World Vision

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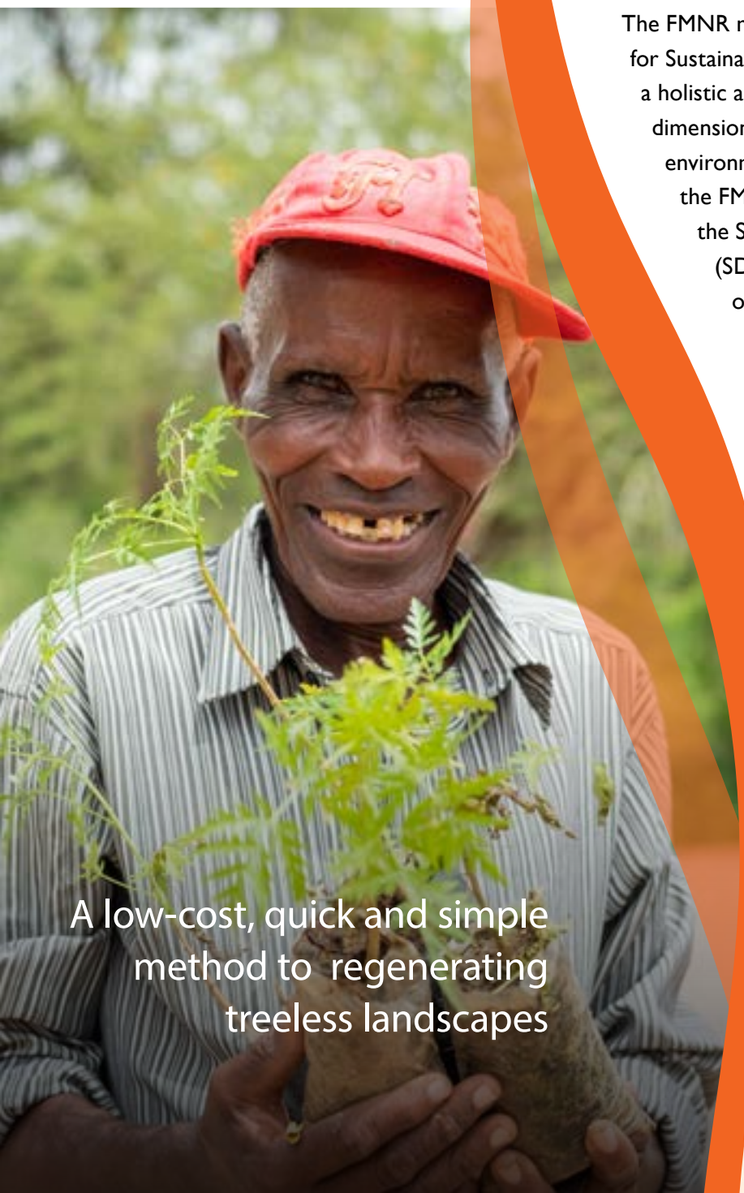
Farmer Managed Natural Regeneration

A holistic approach to sustainable development

FMNR is "the greatest positive environmental change in the Sahel, if not all of Africa".

- Chris Reij, Senior Fellow, World Resources Institute -



A low-cost, quick and simple method to regenerating treeless landscapes

Introduction

Farmer Managed Natural Regeneration (FMNR) is a low-cost land restoration technique used to combat poverty and hunger amongst poor farmers by increasing food and timber production and resilience to climate extremes. In practice, FMNR involves the systematic regrowth and management of trees and shrubs from felled tree stumps, sprouting root systems or seeds. The regrown trees and shrubs, which help restore soil structure and fertility, inhibit erosion and soil moisture evaporation, rehabilitate springs and the water table, and increase biodiversity. Some tree species also impart nutrients such as nitrogen into the soil.

FMNR and Sustainable Development

The FMNR method is central to the 2030 Agenda for Sustainable Development. It provides a holistic approach and delivers on all its dimensions including economic, social and environmental. World Vision believes that the FMNR is fundamental to achieving the Sustainable Development Goals (SDGs), improving the lives of millions of children and their communities around the world.

Adopting FMNR helps to improve healthy lives (SDG3) through food security (SDG2), eliminates poverty (SDG1) and develops communities sustainably (SDG11).

Many communities which have adopted FMNR are substantially benefitting from increased and more sustainable production, reduced inequalities (SDG10) and greater gender equality in decision making and access to natural resources (SDG5). Several environmental and economic benefits have been recorded (SDG8), which have had a positive impact on climate change (SDG13 & SDG15).

Climate change adaptation and mitigation

Over the past 5,000 years, an estimated 1.8 billion hectares of forest land has been lost worldwide, with an estimated 13 million hectares of land being lost every year.[1] This decline in global forests has been linked to the rise in atmospheric carbon dioxide – one of the principle causes of climate change – owing to the important role of forests in global carbon cycling. Whilst climate change is a global phenomenon, those living in developing countries are disproportionately affected. This is due to the heightened geographic vulnerability of many developing countries, and the unique challenges faced by individuals and governments from these countries to mitigate, adapt, respond and recover from the effects of climate change. Climate change has a profound destructive impact on the lives, property and livelihoods of the poorest and most vulnerable, trapping them in a perpetual cycle of poverty.

"If our parents continue to destroy the environment at this pace, in the future we (children of today) will not be able to have children of our own because there will be nothing left in the environment to feed our kids"

- Child from Senegal -

Globally, climate change and environmental degradation have gained attention.

At the COP21 (Paris), many key country leaders, including EU Member States, identified afforestation, reforestation and preservation of existing forests as a key element in combating climate change.

The UN Decade on Ecosystem Restoration (2021-2030) aims to massively scale up the restoration of degraded and destroyed ecosystems as a proven measure to fight the climate crisis and enhance food security, water supply and biodiversity and calls for urgent action to rapidly scale-up the restoration of these ecosystems.
At the EU level, the European Commission issued a Communication on Stepping up EU Action to Protect and Restore the World's Forests.[2] The aim is, among others, to "develop and implement incentive mechanisms for smallholder farmers to maintain and enhance ecosystem

1. Food and Agriculture Organization of the United Nations (27 July 2017), "State of the World's Forests 2012" [online]. Available at: <http://www.fao.org/3/ai3010e.pdf>, p.9; United Nations Development Programme 2017 (14 August 2017) "Goal 15 Targets" [online]. Available at: <http://www.undp.org/content/undp/en/home/sustainabledevelopment-goals/goal-15-life-on-land/targets/>. http://www.undp.org/content/undp/en/home/sustainabledevelopment-goals/goal-15-life-on-land/targets/>.

2. Communications from the Commission to the European parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Stepping up EU Action to Protect and Restore the World's Forests, 23 July 2019

services and products provided by sustainable forest management and agriculture" and "promote the restoration of forest landscapes, as well as reforestation projects that integrate ecological principles favourable to biodiversity, local population rights, and livelihoods through the provision of enhanced ecosystem services."

In response to these challenges, World Vision has been actively contributing to major international land restoration targets. This includes the Bonn Challenge target of restoring 350 million hectares of degraded land globally by 2030 and the Africa Restoration Initiative (AFR100) target of restoring 100 million hectares of degraded land in Africa.

World Vision also recently launched its Regreen the Globe Movement with four strategic objectives 1) Strengthen prioritisation and planning to scale-up FMNR 2) Create an enabling national institutional policy and legislative environment to scale-up FMNR 3) Mobilise additional resources to scale-up FMNR 4) Address technical knowledge and skills gaps to scale-up FMNR.

The first national movement which was initiated in Ethiopia in August 2018 will function as a 'test and learn' pilot – if successful, World Vision hopes to scale globally.

Implementation of FMNR

Research has shown that tree-based farming systems store carbon in above and below ground biomass and organic matter contributing to reduced greenhouse gas emissions.[3]

In semi-arid regions on farmland, regenerated trees are sequestering around one ton of CO_2 per hectare per year, while in more humid, forest settings, regenerated forests are sequestering approximately 15 tons CO_2 per hectare per year. There are also multiple co-benefits, including provision of ecosystem goods and services such as increased soil fertility, pollination, pest predation and improved microclimate.

"Before there were no trees, it was bare degraded land and temperatures were very high. After protection, the trees started growing fast, wild life started coming back, the temperature has gone down, and rainfall is getting better."
– Child Members of Environment, Club Humbo, Ethiopia -

World Vision has demonstrated ongoing experience implementing FMNR in over 27 countries.

In Ethiopia, carbon stock monitoring data from World Vision's 2,700 hectare Humbo Community Managed Natural Regeneration Project (2005 – 2018) found that FMNR activities led to the sequestration of 181,650 tonnes (net) of carbon dioxide from the atmosphere between the period of 2006 and 2018.

In a survey conducted among community members, over 80% of respondents in the project area reported decreased on-farm soil erosion over the past five years, while 74% reported increased on-farm soil fertility over the same period. Community members in World Vision's Humbo and Soddo FMNR projects in Ethiopia further identified increased rainfall, better air quality, reduced air temperature and reduced soil erosion as some of the additional benefits of FMNR.

"After the project, we have got good rain, good crop production, fresher air, and water for livestock. All of the weather conditions for humans and animals have become good." – Male Farmer, Humbo, Ethiopia -

3. Mbow, C., Van Noordwijk, M., Luedeling, E., Neufeldt, H., Minang, P.A. and Kowero, G., 2014, "Agroforestry solutions to address food security and climate change in Africa," Current Opinion in Environmental Sustainability, pp.63

4. Food and Agriculture Organization of the United Nations "Food security and nutrition around the world in 2019" [online]. Available at: http://www.fao.org/3/ca5162en/ca5162en.pdf

5. Vermeulen S.J. 2014. "Climate change, food security and small-scale producers. CCAFS Info Brief." CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark

6. Ibid

FMNR's contribution to climate change adaptation and mitigation

* Increased carbon sequestration
* Localised reduction in soil & air temperature
* Reduced greenhouse gas emissions from felled woody biomass & soils
* Greater biodiversity
* Improved vegetation, land & soil quality
* Reduced land degradation & soil erosion
* Increased soil moisture & greater drought resilience
* Increased soil fertility (especially in areas where trees border fields)
* Increased woody biomass (trees & shrubs)

Food security

In 2018, over 700 million people were recorded to be severely food insecure.[4] This has become a great concern globally as research findings suggest that crop and pasture yields are likely to decline in many places.[5]

By 2050, eight major food crops across Africa and South Asia are predicted to decline by an average of eight percent.[6] Rural populations in developing countries also heavily rely on ecological resources from forests and savannah lands for food in the form of tree products, wild animals and honey.[7]

"This year is very exceptional for me because I have been able to get enough sorghum. I cultivated One hectare and harvested 15 bags of sorghum. Generally, I could get three to five bags when working in this land in the past. This would have been impossible if I was not taught the new FMNR technique of land management."

– Khadidja Gangan, 35-year-old mother of six, Chad -

Farmers in Niger Republic produce an additional 500,000 tons of cereal per year because of the widespread adoption of FMNR than in the 1970s and 1980s. As a result, 2.5 million people are now more food secure.

Trees grown with crops have a major impact on crop performance as trees can buffer climatic extremes that affect crop growth such as air and soil temperature, and wind and wind and solar radiation.[7] Tree products also play an important role in assuring food security, especially in the "hunger months" when grain stores are low.[8]

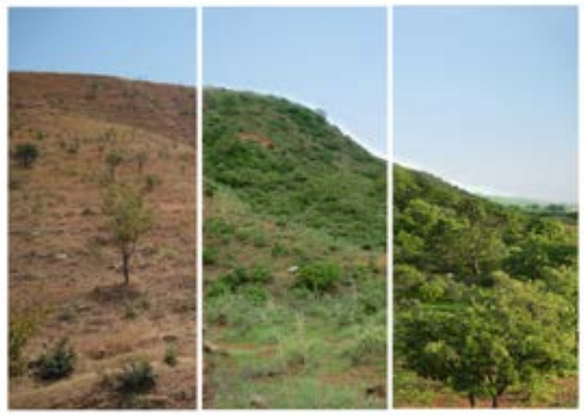
"[Community members] can get wildlife from there now that bush burning and destruction of forest has disappeared. They are even coming back to breed. This means meat … before the land was so bare, there was nowhere for these animals. Now that there is natural regeneration of the shrubs, it is returning to how it was 100 years ago: forest."

– Edward Agumah, Ministry of Food and Agriculture, Ghana 2011 -

These benefits are further amplified through the introduction of Climate-Smart Agricultural techniques such as introducing climate adaptive and high-yield seed varieties. Integrating Market System Development programming increases food security by increasing the purchasing power for smallholder farmers. Market System Development programming improves farmers' linkages with other value-chain actors and their access to markets, thereby supporting farmers to increase their income via the selling of timber and non-timber food products such as fruits and seed pods. These multi-faceted benefits support farmers to improve their food security all year round, especially in the dry season.

"The mass scaling-up of Farmer Managed Natural Regeneration is far more cost effective than conventional practices".

- Dennis Garrity, United Nations Drylands Ambassador -



Contributions of FMNR for food in security

* More consistent crop yields
* Diversified food options
* Improved nutrition
* Increased quantity & availability of food
* Improved access to food
* Increased availability of fodder needed for livestock production
* Improved soil fertility

7. UNDP, 2011, "Human Development Report 2011", United Nations Development Programme, New York

8. Faye M.D., Weber J.C., Mounkoro B., and Dakouo J.M. 2010, "Contribution of parkland trees to farmers' livelihoods: a case study from Mali", Development in Practice, 20, pp. 428–434.

Recommendations towards the EU and its Member States

Mainstreaming landscape regeneration

- Ensure a coordinated and coherent EU response to climate change and environmental degradation. All concerned policy areas must be aligned with the Sustainable Development Goals targets and the Paris Agreement commitments.
- The European Green Deal should fully take into account the external aspects of climate change and action, in line with existing policies, the Sustainable Development Goals and the Paris Agreement commitments.

Multi-Annual Financial Framework

- Ensure the Multi-Annual Financial Framework (MFF) for 2021-2027 allocates at least 25% of spending target for climate objective as part of the Neighbourhood, Development and International Cooperation Instrument (NDICI), with meaningful indicators for climate change adaptation and mitigation.

Farm to Fork Strategy

- Ensure the new "Farm to fork" strategy for sustainable food fully takes into account the external impacts of internal EU policies. Potential impacts on third countries need to be detected as early as possible, to minimise negative consequences and maximise positive impacts, in line with the principle of Policy Coherence for Development (PCD, art. 208 of the Lisbon Treaty). The new strategy should follow a food systems approach while recognising the impact of climate change on food value chain globally.

Development policy

- Following the Council Conclusion of 26 November 2018, embrace and integrate agro-ecological practices, such as FMNR, in food security and nutrition policies but also in reforestation policies. Any new development policy should seek to address climate change and environmental degradation as part of its core objectives

Carbon Offset

- Actively seek and promote carbon offsets through community-managed forest restoration.

FMNR is low cost and has been adopted by even the poorest farmers. Labour cost estimates to regenerate trees are in the order of $14/ hectare, however, most poor farmers do the work themselves.

World Vision

www.wvi.org/EU

World Vision Brussels & Eu Representation
Square de Meeûs 18, 1050 Ixelles
Brussels, Belgium
T + 32 (0)2 280 34 26
www.fmnrhub.com.au

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www.makeeuropesustainableforall.org