

# Case Study: The spread of Farmer Managed Natural Regeneration (FMNR) in Niger Republic

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The almost total destruction of trees and shrubs in the agricultural zone of Niger between the 1950s and 1980s had devastating consequences. Deforestation worsened the impact of recurring drought, strong winds, high temperatures, infertile soils, pests and diseases on crops and livestock. Combined with rapid population growth and poverty, these problems contributed to chronic hunger and periodic acute famine.

In 1981, the whole country was in a state of severe environmental degradation, an already harsh land turning to desert, and a people under severe stress. More and more time was spent gathering poorer and poorer quality firewood and building materials. Women had to walk for miles for small branches and millet stalks and even cattle and goat manure was used as fuel. This further reduced the fodder available for livestock and manure available for use as fertilizer. Under cover of dark, people would dig up the roots of the few remaining protected trees. Without protection from trees, crops were hit by 60-70 km/hour winds and were stressed by higher temperatures and lower humidity. Sand blasting and burial during wind storms damaged crops. Farmers often had to replant crops up to eight times in a single season. Insect attack on crops was extreme. Natural pest predators such as insect-eating birds, reptiles, amphibians and beneficial insects had disappeared along with the trees.

Conventional approaches to reforestation through raising tree seedlings in nurseries and planting them out were a failure.

Acceptance of FMNR was slow at first. A few people tried it but were ridiculed. Trees protected through FMNR were often cut and stolen. A change in mindset began in 1984, following intense radio coverage on deforestation in Maradi. Messaging helped increase awareness of the link between deforestation and the climate. This was followed by a Niger-wide severe drought and famine which reinforced this link in peoples' minds. During the famine and through a "Food for Work" programme, communities were required to practice FMNR on their farmland. For the first time, people in a whole district were leaving trees on their farms. 500,000 trees were protected. Many were surprised that their crops grew better amongst the trees. All benefited from having extra wood for home use and for sale.

Sadly, once the Food for Work programme ended, over two thirds of the trees were chopped down! However, district-wide exposure to the benefits of FMNR over a 12-month period was sufficient to introduce the concept and reduced fears about growing trees with crops. Gradually more farmers started protecting trees again, and word spread from farmer to farmer until FMNR became a standard practice. Over a twenty year period, this new approach spread largely from farmer to farmer, until today five million hectares of farmland have been re-vegetated. This is a significant achievement **largely through efforts of farmers themselves**. It occurred in one of the world's poorest countries with little investment in the forestry sector by either the government or NGOs. **FMNR rapidly moved from being a 'project' to becoming a 'movement' not reliant on external inputs.**

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## Typical farm scene before FMNR introduction.

Farmers believed that a good farmer was a 'clean' farmer who would cut down all farm trees and sweep up and burn any crop residue and organic matter on the farm. As trees belonged to the government, there was no incentive for farmers to protect them from thieves. Theft of trees was common so many farmers chose to cut down the trees on their land themselves, so that they would at least benefit from the wood.



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## Typical farm scene after FMNR introduction.

Today, farmers are leaving an average of 40 trees per hectare and some are leaving as many as 150 trees per hectare – on their farm land. They benefit from increased income from the trees, improved crop yields and increased supply of fodder for livestock. Wind speeds have reduced and in some regions, water tables have risen.



## ***Key elements contributing to rapid spread of FMNR in Niger and lessons learned***

- District wide promotion of FMNR resulted in a *critical mass* of people being engaged in the same activity. This made it easier for individuals to accept this new innovation. **Convincing a large percentage of the community of the value of FMNR facilitated rapid uptake.**
- By working with the forestry department, an 'enabling environment' was created in which farmers believed that they would benefit from their labour on FMNR, i.e. they were assured that they were doing a legal activity and would not be fined for tree cutting as long as they practiced FMNR. Measures were also in place to reduce tree loss through theft. **Farmers need assurance that they will benefit from their efforts.**
- Project staff and FMNR-farmer champions lived in the villages and were required to practice FMNR on their own farms, thus teaching by example. In addition, staff and FMNR farmer champions regularly followed up on practicing farmers, visiting their fields, holding discussions and village meetings, advising and assisting when problems (such as theft of trees and damage by livestock) occurred. **Regular follow up by trusted staff and farmer FMNR champions and teaching by example are very important.**
- Early direct rewards to participants (in the form of firewood from pruned branches, increased income from sale of wood, reduced erosion, reduced windspeeds, increased fodder availability and increased crop yields) encouraged farmers to practice FMNR even more intensively. **Early (within the first year), direct rewards from FMNR act as powerful incentives for adoption.**

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- As farmers benefited, they began sharing their knowledge with other farmers independently of the project. This is thought to be the main way in which FMNR spread in Niger – by word of mouth! **The main means of spreading FMNR was farmers themselves – outside of project interventions. Encouraging this type of farmer ownership and enthusiasm should be part of every FMNR ‘project’.**
- The project provided training and hosted exchange visits (Field days) by external farmers groups, other NGOs, government agricultural and forestry extension services, farmer and church groups. Visiting groups and individuals usually came for a day and learnt directly from the local farmers.  
In addition, project staff and FMNR farmer champions were sent to other regions of Niger where communities were requesting teaching. **Sharing knowledge outside of one’s own NGO is critical to generating an FMNR mass adoption or movement and therefore having an impact at scale. Entrusting training to farmers themselves is very empowering.**

## *Some of the many challenges included:*

- **Traditional practices:** The tradition of free access to trees on anybody’s property and a code of silence protecting those who cut down trees had to be overcome. Within the culture, it was considered anti-social to expose anybody who had stolen somebody else’s trees. This tradition was hard to break and those who practiced FMNR were often discouraged when their trees were taken by others. This situation was successfully addressed through advocacy, creation of local by-laws and support from forestry agents and village and district chiefs in administering justice. Gradually, people accepted that there was no difference between stealing from someone’s farm and stealing from within someone’s house.
- **Beliefs:** Fear that trees in fields would reduce yields of food crops. Field results and measurements showing that crop yields actually increased eliminated these fears over time.
- **Inappropriate government laws:** if the farmer does not have the right to harvest the trees he has protected, there will be little incentive to do so. Farmers feared that they would be fined and even jailed for harvesting their own trees. By collaborating with the forestry service, agreement was reached that if farmers practiced FMNR they would be allowed to legally harvest and sell wood.
- **Food for Work** during famine was an effective means of introducing FMNR on a district wide basis, however, in order to not create dependency, once crops were harvested, the food for work program was discontinued while intensive promotion and teaching on FMNR continued.

## *Benefits of FMNR in Niger*

- Increased volumes of firewood on-farm: This saves hours of time, especially for women and children. Farmers save money by now producing their own wood and diversify and increase income through sale of wood.
- Increased soil organic matter and fertility: Tree roots absorb nutrients from deep in the soil and convert them to soil organic matter via leaf and fruit drop. Leguminous trees increase soil nitrogen. The presence of trees reduces erosion and evaporation and attracts animals which graze and deposit manure and urine onto the soil.

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- Increased productivity of livestock: Animal fodder in the form of tree leaves and seed pods became available reducing livestock mortality and increasing productivity.
- Improved pest-control: Trees attract toads, lizards, birds and spiders which prey on crop-eating insects.
- Increased nutritious food: Indigenous trees provide edible fruit, seeds and leaves. Honey production became possible.
- Diversified production for diversified incomes: Trees provide saleable food, medicinal products and timber. Usually, such products are available or in-season when conventional agriculture is out-of-season, allowing activity and incomes to be spread across the year.
- Desertification was halted and deforestation was reversed
- Biodiversity increased
- Water tables rose in some regions.
- Disaster resilience increased as people now had reserves (standing trees) to draw on.
- Conflict over scarce resources reduced

## ***Questions:***

1. How did FMNR spread to 5 million hectares in Niger over 20 years largely in the absence of NGO or government intervention?
2. How can you promote this same self-multiplying process in your own FMNR projects?
3. How would you encourage farmers to become FMNR champions?
4. How will you overcome problems of theft of FMNR regenerated trees?
5. Why should an NGO or project go out of its way to promote FMNR in regions beyond its own project boundary, or assist other organizations to adopt FMNR?
6. What was the significance of radio messaging linking deforestation and drought, followed by a severe drought in 1984 to changing attitudes to trees and to the uptake of FMNR?
7. What is the significance of the sentence: "FMNR rapidly moved from being a 'project' to becoming a 'movement' not reliant on external inputs".
8. In this context, what is a movement?