purposes, some of which are:

- Providing sustainable source of firewood
- Helping to increase soil fertility and improve crop production
- Supplying fodder for animals and food for people
- Creating wood and non-timber forest products for income generation

- Reducing run off, floods, wind damage and soil temperatures
- Increase water recharging capacity of the area

FMNR is more than just a biophysical resource management practice. FMNR is also a foundational practice used to support the sustainability and success of other development interventions. At its core, FMNR focuses on **re-greening the mind and empowering the community**. Re-greening the mind involves challenging destructive values held about trees and the environment and offering an alternative perspective that is working with nature that will provide more productive and sustainable outcomes than working against it. Communities practicing FMNR are empowered by ensuring access and control to the resource they manage. There are number of factors that contribute to an enabling environment for empowerment. These include:

- 1) **Changes in individual beliefs and attitudes:** - The practice of FMNR often requires changing beliefs and attitudes as well as tree management practices and is therefore a powerful tool for social change and promoting environmental values.
- 2) **Securing inclusive community involvement and commitment:** - While individuals can practice FMNR on their own, it is more successful when there is active involvement of everyone in the community who uses or has access to the communal land and trees
- 3) **A sense of hope and self-determination:** - FMNR is implemented by people who manage the trees with tools they already own and use them with agreements/bylaws they make among themselves. Communities that practice FMNR do not need outside support to improve their lands and lives.
- 4) **Improving policy support:** - FMNR is most effective when there are enabling policies, such as legislation that secures the right for individuals and communities to benefit from their work by harvesting trees and other non-timber forest products (fruit, honey, medicinal plants, grass, etc.)
Creates sense of ownership: - communities that practice FMNR are granted user right and legal access and control over the resource. They form local institution, cooperative/association as legal entity to secure sustainable resource management and benefits to the users groups.

It is the objective of each FMNR that determines the practice. For example, if the objective is to restore a biodiverse forest for habitat conservation, the types and numbers of trees selected, as well as the amount of pruning and ongoing management required, will be very different to an FMNR project practiced on cropping land, as part of an agroforestry practice.

2.1.2 PRINCIPLES OF FMNR

FMNR is considered as working well whenever the following three principles are in action:

- 1) The systematic pruning and management of existing indigenous trees and shrubs by the land user
- 2) An overall increase in tree or shrub coverage and biomass across the landscape
- 3) An improvement in the ecological function of the landscape and therefore its ability to support human well-being

A good FMNR practice involving an entire community or landscape will include the following additional principles:

- 1) Strong and inclusive community ownership and commitment for FMNR adoption
- 2) Built on traditional knowledge through a farmer-driven approach, empowering land users to experiment and adapt FMNR practices to meet individual and community needs.
- 3) Community agreements such as bylaw in place for the management of trees and land and benefit sharing
- 4) Progress made towards government recognition and formalization of rights and responsibilities of FMNR practitioners to access the trees and benefits from their work.
- 5) FMNR knowledge, skills and experiences actively shared with others, both within and beyond the community.

FMNR practice can contribute to a range of desired development outcomes, including, livelihood development, sustainable agricultural production systems, land restoration, climate change mitigation and adaptation, disaster risk reduction and community development. Hence, development organizations should deliberate this practice, especially in contexts where:

- Land degradation has exacerbated food insecurity, drought, conflict or the resilience of vulnerable people, as FMNR tends to be more readily adopted in areas where people have few immediate alternative options.
- The area was historically forested, is near a forested area or there is evidence of stumps or seeds, bush encroachment or successful re-greening efforts are present.
- Local communities have expressed interest in addressing local land degradation issues, or are open to discussions about this and take action that benefits them.

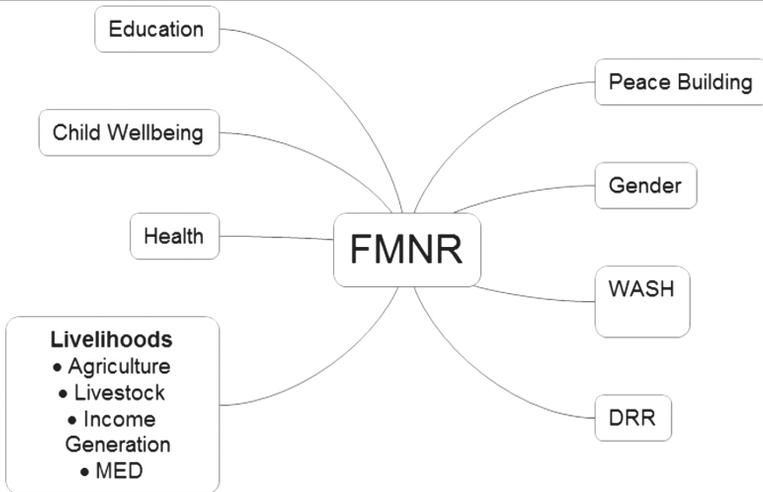
2.1.3 WHO CAN DO FMNR?

Process of FMNR is very simple, nearly any man or woman can manage trees. As the FMNR movement began with farmers, it is easy to think of farmers first, but anyone with access to living tree stumps or encroaching bush can adopt the practice, especially if they want to improve their land. Landowners or land users who control the process and the proceeds are highly motivated to do the work when convinced they will benefit from it. FMNR on communal land works well where there are very strong leadership structures, or where there are incentives for people to work towards a common goal, such as payments through a carbon credit scheme, access to credit to make business, bee keeping, fattening, etc. On communal land, the whole community or certain groups in the community, or those with a stake in the land, should jointly manage FMNR. This ensures that everyone understands why it is important to protect the trees and that everyone can benefit from practicing FMNR. When the land is individually owned, FMNR is best managed by the land users. This allows them to ensure they keep the number and types of trees that best suit their needs.

2.1.4 WHEN AND WHERE TO PRACTICE FMNR?

Many land users prune trees during the dry season, when there is not as much farm work to do and labor is more plentiful. The downside of pruning too early in the dry season, especially on farmland, is that newly pruned stems are more vulnerable to livestock, at a time when little feed is available. FMNR can be practiced on any land with living tree stumps capable of re-sprouting, as well as self-sown seeds or encroaching bush. The biggest determining factor to success, more important than climate, geography or even presence of tree stumps is the attitude of communities and individuals, and their commitment to succeeding. If the community is committed to FMNR and willing to make the changes necessary, then amazing results, even under extremely difficult conditions, are possible.

FMNR can be integrated into a range of different programs, including, water, sanitation and hygiene, disaster risk reduction, education, nutrition and health, agriculture and natural resource management and humanitarian and emergency response and food security programs. FMNR can be practiced across different land use systems like degraded forestland, cropland, catchment/watershed and grasslands.



- 1. FMNR degraded forestland:** - FMNR can be successfully used to regenerate degraded forests. In forests that have been disturbed through clearing or over harvesting, there may be low species diversity or bush encroachment, leading to poor forest structure. Forests that can provide sustainable benefits, such as the provision of medicines, fruits, fodder and firewood, are more likely to have the support of the surrounding community, making them easier to conserve. While the ultimate goal is to create a biodiverse natural forest, multiple stems can be left on each tree stump to meet short and medium term needs of the communities now managing and utilizing the forest. Indigenous species that promote soil conservation, or can be used for firewood, food, fodder, bee forage and wood are recommended.
- 2. FMNR in cropland:** - Farmers think trees on farmland will reduce crop yields. However, there are many examples where farmers have experienced no detrimental effects at all; some studies have shown harvests to double or triple in fields with trees. This is possible where trees with the right characteristics are selected, example *Faidherbia albida* trees are best fit to Ethiopian context. *Faidherbia albida* is a very popular fertilizer and fodder tree across many parts of Ethiopia. Tree species that are high value or beneficial to the crop, for example nitrogen fixing are recommended.
- 3. FMNR for water management:** - Increasing the number of trees in critical locations across a landscape can help address issues soil erosion, land instability, salinity and depleted groundwater resources in catchments or watersheds. Trees on hillslopes and upper catchment areas can assist in slowing the rate of surface run-off, allowing more time for water to infiltrate and recharge groundwater reserves. Species with a range of community values & biodiversity conservation values are best for this purpose.
- 4. FMNR in grasslands:** - In most grasslands, scattered trees are allowed to grow and provide multiple benefits such as of fodder and shade

for animals during dry period and increase biodiversity. However, tree density is highly regulated to avoid any negative impact on the grasses or shrubs grown beneath the trees as grasses and other plants that serve as source of feed for animals is the top priority of the land use system. *Faidherbia albida* and other fodder tree species are valuable for livestock feed and shade in dry period.

- 5. FMNR on communal sloping or degraded land:** - Usually, non-agricultural sloping land is communal land. To implement an FMNR program on these slopes, it is necessary to work through community groups. This often requires a lot of advocacy, awareness raising and patience. If communities do not have exclusive or predominant access rights to the area, then it is important to engage with authorities to ensure they have legal user rights. Without reasonable assurance that they will benefit from any improvements they make to the communal land; communities are unlikely to persevere with FMNR beyond the life of a project or intervention from external parties. FMNR on communal land provides a number of valuable benefits. These include fodder, traditional medicines, firewood, timber and wild foods, as well as ecosystem services such as groundwater recharge, improved nutrient cycling and soil fertility, plus reduction in erosion, flooding and even landslides. Potential negative effects include an increase in wild animals that might be perceived as threats to crops or livestock. Many wild animals are very important for ecotourism and other economic purposes. However, there are wild animals that are dangerous for crop or livestock. Such animals will be taken care by the wildlife authority to reduce negative impact on community properties.

Table 1: Shows land use types and tree management

Land use	Cropping	Pasture	Hillslopes or degraded communal land	Forests
Tree density	Lower density (Approximately 40 trees per hectare).	Moderate density (approximately 50-100 trees per hectare)	Moderate density (approximately 100 – 1000 trees per hectare)	High density, depending on rainfall. (1,000-1,500 trees per ha).
Types of trees or shrubs regenerated	Species that are high value or beneficial to crops, nitrogen fixing	Fodder species, or species with other uses such as medicine or food. Shrubs and grass-land species	Indigenous species that promote soil conservation, or can be used for firewood, food, fodder	Species with a range of community values & biodiversity conservation values
Species Diversity	Lower diversity Trees species selected primarily for crop interaction and other uses	Moderate diversity of species to meet fodder, firewood and soil conservation needs, grass and shrub species	Moderate diversity of species to meet fodder, food firewood and soil conservation needs. Grass and shrub species	Maximum diversity of species to be encouraged, including trees, shrubs and grasses.

2.1.5 TREE SPECIES SELECTION

Tree species selection is a critical part of the FMNR process. The land user should be responsible for selecting the tree species of most use to them and their families. FMNR specifically works with native species naturally occurring in the targeted area, helping to improve biodiversity and conservation of local environmental ecology while also meeting land users’ needs.

Tree species identification and selection is often a mutual learning process on the part of both the land user and development workers, as well as other external experts who may involve. As the names, uses and values of certain indigenous species may not be known to the same degree by all in the community, it will be important to consult elders, women, local experts or vegetation specialists and reference material to learn what trees are in the FMNR site, and

what useful services they may provide. To assist in collecting this information, a 'preferred FMNR species list' can be developed, based on which species are locally available, what benefits they have for the communities' priority needs, or restrictions for use. Species selection involves the following steps:

Step 1: Survey land for sprouting stumps and identify what species are present: - This is the first step to take when establishing an FMNR site. Look for stumps, shoots and seedlings available for regeneration. While you are surveying the site, record some details about the land to be treated with FMNR. This information will help in monitoring, evaluating and learn what is working, and what is not.

Step 2: Select the species and stumps to be regenerated: - Species selection is an important step in FMNR. Selection depends on a number of factors, including what species are naturally occurring; their coppicing ability and uses; the local beliefs and values ascribed to each species; and characteristics such as competitiveness with crops and growth rate. Ensure there is maximum diversity of species, since every native species provides some ecosystem service or benefit. Many species also provide inclusive benefits for the community. If the FMNR site is managed by a group or is on communal land, it is important that all communities involved in the site are able to contribute to the species selection process. Get people to participate in selection process and encouraging them to leave as many different species as possible for enhanced biodiversity. Table 2 below helps communities identify what species should be on their preferred FMNR sites.

Table 2: Tree species primary use and characteristics

Primary use of trees	Common characteristics of useful trees
<i>Intercropping with food or cash crops</i>	<ul style="list-style-type: none"> • <i>Deep roots that avoid competition with crop root zone</i> • <i>Open canopy for light shading (can also be managed through pruning)</i> • <i>High-nitrogen leaves for mulch</i> • <i>Nitrogen-fixing nodules on roots</i> • <i>No allelopathic effect, i.e. does not suppress the growth of other plants</i> • <i>Root structures that provide 'hydraulic lift', drawing up deep water from the soil profile and releasing it for other parts of the tree, and other plants</i>
<i>Boundaries/living fences</i>	<ul style="list-style-type: none"> • <i>Dense or bushy habit</i> • <i>Thorns to deter livestock or intruders</i> • <i>Useful for fodder</i> • <i>Neutral or beneficial for crops grown in neighboring plots</i>
<i>Timber and firewood Honey Fodder</i>	<ul style="list-style-type: none"> • <i>Strong wood/high energy content for firewood</i> • <i>Withstands pruning of large branches and stems</i> • <i>Flowers preferred by bees</i> • <i>Flowering occurs at different times throughout the year,</i> • <i>Leaves, bark or pods palatable and nutritious for livestock</i> • <i>Quick to reshoot</i> • <i>Withstands regular pruning or grazing</i>
<i>Fruit and non-timber tree products</i>	<ul style="list-style-type: none"> • <i>Produces fruit or non-timber tree products or valued for sale at accessible markets (may include tree seed from superior quality 'mother' trees)</i>

<p><i>Forest restoration and biodiversity conservation</i></p>	<ul style="list-style-type: none"> • <i>Rare or less common indigenous species of trees, shrubs and grasses</i> • <i>A high density of stumps should be selected for regeneration</i> • <i>Species valuable for habitat and food sources for native wildlife to encourage their return to the area</i> • <i>Species that provide fruits, medicines, honey or firewood to increase the value of the forest area for local communities</i>
<p><i>Land stabilization/erosion control</i></p>	<ul style="list-style-type: none"> • <i>Deep roots to stabilize soils</i> • <i>Fast growing and provide improved conditions for additional species to be established in the future</i> • <i>Stumps or seedlings that are located along terraces or bunds to assist in slowing the rate of surface water run-off and encourage infiltration</i> • <i>Species that provide value to the local community such as firewood, medicines, honey production</i>
<p><i>Pasture land / communal grazing land</i></p>	<ul style="list-style-type: none"> • <i>Fast growing or able to grow large enough to withstand speedy browsing or grazing</i> • <i>Thorns, which may help a tree be more resilient to browsing pressure during its establishment - nutritious leaves, pods or bark for supplementing livestock diets in times of grass shortages</i> • <i>Open canopy for dispersed shade and maximum grass growth (tolerant to manage shading)</i>
<p><i>Water conservation</i></p>	<ul style="list-style-type: none"> • <i>Root structures that provide 'hydraulic lift' by drawing up deep water from the soil profile and releasing it for other parts of the tree, and other plants, during dry spells</i> • <i>Heavy mulching, which provides organic matter to the soil to improve its water holding capacity</i> • <i>Deep roots, which provide greater water infiltration opportunities through improvements in soil structure and reduction in compaction</i>

1. NUMBER OF TREE STUMPS TO BE SELECTED: - Across all land types, the number of tree stumps left to grow will vary with climate, tree species and objectives. Almost universally, farmers are reluctant to leave trees on their

farmland. In most places, the cultural norm is to clear all trees from farmland. FMNR promoter should expect resistance and work wisely to introduce this radical change to accepted norms. On cultivated land, farmers tend to begin very conservatively, often leaving only 5 to 10 trees per hectare but increase them after some benefits are gained. On grazing land, it may be possible to exceed 100 trees per hectare while still increasing fodder yield. On forestland, all stumps and species would ideally be encouraged to regrow, using thinning and selected pruning to support better tree growth, while also providing local communities with benefits such as firewood. If there are no enough naturally occurring tree stumps or seedlings available, it is better to raise tree seedlings in a nursery, plant out or seeds are directly sown in the field and manage them, using FMNR techniques. The principles of pruning and protecting will provide the same benefits to nursery trees as they do to wild seedlings. Some FMNR sites may not require more regeneration, but instead may focus on the better management of existing trees, shrubs and even grassland. The same process of species surveying, prioritization and selection still applies; land users can choose which trees and shrubs they would like to manage, and what management needs to occur to help them reach their desired goals.

Step 3: For each stump, select three to five stems to keep and prune away the unwanted stems: - After selecting the stumps, the land user decides the number stems to grow on each stump, based on his or her needs; the species selected and the ultimate objectives of the FMNR sites. In general, it is advised to start by leaving three to five stems per stump. While it is possible to leave and manage only one regenerated stem, it is usually better to keep three to five, at least initially. This is because more than one stem allows the land user to harvest some of the regenerated wood in the short term, while still leaving a main stem to mature into a tree. Surplus stems can be harvested each year for firewood, or poles. A new sprout should be allowed to grow every time a stem is harvested for sustainable harvest of wood.

Step 4: For each remaining stem, prune side branches up to halfway up the trunk: - Under normal pruning practice, side branches are cut flush with the stem. However, in most areas where FMNR is practiced, there is no fencing to deter livestock from trees. To help protect new growth, it is possible to cut the side branches 10 to 15 centimeters from the stem as a slight deterrent to livestock. After a year or so, when the tree is more robust to resist damage, these short side branches can be pruned right back to the trunk.

Select desired tree stumps and for each stump, choose number of (tallest and straightest stems to leave

Remove unwanted stems and side branches

Cull emerging new stems and prune side branches from time to time

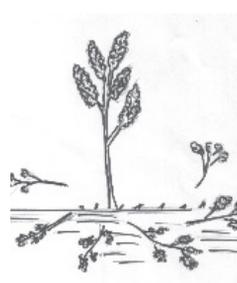
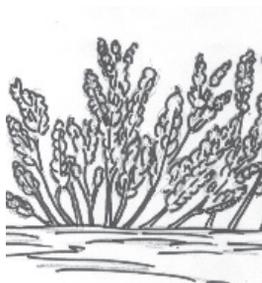


Figure 1: Tree pruning/copies reduction system to reduce competition



Step 5: Protect the stems while they are growing: - Once you have done the work of selecting, pruning and maintaining trees, it is important to ensure your trees will not be damaged. In FMNR, social fencing practiced as best protection method. Social fencing is where members enforce bylaws/laws themselves. They set by-laws and stick to them, with infringements (an unsurprisingly few number) punished by fines. That is, an agreement between everyone using shared natural resources (in this case, land and vegetation) to follow a joint-

ly developed set of bylaws on how to manage these resources. In practical terms, this includes self-imposed regulations on livestock movements, use of fire and harvesting of trees. When these bylaws are embedded in traditional legal structures, they can be just as or even more effective than wire fencing, which after even a short period can be no match for resourceful, hungry goats.

Step 6: Prune unwanted emerging shoots/branches every two to six months as needed: - New branches and stems will continue to emerge, so every two to six months it is best to return and prune away new growth. This will produce straighter stems and help the selected stems grow quickly. Once regrowth reaches two meters or more, it should be safe to prune side branches up to two-thirds of the way up the stem. However, the more branches you leave, the more leaves will be photosynthesizing and fueling tree growth. Hence, avoid over pruning for healthy growth of trees. The pruning technique described below is the basic approach used in most situations. Over time, land users may adapt their techniques to maximize the particular outcomes they are looking for. Managing threats to trees such as livestock, weeds, pests and disease give trees the best chance to regenerate.

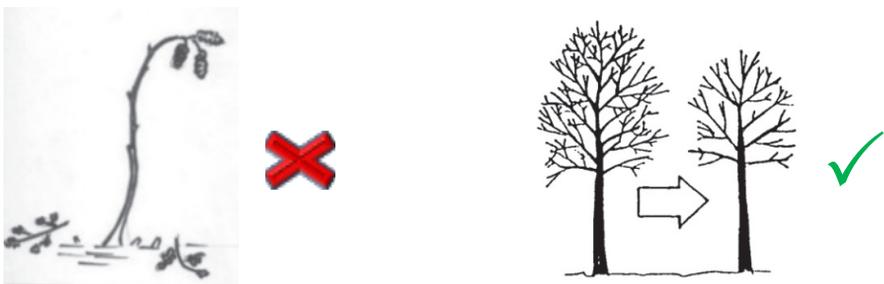


Figure 2: Over pruning effects on growth (left) and normal pruning support for growth (right)

The three golden rules of pruning:

While the act of pruning itself is not difficult, there are three golden rules to keep in mind to prevent trees becoming diseased or damaged:

1) Use sharp tools. Sharp saws or secateurs are ideal pruning tools, since they provide a clean cut. If you do not have these tools, then machetes, harvesting knives, axes and even hoes will work fine as long as they are kept sharp.

2) Wherever possible, cut upwards not downwards. Cutting upwards causes less damage to the bark, so the tree will recover faster. Because this technique is less damaging, it also reduces the risk of disease and insects entering the wound where the tree has been cut.

3) Do not prune stems too high. Pruning too high up the stem may make the stem too fragile or top heavy to survive wind or animals brushing against it.

Figure 3: Golden rules for tree pruning

Step 7: Utilize trees for planned purposes: - FMNR trees can be managed for a wide range of purposes, depending on the land user's needs. Using the pruning system described above, land users are encouraged to harvest one stem per year over a four to five-year cycle, always allowing a new shoot to replace the harvested stem. Ideally, in the fifth year, the largest stem will have attained tree stature.

2.1.6 TAKING STOCK ASSESSMENT (TSA)

Taking stock assessment is assessing current situation and goals of the community (what the community expect to achieve) from FMNR; land use types, social and cultural characteristics of the community and examining changes over time in relation to climate change, land productivity and disaster occurrence and livelihood condition. During TSA, ensure all stakeholders are involved and able to contribute to the taking stock assessment activities. This will increase community support and buy-in to the decision of undertaking FMNR.

1. HOW TO TAKE STOCK ASSESSMENT: - TSA should be done with the community that will potentially be involved in the FMNR project. This includes farmers, pastoralists, local leaders, government sector offices and other relevant stakeholders at the community level. TSA is best undertaken in a workshop

format, as this highlights the seriousness of the topic being discussed. The assessment can also be conducted through focus group discussions (FGD) or site visits to multiple locations in the area. During the TSA, the following point should be given attention. Answering the following questions and their description in detail will determine the types of information that should be gathered during the TSA.

2. QUESTIONS TO BE CONSIDERED DURING TSA: -

a) What is the current situation and what are the goals of the individuals/ community who will manage the trees?

Considering the current situation in the community, environmental, economic, social and the biggest and most pressing challenges that affected the livelihood of the community. Understanding individual and/or community goals and how FMNR can help to achieve them is vital. In this regard, community members should list goals they have for their land, work and lives that are affected by the health and productivity of their land. The FMNR project will ultimately build on the achievement of these goals. Goals should be recorded and used in FMNR Action Planning.

b) What type(s) of land the communities are working with?

This refers to the characteristics of the land they are working with and how they relate it to FMNR success. This is because, communities live and practice FMNR in a wide variety of places, humid or dry, cold or hot, mountains, valleys or plains and this should be specifically recorded as it helps for planning FMNR management.

c) How is the land used?

This is to make clear how the people who live and work there use their land, as well as what key elements need to be restored and maintained in order to ensure environmental integrity and function. Restoring tree cover for the value of reduced flooding and erosion, increased ground water recharge and the benefits of increased biodiversity and habitat are very important for environmental function and ultimately for the productivity and profitability of more intensively utilized land.

d) What is the local climate and disaster risks in the area?

Because FMNR works with trees, it will influence and be influenced by the climate of the place it is practiced. An assessment of the environment will look

into account how much rainfall the area receives, when the rains come, what happens to the rainwater, temperature and any other important climate information that will affect decisions about how and where to do FMNR. It is also necessary to be aware of what disaster risks occur in the area. Many of these can be climate based, such as drought, floods and storms, while others may include natural disasters such as earthquakes or landslides.

e) What plants live naturally in the area?

One of the first things that FMNR practitioners need to understand is what types of trees grow in their area, and what types of stumps or self-sown seedlings are available to be managed with FMNR practices. It is important to begin compiling lists of indigenous plant species and their characteristics and uses. It is also helpful to understand other types of plants are common there.

f) Describe social and cultural characteristics of the community

It is important to understand how the community is organized, including what leadership and government structures as well as influential groups and leaders exist. These questions can start to inform the identification of key stakeholders that may need to be involved in any future FMNR projects. Ask what laws or community agreements (formal or cultural/traditional) influence the management of trees or natural resources. Knowing how the community has changed over time in terms of population, wealth and cultural aspects, such as religion and relationships with the natural resources will also help to explain how some practices have changed over time what actions can support FMNR.

g) What changes are there over time?

In each area of your assessment, look at changes that have occurred over time. Changes in soil fertility, crop yields and weather patterns, the amount of water available to meet people and animals' needs and any other changes that affect people's lives and work. It is equally important to discuss the reasons for these changes. Answering these questions and many more others will help FMNR project implementers to decide on the process steps, techniques and method to follow for better success of FMNR and will guide on how to achieve the envisaged goal.

6. USING THE STOCK ASSESSMENT: -If the stock assessment has identified gaps in environmental health that FMNR can help to fill, there is an opportunity to introduce the practice following these three steps:

- Introduce the concept of FMNR to the community with examples that have been practiced somewhere in the past. This should involve a physical demonstration on how to do FMNR, partly because not everybody will understand FMNR through a verbal description.
- Identify and clarify any questions and concerns of the community.
- Provide FMNR process to make informed decisions about whether FMNR is the right choice for them. This could involve: 1. Reflecting on information gathered about the past, present and future to help people accept that continuing with business as usual will result in disaster. 2. Presenting a case study of FMNR practices supported with films and written resources available. 3. Let 'positive deviance', individuals who are already practicing some form of FMNR share their experience on why and how they do it.

2.2. BENEFITS of FMNR

The comprehensive benefits of FMNR make it a foundational practice for sustainable development. Increasing tree density and biomass has positive benefits for soil fertility, water availability, biodiversity and other ecosystem functions performed by a healthy environment. Without a strong, functioning environment, it is very difficult to achieve food security, economic development and resilience to shocks. Just as FMNR projects and the communities who practice FMNR are all different, the benefits of FMNR will vary by location, goals and context.

Improved vegetation cover: - Large areas of land can have indigenous tree cover restored for relatively low cost with FMNR. Improved vegetation cover is desirable to provide more organic matter, nitrogen and stability to the soil, for biodiversity conservation and for timber and non-timber forest products they provide for the communities. Increased vegetation cover also captures and stores significant volumes of carbon from the atmosphere to combat climate change.

Improved soil and land condition: - As tree cover increases through the implementation of FMNR, soil quality and fertility are rebuilt. High-density tree cover also helps to reduce the loss of topsoil by erosion. This occurs as trees reduce rainfall run-off; slow down wind speeds and trap airborne topsoil particles. Vegetative cover of agricultural land and greater amounts of organic matter improve soil moisture retention by reducing evapotranspiration and

improving water infiltration.

Improved crop production: - The use of FMNR on agricultural fields has a positive effect on crop productivity. Not only do trees deposit mulch and nutrients into the soil, but also provide shade for exposed soils and reduce evaporation; attract animals that deposit nutrient-rich manure and urine, all to the benefit of crops grown amongst or near trees regenerated by FMNR.

Improved grass/fodder and livestock production: FMNR trees on farms and grazing lands provide fodder and shade for livestock and improved pasture growth. This, in turn, increases animal health and productivity, as well as survival rates during severe drought. With the implementation of FMNR, monthly fodder production stabilizes. This allows farmers to manage their herd as they see fit, rather than as a result of weather events, allowing for improved herd management.

Improved food security: - The implementation of FMNR improves the food security and resilience of rural families. FMNR helps to put more food on the table, reducing communities' vulnerability to food shortages and famine. Benefits such as food and income from fruits and nuts of regenerated trees contribute to a diversified diet and improved nutrition and provide a stable food source.

Improved household incomes: - Small-scale farming families can experience income growth as a result of improved crop yields, the sale of tree products, improved livestock production as well as the growth of assets such as high-value trees. FMNR trees on farms and community-managed forest reserves generate a surplus of natural resources that can be sold to diversify household incomes, including firewood, construction timber and non-timber forest products, medicine and honey.

Improved community cohesion: - The benefits of an improved environment show communities how positive results can be achieved through FMNR. Restoration of tree cover has a significant effect on the psychological and physical well-being of residents and creates advocates for community development. FMNR programs also build durable intra and inter community cooperation and collective decision-making. This helps achieve an organized community-led approach to environmental regeneration as well as improved agricultural production.

2.3. COMBINING FMNR WITH OTHER PRACTICES

FMNR is a foundational and complementary intervention that is rarely promoted as a standalone activity. When planning FMNR interventions, it is important to address key limiting factors to sustainable livelihoods in order to take an integrated approach. Sometimes communities can see the short-term reduction in productivity as trees grow in farmland, as a barrier to implementing FMNR and the mid-to-long term return on investment. This is especially the case for the most vulnerable people, who prioritize immediate return on investment to cover all their daily needs. Combining FMNR with other livelihood options that provide short-term benefits, such as poultry, bee keeping and market gardening, increases the likelihood of FMNR adoption. Because of this, it is common to see FMNR interventions combined with other practices such as soil and water conservation, improved livestock management, climate change adaptation, disaster risk reduction or management economic development, irrigation and improved farming techniques. When choosing complementary practices to be combined with FMNR, it is always wise to use the most locally adapted and climate-smart practice available to increase the long-term success of farming, herding or forestry. The following are some of the key practices complement FMNR projects with forestry, agriculture, and environment as development practices.

Beekeeping: - Beekeeping and honey production benefit from an increase in trees and can be a beneficial source of food and income. Beekeeping can also provide a valuable source of income during the short 'start-up' period of FMNR, when new trees are being protected but not yet contributing as economic benefits.

Fodder production: - Leaves and seedpods of many trees are highly nutritious, while the regeneration and management of trees in pastoral areas also contribute to an increase in grass growth. When trees are still being protected, fodder from grass in the field or tree pruning can be collected and carried away to supply animals. Fodder can also be dried and stored as dry or cold season feed. As grass-growing conditions improve through the effects of FMNR, it also becomes more viable to invest in grass seed varieties that provide high-value fodder.

Small livestock, animal fattening and breed improvement: - As grass, nutritious seedpods and leaves become more plentiful in FMNR sites, these can be stored by FMNR practitioners and used to fatten animals for profit. This is another way to diversify incomes during the start-up period of FMNR, before trees are mature. Furthermore, once reliable fodder supplies are established, investments in improved breeds of livestock become more successful, and can be used to increase herd quality and productivity over time.

Agroforestry, forestry and tree planting: - Because FMNR can increase tree cover on both farm and forest land, it's not difficult to see how it can help forestry and agroforestry efforts. Through careful selection of species and location of stumps to be regenerated, FMNR can be used to implement systems such as evergreen agriculture, alley cropping, woodlots and silvopastoral practices. Enrichment planting can also occur simultaneously with FMNR if there are not enough surviving stumps or self-sown seeds to meet the site objectives.



Figure 5: Trees in agriculture field and alley cropping (crop between rows trees)



Conservation of soil and water and erosion control: - FMNR decreases the speed of wind and water run-off, while trees help to hold soil in place. Trees also allow more water to sink into the soil and recharge wells and aquifers. The organic matter from tree leaves helps to improve the structure of soil, while fertilizer trees increase soil nitrogen. FMNR is typically implemented to restore degraded land. Occasionally,

land has been so degraded that there are few sprouting stumps or naturally sown seedlings remaining. In such situations, soil and water conservation practices and direct sowing of tree seeds may be implemented to bring the land to a point where FMNR can be practiced.

Water recharging: - Scientists have proven that intermediate (moderate) tree cover can maximize groundwater recharge in the seasonally dry tropics. Where FMNR has been conducted at scale, there are documented cases of water tables rising, and springs which had long dried up flowing. Most of the soils in the seasonally dry tropics have lost significant amounts of moisture-retaining organic matter. In addition, the removal of vegetative cover and continuous grazing has compacted these soils to the extent that they now shed water.

Fuel-efficient cook stoves and alternative fuel sources: - Programs introducing fuel-efficient cook stoves and alternative fuels are a natural fit for FMNR, as these interventions reduce demand for firewood and as a result, the pressure on people to cut more trees. These interventions are frequent in disaster and refugee relief contexts, as well as in health programming.

Savings groups: - Communities practicing FMNR may choose to work together to achieve additional benefits. Savings groups allow community members to build their savings for future needs, learn financial skills, provide for emergencies and hard times, secure loans and support vulnerable members of the community. Both FMNR and savings groups build trust and cooperation skills, so they fit easily together.

Local Value Chain Development: - Communities with improved land and increased income and savings may also want to consider small business and value chain development. These practices help people generate more sustainable incomes by building up their businesses, learning business skills and gaining better access to profitable markets. Like FMNR, these practices depend on groups of people coming together to support each other and collaborate for the benefit of the community.

2.4. FMNR INTEGRATION WITH OTHER PROJECTS FOR IMPROVED LIVELIHOOD

The success of FMNR approach is based on how much it integrates with other development projects and practices to bring livelihood impacts on the target groups. The sole application of FMNR would not give a significant livelihood improvement in the target community. Therefore, it is imperative to think and design strategies how to integrate and incorporate other development practices and enabling environments into the FMNR practice. FMNR is integrated in the systems mentioned below.

1. FOOD SECURITY AND NUTRITION: - A primary purpose of FMNR is to increase land productivity with fast rehabilitation of degraded land that suits the local context. The FMNR increases farmers' ability to produce more food crops as well as to diversify their crops. The regeneration of the trees from left stumps and purposive introduction of multipurpose trees especially fertilizer trees would benefit to improve the production and productivity of the crop as well as increased the diversity of available meals for the households with fruits, crops, vegetables and other products that enhance the dietary diversity and nutrition of the households. Certain tree species regenerated through FMNR can also provide benefits including edible fruits, leaves, wood and medicinal products. Increased access to firewood from trees closer to home, improves time of women and children spent on firewood collection. Access to fodder from trees, shrubs or better grass growth supports livestock production (chickens, goats, cattle, etc.).

2. DISASTER RISK REDUCTION AND CLIMATE CHANGE ADAPTATION: In places where communities are affected by disasters and climate change impacts, such as drought, flooding, crop loss, famine or the effects of pests on crops, FMNR contributes for reducing these risks. Increased tree cover helps to reduce wind speed, high temperatures, water run-off and flooding while also increasing the productivity of the land. The environment provides resources and livelihood opportunities as well as presenting risks. Community activities such as farming, grazing and extraction of natural resources increase land

degradation. Activities such as FMNR that strengthen landscape resilience and long-term livelihoods are important disaster mitigation strategies. Following a disaster, FMNR activities can provide valuable assistance in the recovery of affected landscapes. If associated with food-for-work or cash-for-work programs, it can contribute towards short-term emergency relief while also supporting the re-establishment of livelihood systems.

3. HUMANITARIAN AND EMERGENCY ASSISTANCE: - FMNR has been successfully included in humanitarian and emergency assistance programs in a number of different countries. Programs such as cash-for-work and food-for-work are common in these contexts and have been used successfully to encourage people to implement FMNR across large areas. Beyond meeting initial needs, such as a sustainable source of firewood, FMNR also provides people with a productive resource to contribute to future income sources, and therefore increases the rate of recovery from such emergency situations.

4. INCOME GENERATION FOR ECONOMIC DEVELOPMENT: - The majority of Ethiopian economy depends on traditional agriculture predominantly natural resources based and land. Therefore, to increase incomes and improve livelihoods at both a household and national level, a strong environment and natural resource base is important. FMNR can contribute to sustainable tree products that can be used to generate income (such as firewood, fruits, fodder or timber), improves the productivity of land used for growing crops and feeding livestock from the wise management of trees in the field. By improving resilience to shocks such as drought, it helps households maintain an income source during difficult periods. FMNR is also often combined with value addition, savings and loan schemes, or market linkage interventions to enable land managers and communities to maximize income generation and economic development opportunities.

5. ENVIRONMENT CONSERVATION AND CLIMATE CHANGE MITIGATION: - FMNR seeks to increase tree cover in the landscape by integrating trees into farmland and restoring degraded forests. Including more trees in the landscape allows for the sequestration of greater volumes of carbon, mitigating further exacerbation of climate change impacts. FMNR's emphasis on conserving

indigenous tree species is valuable for maintaining species diversity. When FMNR is led by the community, traditional knowledge around these species and their uses is also conserved. Re-greening the mindset' through FMNR community engagement and experience results in land managers who value indigenous species and vegetation cover and who are less likely to use environmentally destructive practices such as tree clearing and unsustainable charcoal and firewood generation.

6. CONSERVATION AGRICULTURE WITH TREES: - **Conservation Agriculture (CA)** is a set of soil management practices that minimize the disruption of the soil's structure, composition and natural biodiversity. CA has proven potential to improve crop yields, while improving the long-term environmental and financial sustainability of farming. Conservation agriculture is based on three principles:

- keeping bare land covered at all times
- disturbing the soil as little as possible and
- Rotating crops

This system works well with FMNR, where pruning and leaves can be used as ground cover and compost. Tree roots help to break up hard soil, avoiding the need for excessive tillage, while some trees produce natural fertilizer to boost soil fertility. As trees grow, they provide additional fodder and firewood. This reduces the need for families to use crop residues for fodder and fuel and enables land users to leave the residues on the field, protecting the soil from erosion, building soil fertility, and reducing evaporation and water run-off.

7. WATER AND SOIL CONSERVATION: - FMNR decreases the speed of wind and water run-off, while trees help to hold soil in place. Trees also allow more water to sink into the soil and recharge wells and aquifers. The organic matter from tree leaves being shed helps to improve the structure of soil, while fertilizer trees increase soil nitrogen. FMNR is typically implemented to restore degraded land. Occasionally, land has been so degraded that there are few sprouting stumps or naturally sown seedlings remaining. In situations like this, soil and water conservation practices such as digging holes such as half-moon

and direct sowing of tree seeds may be implemented to bring the land to a point where FMNR can be practiced. These methods increase the capture and infiltration of water and concentrate fertility for crops and trees growing.



Alage site (2018) before project intervention



Alage site (2019) 1 year after project intervention

2.5. COMMUNITY ENGAGEMENT IN SUSTAINABLE FMNR PRACTICE

For FMNR to become a sustainable practice embedded in everyday life, it requires a community that is empowered and interested to understand their environment and identify what is needed to improve their lives. Communities that change the ways they think about and manage their environment, create and implement bylaws and other agreements on sustainable land management and income generation are successful. When possible, the communities should work with government officials and others to create a favorable legal and policy environment in which they work and live.

Engaging the community in the right way from the beginning is foundational to the success of any FMNR practices. FMNR involves change not just in the landscape, but often in the ways that people interact with each other. Key principles of FMNR, such as inclusion and ensuring that women and minorities have equal rights and access, may require the community to carefully think through their values and norms. This is a valuable outcome, but it requires courage and openness. The following sections will describe some of the things to keep in mind when engaging with the community to achieve these objectives.

Encouraging community involvement: - It is important that decisions about land use involve all the different groups in the community; including women and men, elders, young people and children, people with disabilities and any minority groups. In FMNR, the more people involved the better. Having people from all backgrounds share their experience and collaborate to improve their environment makes everyone more successful. Traditional leaders and landowners including extension staff from environment, forestry and climate change commission and ministry of agriculture, as well as local authorities across both FMNR planning and decision-making are very important in FMNR facilitation and adoption.



Figure 5 enrichment planting by community mobilization

Involvement FMNR groups: - While FMNR can be practiced by individuals as well as whole communities, it is helpful to work with others willing to participate and support. Working as a group is very important when tackling landscape challenges. Making changes at the scale of a whole watershed or catch-

ment area requires those at the top of the hills to work with those further down. Belonging to a group can provide mutual support, shared learning, and collective action. Common relevant community groups that FMNR operates through include, women groups; youth groups or clubs; farmer and producer groups; cooperatives and collectives; saving groups and groups existing for the purposes of mutual support and collective action, which have an interest in FMNR. The following major points should be considered for better community engagement.

- Wide-scale awareness creation, including practical field demonstrations on FMNR techniques and use of local media, such as radio and posters, to inform its benefits to the public.
- Consultation meetings and stakeholder planning, preferably working towards creating a shared vision for the future. Community ownership and commitment will make the difference between merely having plans and having plans that work.
- Vulnerability and capacity analysis (VCA)
- Facilitation of community-led action planning, implementation, monitoring and adaptation to ensure the best outcomes from the efforts of land users.
- Facilitation of open dialogue and exchange of ideas at the community level through workshops and community meetings. All stakeholders, including minorities and marginalized groups, need to be heard, because when aiming to sustainably manage a shared natural resource base, everybody's needs must be accommodated to the degree possible.
- Engaging children through school programs or environmental club activities. Children can also be a powerful force for change and should be included appropriately.
- Survey of potential FMNR fields and development of preferred FMNR species list with the community
- Stakeholder analysis to identify potential partners and important stakeholders within and beyond the community, such as identifying traditional and religious thought leaders.

- Facilitation of exchange visits with existing FMNR practitioners. This is a powerful way to demonstrate the benefits of FMNR.
- Strengthening of existing governing structures, through training, mentorship, networking, etc. or if they are not already present, facilitating their establishment. These structures can include FMNR committees, task groups, associations and similar organizational structures, according to the community's culture and needs.
- Creating workable mechanisms for dealing with threats and obstacles. Usually this includes development of bylaws around tree use and management; establishment of volunteer patrollers; and a sustainable and appropriate means of enforcing regulations, such as fines, community service or other approaches as agreed by the community.
- Advocacy for government recognition and formalization of rights and responsibilities of those practicing FMNR.

The value of including community leaders

When you are engaging with the community, don't forget the community leaders – these people can make or break the success of FMNR. Leaders, for our purposes, come in many different forms:

1. **Traditional leaders** often determine how land is used, and they have a significant impact on the attitudes of the community. By engaging with traditional leaders first, you may find their support ignites the interest of the community as a whole.
2. **Faith leaders** play an important and often influential role in the lives of the community; they need to be invited into FMNR efforts too.
3. **Group leaders** in cooperatives, as well as farmers', women's and other community groups, are important allies.
4. **Natural leaders** are influencers in their community, and it is important to know who they are and include them in FMNR efforts. Natural leaders are people that others trust and look to for direction.

Figure 7: Values of including community leaders

Community engagement to create a sustainable FMNR practice

Effective community engagement that helps a community to understand, be empowered, confident for change, innovative and share their experiences is critical for long-term sustainability of the FMNR movement. Community engagement generally covers six main areas:

- 1) *Working with the community to build relationships and trust when introducing the concept of FMNR, as well as understanding who to engage and how through a stakeholder analysis.*
- 2) *Creating a community-led FMNR action plan to move from engagement to action.*
- 3) *Building capacity in the community, not only to practice FMNR technically, but also to solve problems, negotiate, experiment, observe, advocate for policy changes, and communicate and share FMNR with others.*
- 4) *Supporting FMNR champions to spread the movement and support the community to adopt the practice sustainably. This involves timely, regular follow-ups, particularly in the early stages.*
- 5) *Identifying, creating and implementing bylaws to reflect the community's agreements about FMNR and how the resources should be managed.*
- 6) *Advocating for policy change to help further enable the spread of FMNR.*
 - o *As each community is different – with different cultures, histories, politics and challenges – it will be necessary to work with them closely to design and implement both sensitive and effective community engagement activities.*
 - o *When community engagement in FMNR is effective, communities understand the link between their lives and the environment, and are fully empowered to identify, experiment, innovate and share the changes necessary in a sustainable way*

Figure 8: Community engagement to create sustainable FMNR practices

2.6. BUILDING COMMUNITY AGREEMENT AND OWNERSHIP

FMNR involves decision-making. Therefore, community ownership of the process is essential. The physical practices that are part of FMNR activities are important, but they will not succeed unless the people who use the land more broadly are in agreement on how to manage it. Every man, woman or young

person who uses the land should decide together on how they will treat the trees being regenerated and what benefits each will get from the FMNR work. This way, FMNR plots are more likely to be protected from damage by competing land uses, such as grazing and conflicts over the use of resources are avoided. The key to FMNR success is that the community doing the FMNR work has full ownership of the process. If FMNR is promoted by anyone from outside that community, it is critical they know how to work in a way that does not take over, but leaves decisions, responsibility and power firmly in the hands of the people.

It is wise to expect some resistance and even opposition. Be prepared to make visits and spend time with people one-on-one and in small groups. Most importantly, join people on their farms or communal FMNR sites and work with them on pruning, explaining the benefits as you go. When extension agents do not engage in physical labor, it conveys conceit and puts distance between themselves and the people they are trying to teach; who, in most cases, earned everything they own through manual work. Above all, always listen; listen for what people know already, listen to their concerns and listen to their hopes for the future.

Remember these points when building community agreement and trust

- 1. Be inclusive of everyone, regardless of their role, gender, ethnic group and age.*
- 2. Respect and encourage thoughtful, civil debate.*
- 3. Discuss every person's concerns and work together to find solutions that help everyone. There is nearly always a locally appropriate solution; give people the opportunity to suggest it.*
- 4. Always start with the assumption, other person has positive intentions and respond to misunderstandings and mistakes*
- 5. Whenever possible, invite people already practicing FMNR to share their experiences and knowledge*
- 6. Listen and learn. By listening, you will develop the knowledge necessary to support the community. It is the only way for you to find out what might be the best way to introduce FMNR. Listening will help you become aware of threats to success and it will win you many allies.*
- 7. Share what you know and what you do not know. Admit when you do not know the answers.*
- 8. Talk about values. Do not lecture or preach, just share your values, listen to others' and walk your talk. Then, when you make suggestions, connect them to shared values.*
- 9. Make sure that everyone knows and try FMNR in their own way, as much or as little land as they are comfortable using.*
- 10. Do what you say. If you promise things you can't do, people might like you, but they won't trust you*

Figure 9: Points for building community agreement

2.7. CAPACITY BUILDING

Capacity building activities seek to equip people with the knowledge and skills not only to successfully practice FMNR, but also to work together and to negotiate and share their experiences with others. Capacity building aims to help communities develop the skills and structures needed and to have the capacity to organize and manage the work, communicate about what they are doing and deal with problems. Capacity building should enable and empower participants to take full ownership of and responsibility for their FMNR practices. Capacity building can take different forms according to the community's needs. It could include workshops, field trips, use of demonstration sites, field schools and multi-day courses. This may be held for large groups, farmer groups or individuals. Peer-to-peer learning is one of the most common ways that FMNR spreads, so focused effort should be put into training land users and enabling and empowering them to share their knowledge. Consider timing, distance from home and access, particularly to ensure groups such as women and people with disabilities can participate in the training. For FMNR practice, training should include a practical component in the field so that land users can see and practice pruning activities for themselves. Regular follow-up and field visits to boost skills and troubleshoot problems will also improve the success of FMNR. While teaching the principles of FMNR, trainers should encourage trainees to also experiment and learn by trial and error; to be observant and to make adjustments to their methods accordingly.

2.8. COMMUNITY ACTION PLANNING ON FMNR

Once the community has decided to change their environment and that FMNR is an appropriate method for addressing many of the issues that concern them, they are in the right frame of mind to implement FMNR. Together, they can now formulate a vision statement that answers the question, "What do we want to achieve?" They can also outline a goal or goals for their work. Once they agree on the goal, it will be very important to jointly formulate an action plan that turns their vision and goal into reality.

Establishing a vision statement and goals: The vision statement is a description of what changes the community would like to see as a result of adopting FMNR. Visions can be a short, written statement, for example, evoking a pro-

ductive landscape or a community free from poverty and hunger or a drawing map of the area, showing how the community would like their landscape to look in the future.

Developing FMNR action plan: This action planning may take place at FMNR workshop. This workshop should include representatives from all groups in the community that are affected by the FMNR project. Necessary participants will have been determined from work completed while getting to know the community and the stakeholder analysis. The FMNR action plan should cover:

- What work will be done.
- Who is responsible for doing it (if more than one person, list them all)?
- When each action will be completed by
- What materials and funding are needed?
- Where the work will take place

The action plan should be recorded in a simple table, with columns indicating information needed for action. Action plans can be developed by small groups, perhaps according to geographic area or organization, where communities are fortunate enough to have a secure meeting place, it is good to pin the vision statement and action plan to the wall for them to refer to and to keep before them during subsequent meetings. A good plan won't limit itself to local communities and government agencies. It will also include a communication strategy for any organizations represented by participants, such as NGOs or government departments (see annex 1).

2.9. SUSTAINABILITY

One important thing to remember is that even the most passionate person can become overwhelmed or discouraged. This is something we do not want to happen to FMNR practicing communities. As communities will work for their own benefits on their own time, at their own pace, it is vital to encourage them and capacitate them technically. Effective community engagement that helps a community to understand, be empowered, confident, innovative and share their experiences is critical for long-term sustainability of FMNR move-

ment. This could be addressed by engaging the community and other stakeholders from planning to implementation, monitoring progress and modifying their bylaws when required. Community engagement generally covers six main areas:

- working with community
- creating community led action plan
- build capacity in negotiating, observe, communicate and experience sharing
- supporting champion/VFTs
- identifying, creating and implementing bylaw and
- advocating for policy change

2.9.1 DEVELOPING AND AGREEING ON BYLAWS

Bylaws are rules or laws established by a community or group of people to regulate itself. Bylaws are essential to the success of FMNR. The most effective bylaws are created through community-wide consultation, so that everyone who uses the land understands how the changes required for FMNR will affect them, what benefits they gain, how benefits are shared and is willing to work with FMNR instead of against it.

When establishing FMNR project, the community will need to create bylaws and decide what the consequences are for those who do not abide by the agreed rules. Bylaws come under the law of the government authorities, so local officials and leaders should be part of the process of creating and supporting bylaws for FMNR. This lends greater weight to the community bylaws and opens the possibility of referring difficult cases to a higher authority. Bylaws are created out of community discussions about goals, concerns and needs related to practicing FMNR. Below is a list of issues that are often covered by bylaws, but be sure that your bylaws include any concerns or special situations important to your community.

The development of bylaws involves many discussions with the community, seeking to shape the proposed bylaws into something everyone is comfort-

able with. These discussions are critical, because FMNR will be most successful when everyone who uses the land agrees to support the work in the most appropriate way. During bylaw development, some community members may have concerns about whether a bylaw will restrict them from meeting their needs or they may disagree with certain points. Minority members of the community may be especially concerned that their rights and needs will be overlooked by the majority. These concerns should be acknowledged and managed by those who are facilitating the process. Common questions for bylaws developing included but not limited to the following questions:

- How should the community organize FMNR work? for example, as a cooperative, an association, simply through their traditional management structures, or by individuals on their own land?
- Who will have user rights to the resources (wood, grass, wild foods, medicines, etc.) from rehabilitated sites?
- When and how resources can be used?
- How should communities share the income and benefits from FMNR activities on communal land?
- What responsibilities will different members of the community have?
- How will they protect the FMNR work? For example, from theft, fire, livestock or vandalism?
- What regulations are needed in reducing free grazing? For example, around designated grazing areas and arrangements to harvest grass?
- What are the consequences of not complying with the agreed by-laws, and who has the responsibility to enforce them?
- What avenues can be taken when designated authorities do not prosecute offenders? (This may be the case where family ties, abuse of power and position or bribery are in place.)
- How will the community engage with government agencies and ministries?

- How should the community be represented in local government structures?
- What specific roles should government agencies have with respect to FMNR activities? What about those developments, communities or other agencies already facilitating FMNR work?
- How often will agreements and bylaws be reviewed to see if changes are needed and take action accordingly?

2.9.2 REVIEWING AND CHANGING BYLAWS

In the early stages, it will be necessary to review the bylaws, how they are being interpreted and implemented. Ensuring that all users are compliant and that any infringements are dealt with quickly will help the community to respect the bylaws and reduce conflict and infringements. This involves agreeing to test a set of bylaws for a period of time, then discussing whether any changes are needed. As the community learns from their experience of practicing FMNR, bylaws may need to be added or adapted to better meet the needs of all. Everyone affected must agree to any change to the bylaws, and this too may require multiple discussions before agreement is reached. This may include the following:

Tree ownership and use: - In order to protect disappearing forests, many governments have made it illegal to cut trees, or to cut certain species of trees or to sell charcoal or firewood. Unfortunately, these regulations rarely work as a deterrent, because most governments do not have enough resources (including finances and staffing) to protect forests efficiently and to monitor trees on farms. For FMNR to be successful, practitioners need to be confident that they will be able to benefit from their work. So laws or formal agreements need to be made that allow FMNR communities formal user rights or even ownership of trees and the right to use and sell the FMNR products.

Carbon ownership: - Most FMNR projects are focused on the benefits from the trees themselves, but one type of project, the carbon sequestration project requires a more complex legal framework. In projects where communities

seek to earn carbon credits from their FMNR work, it is very important to establish from the outset who owns the carbon. If the individual or community does not have legal ownership of the carbon, then their claim to receive carbon credits can be disputed and they will have no incentive to regenerate trees for carbon trading.

Non-wood forest products: - use grass in a form of cut and carry, medicinal plants collection and utilization and honey production are some of the non-wood forest products. System should be developed and included in the bylaw indicating how, who and where to use these products and share benefits.

2.10. CONFLICT MANAGMENT

Communities are in a state of perpetual conflict because of competition for limited resources. Conflict in many social orders is maintained by domination and power rather than consensus and conformity. A basic premise of conflict arises when individuals and groups within society work to maximize their own benefits. The other source of conflict will be neighbors who lost access to the resource and sometimes within the same group when someone/group felt they may loss or lost the right they have to exercise. The following diagram indicates types of problems that may arise within the community and the way to manage them.

The two types of conflicts most commonly encountered in FMNR are:

1. Technical problems involving difficulties managing trees, such as selection, pruning and tree management.
2. Social problems involving confusion, misunderstanding or conflict. The seven-step resolution process described in Figure 1 can help to solve problems related to people in particular, or at least start you on the path towards a solution. Problems that are more technical may be solved through:
 - experimentation and learning from different methods available or those already used;
 - seeking external advice from local experts or other FMNR practitioners;
 - careful observation of outcomes that result from different practices;
 - mentoring;
 - exchange visits; and
 - Research.

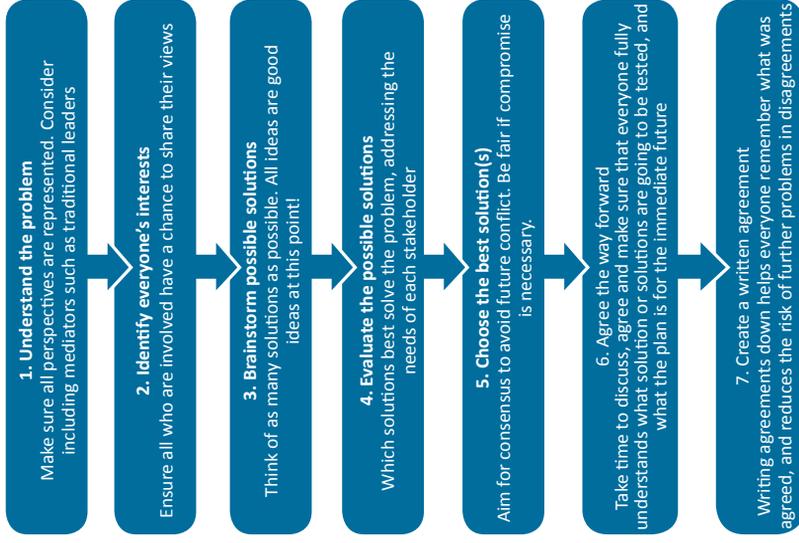


Figure 10: Problem and problem solving mechanism

CHAPTER 3

3.1. FMNR IMPLEMENTATION CHALLENGES

Though FMNR is introduced to Ethiopia since 2008, the direct environment and socio economic benefits/services are not yet clearly indicated in some the regions. Nevertheless, local government officials, development organizations and other relevant stakeholders are still engaged in promoting restoration of degraded and deforested land through encouraging trees to grow in communal land and farmlands. However, such efforts are challenged by multiple factors some of which are:

- 1) Farmers perceive that trees have detrimental shading effect on crop production. This concern could be managed by regularly pruning and appropriate tree species selection as some tree species remove their leaves during cropping season.
- 2) Trees create inconvenience particularly during their early stage for farming operation like tillage. To reduce this problem, farmers often clear newly regenerating trees/ shrubs on their farmlands. The best way to reduce this problem is not clearing trees but leaving trees in rows and prune regularly to make movement easy.
- 3) Some community members assume, as trees are a problem for agriculture. Many evidences show many trees that contributes to the improvement of soil fertility and land productivity. Hence attitudinal change is very important.
- 4) Lack of strong commitment to implement local by-laws that restrict the practice of free grazing. This should be included in the bylaw developed by the community and enforcement and review take place regularly.

- 5) It is believed that trees harbor pests like birds, and farmers are not interested to allow the regeneration of tree seedlings/plant trees in their farmland. In many indigenous agroforestry practices in Ethiopia, farmer practice tree pollarding during the crop season so that they re-sprout after the crop harvest.
- 6) In some cases, limited availability of tree species that meet the economic and ecological needs of the farmers restricts farmers' willingness to maintain trees in their land. This needs government and other organization's intervention to avail important tree seeds that fulfill the needs of the community.
- 7) Technical capacity gaps: implementing partners lack capacity to fully support FMNR practices due to conceptual misunderstanding and absence of strong extension service that focuses on the system. Government and non-government organizations should give due attention in capacity building both technically and managerially.
- 8) Drought and other climate related factors reduce the survival chance of planted seedlings on farmlands and area enclosures. Focus on indigenous trees (growing locally) that are drought resistant and survive hard situations.
- 9) In some areas, stakeholders assume that introducing FMNR practices such as tree pruning and thinning will reduce carbon stock and affect carbon trading. Pruning and thinning will support tree growth stronger, both in height and diameter where carbon is store than in bushing setting.

CHAPTER 4

4.1. MONITORING AND EVALUATION

Monitoring is a continuous assessment of program based on early detailed information on the progress or delay of the ongoing assessed activities. An evaluation is an examination concerning the relevance, effectiveness, efficiency and impact of activities in the light of specified objectives. Monitoring and evaluation (M & E) are used to assess the performance of projects. M & E goal is to improve current and future management of outputs, outcomes and impact. For FMNR project, it is important:

- Understanding how FMNR works in different contexts
- Ensuring the project and FMNR are meeting people's needs
- Identifying opportunities for improvement in the project
- Sharing evidence of outcomes and impacts of FMNR. When project M & E is shared, it can contribute to track the spread of FMNR in communities and across countries.

1.1 FMNR MONITORING AND EVALUATION

Well-designed M & E of FMNR projects is essential for a number of reasons. Project M & E can demonstrate the effectiveness of different methods of promoting FMNR, assess the work of the organization and staff doing the work and document the success or failure of FMNR in different contexts and conditions. M & E also provides the necessary data for reporting the outcomes of their investments, such as impacts on income, food security, water availability and other critical outcomes and for policy makers to make informed decisions. Evaluation of how well the project met its goals and what benefits the community and other stakeholders gained from investment in FMNR, is growing in importance as a means of:

- Demonstrating value and cost benefits
- Increasing visibility of and interest in FMNR for funding decisions
- Providing data for policy decisions
- Troubleshooting practice and approaches to promoting FMNR and
- Capturing lessons to improve projects in the future and increase the spread of FMNR.

Evaluations are often done by analyzing changes identified between the baseline and end line assessments of the chosen indicators. Data to inform these assessments will depend on the indicators selected but in FMNR projects this often comes from household surveys and possibly satellite imagery to assess tree cover. Evaluation of FMNR projects should also assess the sustainability of the project and what contribution it has made to the broader FMNR movement. For example, is there evidence of spread beyond the project area?

How to monitor and evaluate FMNRF projects: - FMNR M & E, like FMNR itself, should be participatory and inclusive. This means involving all relevant stakeholders in the M & E activities to ensure their perspectives and experiences are vital. Hence, it should be accomplished and make them receive and understand the results that may support their future actions.

When and what to monitor or evaluate: - In general, M & E involves understanding how things were before the project (the baseline), how things are done during the project (monitoring) and what has been changed at the end of the project (the end line or 'end of project evaluation'). As it is well known, the only truly successful FMNR project is one that works for the people managing the trees. Therefore, monitoring and evaluation of FMNR should focus on the social, economic and environmental outcomes of the practice for these people. The FMNR theory of change or your project's customized theory of change or logframe, can be a good way to identify the likely outcomes you are looking for. Indicators should be identified for a range of the changes, or outcomes and impacts, that you anticipate occurring as a result of your FMNR project.

FMNR indicators:- We use indicators to help determine what data needs to be collected to help assess the progress of a project and whether it is on track to achieving its goals and objectives. By consistently monitoring these indicators across projects, we learn a great deal about the variations and benefits of FMNR.

Table 3: Common FMNR indicators & means of measurements

FMNR core indicators	Minimum measurement requirements
<i>Number of individuals (male, female, total) trained in FMNR.</i>	<i>Project monitoring data – Training records</i>
<i>Number of individuals (male, female, total) adopting FMNR.</i>	<i>Project monitoring data – Project participant records</i>
<i>Number and proportion of households that have adopted FMNR in the target area.</i>	<i>FMNR adoption records</i>
<i>Coverage (hectares) of FMNR in the target area</i>	<i>Landscape-scale analysis of tree cover (remote sensing and ground truth)</i>
<i>Average tree density change in the target area (in hectares). Differentiate between cultivated land, grazing land, degraded forest and other (specify).</i>	<i>Project monitoring data (FMNR site assessments) Baseline and end line household survey</i>
<i>Number and proportion of households with year round</i>	<i>Landscape-scale analysis of tree cover (remote sensing and ground truth) Baseline and end line household survey</i>
<i>Number and proportion of households (and women) with access to forest products: firewood, timber and non-timber forest products, including honey, fruit, nuts and leaves</i>	<i>Number and proportion of households with year round Baseline and end line household survey</i>
<i>Total household income (from crops, livestock and FMNR-related products).</i>	<i>Baseline and end line household survey</i>
<i>Proportion of parents or caregivers able to provide well for their children</i>	<i>Baseline and end line household survey</i>

Methods of data collection: - Data for M & E of FMNR projects often come from:

- Field visits
- Focus group discussions with different groups in the community
- Key informant interviews with individuals, such as a sample of participants, project staff, partner organization staff, community leaders and leaders from beyond the project area
- Household surveys of both participating and non-participating households
- Literature reviews and research reports
- Tree cover, tree measurements and tree count sampling and
- Fixed point and/or GPS referenced photographic records

Monitoring trees and tree cover: - Monitoring trees and tree cover is important measurement focused on the information most useful to the community in tracking and learning about their FMNR activities and related to the project theory of change.

In-field tree surveys: - As communities begin to practice FMNR, data should be collected on what trees, stumps and seedlings are present in the field. Record what species are present, how many stumps or seedlings are being protected, and how existing tree species are being managed and used. Also make sure you record the total size of the farm or area being managed with FMNR in hectares, as this is important when calculating tree density. You can also record other observations such as how the land is being used and if there is evidence of erosion or poor ground cover or weeds. Using photo points is also a good way of tracking changes in tree cover and the condition of the land over time. See the text box below on how to establish photo points for monitoring.

If you would like to make some calculations about the growth rates of the trees, or the amount of carbon being stored in the regenerated landscape, you may also need to record the height (in meters), diameter of the tree at breast height (1.3 meters above the ground) in centimeters.

Depending on the size or number of land users engaged in your project, it may not be possible to assess the whole area. In this case, it may be possible to

record this information on a random selection of 20 percent of land users who are participating in the project. If you are using a sampling technique, ensure that you have sites from all different landscapes in the project area.

Sample plots: - If the FMNR sites are particularly large (for example, degraded forest areas or communal grazing land), it may not be practical to try to record all trees and seedlings across the entire site. In this case, you can establish a number of sample plots to monitor that will represent changes in the overall area. The number and size of the sample plots required varies based on how variable the site is, and how precise you need the data to be. For measuring tree dimensions, approximately 15-20 trees in a sample plot is recommended. Factors to be considered when locating the sample plot include:

- Plots should not be located on the edge of the site or take in abnormal features (such as dams).
- If trees are on the edge of the sample plot, they are counted as 'in' if the center of the stem is in the plot.
- All information collected should be checked before leaving the plot.
- Plots will be marked by GPS record at the center of the circle or the four corner points of a square plot.
- If appropriate, sample plots can also be created by marking paint on rocks or tape on trees.

Sample plots of various sizes can be established based on the following dimensions. On sloping ground, all distance measurements should be horizontal.

Remote sensing to monitor tree-cover change: - To be able to see how tree cover across the landscape is changing, it is necessary to take a birds-eye view. Aerial photography and satellite imagery have such good resolution now that individual trees can often be distinguished, and therefore counted. There are a range of tools that can assist with this process, from powerful Geographic Information Systems (GIS), through to simply looking at photographs of an area in the past and comparing with what it looks like currently.

A simple guide to photo point monitoring for FMNR: - Taking regular photos at a set point can be a very successful way to monitor changes over time and the effectiveness of projects such as FMNR. Setting up photo point monitoring can be fast, simple and inexpensive.

A simple guide to photo point monitoring for FMNR

Taking regular photos at a set point can be a very successful way to monitor changes over time and the effectiveness of projects such as FMNR. Setting up photo point monitoring can be fast, simple and inexpensive.

*The most important element of photo point monitoring is to **keep returning to the same position** and take a photo in the **same direction**, so that comparisons can be made of the physical change at a given location. For a project that is five years long, these photos should be taken at a minimum of every 12 months.*

Materials required

- *Digital camera (a camera with a built-in GPS, such as a good-quality smart phone, is ideal)*
- *Computer for data storage*
- *GPS (if not included in your camera/phone)*
- *Paint or ribbon to mark photo point location (optional)*

Approach

- *Select a location in the landscape that you expect will show some changes as a result of your project.*
- *Identify two objects that should not move, such as big trees or rocks, or a hillside in the background.*
- *Stand in front of one object, facing towards the other, and take a photo of the landscape. Make sure that the second object is included in the photo. If you can, mark your location on the first object with paint or a ribbon. Get the land user's permission first*
- *If your camera records GPS locations, then make sure this is turned on*
- *Return to the same place every 12 months and take another photo. It helps to bring a copy of last year's photo, to make sure you are capturing the same view of the landscape.*
- *Export your photos from the camera to the computer as soon as you return to the office. Label each file with the location name and date, and save them in a specially created folder. Make sure this folder is accessible from other computers too.*

Figure11: Simple guide to photo points for FMNR

Re-greening Apps: The Re-greening Africa App is a free mobile-based Android application designed to help partners and users collect information on how farmers are managing and protecting trees on their farms. This Application targets to Reverse Land Degradation in Africa by Scaling up Evergreen Agriculture. The application development is guided by the following objectives:

- Facilitating the collection, reporting and verification of the number of households reached and the number of hectares re-greened.
- Enable monitoring of near-real-time (NRT) progress of the project by all project managers (e.g. trainings conducted, tree nurseries supported in their jurisdiction, farmer groups supported, etc.)
- Bridging data gaps from existing data collection tools and methods for triangulation.

CHAPTER 5

5.1. CASE STUDY

5.1.1 HUMBO COMMUNITY MANAGED NATURAL REGENERATION

In 2004, World Vision Australia and World Vision Ethiopia initiated a forestry-based carbon sequestration project as a potential means to stimulate community development while engaging in environmental restoration. The Humbo Community managed Natural Regeneration Project involving the regeneration of 2,728 hectares of degraded native forests, brought social, economic and ecological benefits to the participating communities. Within just two years of operation, communities were collecting wild fruits, firewood and fodder, and reported that wildlife had returned and erosion and flooding had been reduced.



Figure12: Humbo site before intervention

Humbo, before the project:- *The area was bare of trees, although some small shrubs remained in some pockets of valleys. High rainfall led to flash flooding in the area, destroying crop, roads and there was extensive erosion. Large amounts of topsoil had been lost, reducing potential productivity in higher areas and leaving large silt and rock deposits on farms in lower areas.*

Since June 2008, the project site has been managed using Farmer-Managed Natural Regeneration (FMNR). The communities are very excited about the project and tree growth has been exceptional. Tree nurseries were also very successful and in 2008, some 450,000 seedlings were planted as enrichment planting.



Figure13: Humbo site after intervention (2 years)

Humbo, after the project:- The total impact of Humbo across Ethiopia and internationally is incalculable. A constant stream of individuals and groups has heard of or has visited Humbo independently and many are applying what they learnt on their own land. The World Bank and World Vision have posted press releases and articles about Humbo on their web sites, and articles on Humbo

have been written in journals with wide readership. Key elements contributing to the success of the Humbo project are:

- *World Vision facilitated broad stakeholder consultation and meetings, gathered information and brought stakeholders together regularly as the concept was being developed.*

World Vision facilitated the granting of legally binding tree user rights by government, which gave communities confidence that they would benefit from their efforts in restoring the forest.

- *World Vision provided regular and persistent follow-ups, and responded to problems as they arose, including countering rumors and accusations.*
- *World vision provided training in FMNR, management of trees and forest, biodiversity monitoring and finance and cooperative management*
- *World Vision and the local government facilitated the formation of forest management cooperatives.*
- *World Vision and the local government worked with the cooperatives to develop their own by-laws relating to the management of livestock, fire, disputes, sustainable harvesting of forest products and sharing of benefits.*
- *World Vision identified vulnerable households that were going to experience temporary loss of income or access to fuel wood or fodder,*

and assisted them with alternative opportunities, such as small business loans for marketing, vegetable production and honey production.

- *Once the project started, participating communities began benefiting directly from forest restoration through access to fodder and firewood from pruning trees, even within the first year*

5.1.2 LESSONS LEARNED

Though FMNR is a recent approach practice in different parts of the world, there are many lessons learned that can support improvement of the system for better benefits to the community. These are:

- *Investment in advocacy and capacity building is required. Significant time was required for meetings, conferences, workshops and field visits to sensitize potential stakeholders to the issues and the potential associated with carbon projects.*
- *Small projects are costly to develop, implement and manage. This carbon project would be more cost effective if it was larger; 20,000 hectares would be ideal. Under the current Clean Development Mechanism (CDM) framework, project development costs are high. As a result, small and medium sized carbon projects (<5000 hectares) without additional revenue streams (eg, from agroforestry, non-timber products or tree crops) find it difficult to generate workable economies of scale.*
- *An existing strong working relationship between the implementing agency and the community facilitates project implementation. An 18-year presence in the region gave World Vision considerable understanding of local needs, and the organization was respected as a development partner by both the community and local government. Difficulties experienced during implementation could have derailed the project without the pre-existing strong relationships and trust.*
- *Land use and ownership issues are a volatile topic and there is suspicion of anybody proposing changes to the status quo. The overriding response to surveys on the potential role of World Vision in developing this project was of strong endorsement based on the trust that had been built over time. The establishment of community user rights also made a substantial contribution to success.*

- *Afforestation projects can provide multiple benefits beyond carbon sequestration and these should be recognized and rewarded. Benefits include the protection and management of biodiversity, maintenance and improvement of water quality, reduced flooding, soil protection and poverty alleviation.*
- *Poor communities cannot engage with the current CDM process without technical assistance. The process required to secure CDM carbon credits is highly complex and might not have been successful in the Humbo project without the considerable resources of an organization such as World Vision.*

5.1.3 FMNR IMPLEMENTATION CHALLENGES:

As there are many benefits, there are challenges that need due consideration during FMNR implementation. Some of these are:

- **Community consensus:** *Time taking negotiation and reaching consensus with community and local government*
- **Legal:** *Understanding the Ethiopian laws and regulations on property ownership and land use rights; organizing seven local communities into incorporated cooperatives; granting user right to the cooperatives to negotiate with the World Bank and reach agreement on key issues; and identifying staffing needs and allocating responsibilities.*
- **Financial:** *Developing sophisticated financial forecasts and initial budget allocation*
- **Commercial:** *Understanding carbon markets, reconciling the commercial and development aspects of the project and how resources should be applied to the project.*
- **Project management:** *Analyzing project implementation and management issues in order to develop a robust forestry management plan, baseline survey and data validation by World Bank.*
- **CDM:** *Preparation of a Project Design Document, appropriate application of a CDM methodology and monitoring plan, plus preparation for an independent validation.*

Annex 1:

FMNR action plan template

<i>Action plan</i>							
<i>Location</i>							
<i>Goals</i>							
<i>Objectives:</i>							
1 _____							
2 _____							
3 _____							
<i>S/N</i>	<i>What will be done</i>	<i>By who</i>	<i>By whom</i>	<i>By when</i>	<i>Where (location)</i>	<i>Target (ha)</i>	<i>Supported need- ed, (financial, administrative, technical)</i>

World Vision
Ethiopia
AMCE- Bole Road
Bole sun city, Kebe;e 11, H.No 518
P.O.Box 3330,
Addis Ababa, Ethiopia
Tel +251 16293350
Fax +251 16293346
E-mail info_et@wvi.org

