

Regreening entails increasing the number of both on-farm trees and, in some countries, off-farm trees through natural forest management and for the protection and management of natural regeneration on degraded land. There is an urgent need to scale up existing successes in both regreening approaches, because trees produce multiple benefits for rural populations. Trees have a positive impact on agricultural production as they help maintain or increase soil organic matter content, which increases the water-holding capacity of the soil. Some species fix nitrogen from the air on their root systems, which helps maintain and improve soil fertility. Other species also produce fodder, which allows farmers to keep more livestock. Trees also decrease wind speed and locally reduce temperatures, which helps farmers adapt to climate change. More trees, higher crop yields, and more livestock enable farmers to better cope with drought years. Women are among the key beneficiaries of more on-farm trees, which they can prune for firewood.

The protection and management of woody species is a low-cost way for farmers to intensify and diversify their rural production systems and increase their incomes. Farmers can support regreening without procuring expensive inputs simply by investing their labor in the protection and management of woody species, which produces much better results at lower costs than tree planting.

Pathways to scaling up existing successes

A growing number of farmers in the Sahel protect and manage natural regeneration of woody species to build new agroforestry systems. One example is the large-scale regreening of the densely populated parts of the Maradi and Zinder regions in Niger, where farmers have protected and managed spontaneous regeneration of woody species since 1985. Their regreening efforts cover 5 million hectares.

The approach of African Re-greening Initiatives (ARI), which became operational in June 2009 in Burkina Faso and Mali, is to scale up existing successes in regreening. This policy brief builds on ARI's experience.

Lessons from ARI

Based on the work of ARI so far we can identify a number of key steps that help scaling up regreening.

1. Identify successes in regreening and analyze why and how they emerged. There are many small and large successes with on-farm regreening in the Sahel. Often these examples go unnoticed because most countries are not yet focused on monitoring landscape-level and farm-level changes in the age and density of on-farm trees.
2. Organize field visits for regional and local policymakers to areas regreened by farmers. The regreening initiatives in Burkina Faso and in Mali have organized visits for national, regional, and local policymakers and farmer leaders to the young agroforestry parklands on the Seno Plains in Mali. Several Malian policymakers have visited the large-scale regreening in Niger. Such visits can help stimulate an awareness of the prospects for scaling up regreening and the policy reforms needed to trigger landscape-level transformations.
3. Organize farmer-to-farmer visits. Regreening by farmers is concerned more with knowledge management and commitment of labor than with investment in costly inputs. Farmers learn from other farmers with relevant experience. Visits can be organized within villages, between villages in the same district, between districts, and also between countries. Farmers who observe what other farmers have achieved working under similar conditions often want to do as well, or better.
4. Build village institutions responsible for tree management. The technical aspects of regreening are fairly simple. The required social capital building for managing the new tree capital is much more complex. Individual farmers can protect and manage trees, but it is easier if entire communities develop rules and regulations for the protection and management of trees and are able to enforce these. This requires the building of village and intervillage institutions that represent all stakeholders (men, women, farmers, and herders).
5. Develop technical training for land users in pruning, tree management, and exploitation. Young trees need to be pruned to develop a trunk and a canopy. This requires training. Farmers decide what tree densities fit their specific situation, which depends on their soils, the types of trees that regenerate, and how much land they cultivate, and then prune accordingly.
6. Systematically use rural and regional radio to spread messages about regreening. Radio is an effective but too often underused medium in rural areas. Over radio, farmers can easily present their experience with farmer-to-farmer visits, the impacts they perceive, the development of their technical knowledge and skills, and so forth.
7. Adapt national policies and legislation to private ownership. National policies and legislation should induce resource users to invest in trees. Farmers will protect and manage trees only when they have exclusive rights to their on-farm trees. This is currently not the case in most countries. Farmers often need permission from the forestry service to cut or even prune the on-farm trees they have protected and managed. One reason why the large-scale farmer-managed regreening in Niger occurred is a shift in perception of ownership of trees.

In 1985 the general perception was that the state owned all natural resources, including the trees, but by 2012 most farmers recognize that they have a right to protect, manage, and benefit directly from the use of their on-farm trees. A weakening of the state after 1985 may have created space for farmers to take back what they thought rightfully belonged to them. Besides this, external interventions began promoting greening by farmers, and they collaborated closely with the forestry service, which supported the process.

8. Mainstream greening into existing agricultural, forestry, and rural development projects. On-farm trees tend to be ignored by ministries of the environment, which are more interested in protected areas, national forests, and plantations. Ministries of agriculture often concentrate on the modernization of agriculture by increasing the use of inorganic fertilizers or new seed varieties. Little or no attention is paid to the role of trees in agricultural production systems. Introducing an agroforestry component into agricultural development projects can often be achieved at little additional cost. If existing funds for tree planting would be redirected toward the promotion of natural regeneration by resource users, more can be achieved at lower cost.
9. Explore possibilities for developing value chains for agroforestry products. Certain tree products generate cash income for resource users. Shea nut in West Africa is a well-known example. It is collected and marketed by women's cooperatives, and it increasingly finds its way to pharmaceutical companies.
10. Produce documentaries for national TV about greening and its impacts. A recent documentary, "More People More Trees," returned to locations filmed in Kenya and Burkina Faso in 1994 and presented interviews with the farmers and project staff involved in greening at that time. It depicts a transformation that defies conventional gloom-and-doom stories. More documentaries should be made about greening successes and their impact on food security, adaptation to climate change, and impact on poverty reduction.
11. Inform national as well as international media about successes in greening. The overwhelming majority of Africans are convinced that degradation continues unabated everywhere. It is vital that national and international media publish information about success stories in order to create a more balanced picture.

12. Promote greening with a long-term commitment (more than 10 years) of all stakeholders. Expanding greening requires a combination of flexibility, transparency, and minimal bureaucracy, as well as a willingness to accept that one knows the starting point but cannot predict where the process will be in 5 or 10 years. Standard project implementation frameworks are not well suited to discovering innovations, capitalizing on unexpected opportunities, and following through to scale up successes.
13. Develop a movement of stakeholders willing to engage in the promotion of greening. Scaling up requires the capacity and commitment of a large number of organizations, each with its particular strengths. Engaging diverse stakeholders would enable a process of promoting greening through the dissemination of knowledge among farmers and through effective advocacy for policy reforms.
14. Develop research activities around greening. It is important to generate hard data about the socioeconomic and biophysical impact of greening, as such data can help influence decisionmakers and inform policy reforms. Governments and aid agencies need to be informed about the quantified impact on crop yields and on improving soil fertility, increasing food security, and reducing vulnerability to climate change.

Conclusion

Greening has clear potential for improving farmers' welfare and reducing their vulnerability in arid African countries and elsewhere. Building on the growing knowledge of what works, the international community, national governments, local communities, and civil society organizations need to work together to go beyond isolated interventions and systematically scale up successful greening projects.

For further reading: World Agroforestry Centre, *Creating an Evergreen Agriculture in Africa for Food Security and Environmental Resilience* (Nairobi, Kenya: 2011), available at www.worldagroforestry.org/downloads/publications/PDFS/b09008.pdf; C. Reij, G. Tappan, and M. Smale, "Re-Greening the Sahel: Farmer-Led Innovation in Burkina Faso and Niger," in *Millions Fed: Proven Successes in Agricultural Development*, ed. D. J. Spielman and R. Pandya-Lorch (Washington, DC: IFPRI, 2009); C. Reij, "Investing in Trees to Mitigate Climate Change," in *2011 State of the World: Innovations that Nourish the Planet*, ed. D. Nierenberg and B. Halliwell (Washington, DC: Worldwatch Institute, 2011); A. Tougiani, C. Guero, and T. Rinaudo, "Success in Improving Livelihoods through Tree Crop Management and Use in Niger," *GeoJournal* 74 (5): 377–89; C. Reij, African Re-Greening Initiatives, www.africa-regreening.blogspot.com.

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