Building forest landscapes resilient to global changes in drylands

Analysis, evaluation and documentation of lessons learnt from afforestation and forest restoration
Introduction

All dryland countries are affected by desertification resulting from both climatic variations and human activities. Desertification affects over 1 billion people worldwide and has potentially devastating consequences in terms of social and economic costs, ranging from the reduction of agricultural productivity to migration and regional conflicts.

Along with desertification climate change is a huge, growing concern in drylands. The Intergovernmental Panel on Climate Change (IPCC), predicts a decrease in rainfall and an increase in extreme weather conditions, such as long periods of drought. Climate change and desertification coupled with severe water scarcity are likely to cause a vicious circle of land degradation and forest deterioration leading to unsustainable livelihoods.

Many countries in drylands regions have recognized the crucial economic, social and ecological significance of forest resources and have launched massive forestation programmes both for productive and protective purposes (i.e. increase the production of wood, and non-wood forest products such as gums, resins, cork as well as for watershed protection, combating desertification and sand encroachment).

Forestation projects are essential for supporting rural livelihoods and environmental restoration, however many planting campaigns do not take into account the fact that planting trees in arid regions is primarily controlled by water scarcity, with drought being a major constraint on forest growth, in particular in areas where annual rainfall is less than 400 millimetres. There are indications that such forestation projects may even exacerbate the hydrologic balance and contribute to environmental degradation, soil erosion, and a loss of vegetation cover and biological diversity. The consumption of groundwater by newly established planted forests has become an increasingly contentious issue, in particular when the project design does not take into account the local environmental and site conditions leading to planting densities beyond the ecological carrying capacity and/or to the use of unsuitable species.

The International Policy Framework

The three UN Conventions (UNCBD, UNCCD, UNFCCC) acknowledge the important contribution of forests to the achievement of their respective goals. Forests and trees prevent and combat land degradation and desertification by stabilizing soils, reducing water and wind erosion and maintaining nutrient cycling in soils. The sustainable use of goods and services from forest ecosystems and the development of agro-forestry production systems can contribute to poverty reduction, making the rural poor less vulnerable to the impacts of land degradation. The Intergovernmental Panel on Climate Change recommends forest restoration as an efficient means to considerably increase carbon stock and reduce emissions at low cost with potential co-benefits for climate change adaptation and sustainable development. The CBD Strategic Plan for Biodiversity 2011–2020 includes an ecosystems' restoration target, aiming at restoring at least 15% of degraded ecosystems by 2020, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Different initiatives and financing mechanisms at global and regional levels have been created to fund forestation and restoration projects in drylands, among which are the following:

- the Global Mechanism, UNCCD's tool for mobilizing resources to combat land degradation, desertification and poverty in drylands;
- the Clean Development Mechanism (CDM) and Voluntary Carbon Market (VCM); the REDD+ carbon offset scheme under the UNFCCC supported by the Global Environmental Facility and other donors;
• the Global Partnership on Forest Landscape Restoration;
• the Great Green Wall for the Sahara and Sahel Initiative (GGWSSI), an initiative of the Community of Sahel-Saharan States (CEN-SAD), endorsed by the African Union (AU) and involving over 20 countries, which represents a major political and financial commitment in Africa;
• The Collaborative Partnership on Mediterranean Forests (CPMF) supported by over 15 partners active in the Mediterranean.

**Previous Experience**

Since long, field experience with forestation programmes in dryland areas has been made by national and regional resource development programmes for the establishment of greenbelts, environmental protection and forest cover restoration.

Some programmes have been focusing on testing water harvesting techniques and restoration of degraded lands using local species with high socioeconomic and environmental values. In Burkina Faso, Chad, Kenya, Niger, Senegal and Sudan, FAO with its local partners tested and piloted the introduction of a mechanised water harvesting technology for the rehabilitation of agro-sylvo-pastoral systems (Vallerani system) within the framework of the project “Acacia Operation”. In Morocco, GIZ in close collaboration with the High Commissariat for Water, Forests and Combating Desertification supported rural communities, and in particular women, to enhance their livelihoods through the sustainable management of agro-sylvo-pastoral systems with the oil producing Argania tree.

Supporting integrated ecosystem management (IEM) approaches in combating land degradation, reducing poverty, and restoring dryland ecosystems is the main focus of some vast programmes, such as the GEF-PRC (People’s Republic of China) partnership on land degradation in the dryland ecosystems of the western region. This initiative that was initiated in 2002 has now been consolidated as a large program involving national and international organizations, which recognizes the need for a long-term approach to address land degradation and associated global environmental concerns such as loss of biodiversity, climate change, and desertification.

Other projects and programmes are focusing on fighting against invasive alien plants, a major threat in most dryland regions. For example, the globally recognized initiative "Working for Water (WfW)", launched in 1995 and administered through the Department of Water Affairs and Forestry, has implemented 300 projects in all nine of South Africa's provinces with a very successful control and clearing of more than one million hectares of invasive alien plants since its inception phase. The programme has provided jobs and training to approximately 20,000 people from among the most marginalized sectors of society (52% women) per annum. The governmental leading agency works in partnership with local communities, to whom it provides jobs, with other Government departments (i.e. Departments of Environmental Affairs and Tourism, Agriculture, and Trade and Industry), research foundations and private companies.

The development and application of forest landscape restoration (FLR) projects is a major component of the WWF and IUCN forest programmes worldwide, including dryland regions from Africa, America, Asia, Europe and Oceania. The approach was further supported by the development of the Global Partnership on Forest Landscape Restoration that now involves more than 25 governments, intergovernmental organizations, NGO, communities and individuals. This proactive network has the purpose of catalyzing and reinforcing a network of diverse examples of restoration of forests and degraded lands that deliver benefits to local communities and to nature, and fulfill international commitments on forests. The most notable example of a long-term, landscape-scale approach to dry forest restoration is the Area de Conservación Guanacaste
in Costa Rica, which has re-established forest over some 70,000 ha of former agricultural land since 1985.

The Plant for the Planet: Billion Tree Campaign, coordinated by the United Nations Environment Programme (UNEP) and backed by Nobel Peace Prize laureate and Green Belt Movement activist Professor Wangari Maathai, His Serene Highness Albert II, Sovereign Prince of Monaco and the World Agroforestry Centre-ICRAF, involved all sectors of society—individuals, children and youth groups, schools, community groups, non-governmental organizations, farmers, private sector organizations, local authorities, and national governments—to plant a tree. Each pledge can be anything from a single tree to 10 million trees. The Plant for the Planet: Billion Tree Campaign encourages the planting of indigenous trees and trees that are appropriate to the local environment, with mixtures of species preferred over other options.

Successful research programmes on forest restoration were implemented in several dryland regions. For example, the ReForLan project (Restoration of Forest Landscapes for Biodiversity Conservation and Rural Development in the Drylands of Latin America), a multi-disciplinary research initiative involving partners from Argentina, Chile, Mexico and Europe, analyzed how restoration of degraded lands can be achieved in a way that mitigates the effects of unsustainable land-use practices, contributes to conservation of biodiversity and supports the development of rural livelihoods, according to the FLR approach. The REACTON project (Restoration Actions to Combat Desertification in the Northern Mediterranean countries), a collaborative framework involving forest managers, scientists, NGOs, and policy-makers, has identified innovative aspects of the land restoration process in the northern Mediterranean, from project planning to implementation and monitoring, as well as restoration technology, from plant production in tree-nurseries to planting or seeding.

Analysis, evaluation and documentation of previous experience

FAO upon recommendation of its members identified the need to initiate a comprehensive analysis, evaluation and documentation of relevant forestation and restoration programmes and projects in collaboration with its member countries, local partner organizations and international institutions and organizations.

This endeavour will aim at compiling and evaluating the lessons learnt and developing operational guidelines for the restoration of degraded forests and lands within the difficult environmental and socio-economic framework conditions in arid zones, for the benefits of the local population. The study will focus on Mediterranean type ecosystems (Mediterranean basin, South Africa, SW Australia, Chile and NW America), the Sahel and other dryland countries in Africa, West and Central Asia, Northern China and Latin America.

Specifically, the study will address the following key issues:

- the use of the Forest Landscape Restoration Planning principles to regain ecological integrity and enhance human well-being in degraded dryland landscapes
- the use of effective stakeholders’ participation and governance needed for effectively planning, designing, implementing, and sharing benefits from forestation and drylands restoration;
- the promotion of sustainable management of forests and rangelands to assist and enhance natural regeneration;
- the selection, production and use of a wide range of site-adapted planting material (genotypes) from indigenous tree, shrub and grass species in forestation and drylands restoration including assurance of seeds and seedlings quality;
- the promotion of multipurpose agro-sylvo-pastoral systems and economically valuable native plant species (e.g. oil producing tree species) to improve rural livelihoods;
• the combined use of traditional knowledge and innovative forestation and restoration techniques, with special focus on soil and water conservation and management;
• the contribution of forestation and drylands restoration to climate change adaptation and mitigation within the framework of carbon market schemes (CDM, REDD+ etc.) and adaptation schemes;
• the sustainable financing and investments into arid-zone forestry; (e.g. through Payments for Environmental Services) and the policy issues related to it;
• the monitoring and evaluation of performance of forestation and drylands restoration, and the assessment of its long-term sustainability, and economic and environmental impacts.

Methodology – The Forest Restoration Monitoring Tool

Restoration techniques in drylands have improved in recent decades, due to the inclusion of environmental and socio-economic methodologies, such as participatory rural appraisal, community-based natural resource management, ecological landscape restoration, water harvesting, and bio-engineering. However, there is still lack a structured track record of proven and tested case studies of best field practices, which demonstrate that dryland restoration has successfully contributed to re-establishing environmental and socio-economic resilience against human-induced disturbances.

For this purpose, FAO developed a comprehensive Forest Restoration Monitoring Tool to analyse and evaluate field projects/programs and to help guide project implementers in compiling the lessons learnt, analysing and monitoring the performance and impacts of forest restoration projects and programmes. It will serve as a tool to gather information on good practices and to facilitate the sharing of know-how on effective restoration approaches, strategies, methodologies and techniques among dryland regions. The applicability of this tool will be field-tested prior to large-scale application.

Outputs

The tangible outputs of this initiative will be:

• a field-tested and reconciled forest restoration monitoring tool to be used for analysing, evaluating and tracking performance and impacts of forestation and restoration projects and programs;
• recommendations and contributions of experts gathered through a series of expert consultation and knowledge sharing workshops in several dryland regions;
• an active partnership platform for knowledge sharing on best-practices in forestation and forest restoration projects and case studies. This platform will promote networking among practitioners of ongoing projects led by FAO and partner organizations and facilitate exchange on innovative solutions to common problems among dryland regions;
• a comprehensive expert report compiling the lessons learnt from success and failure and presenting the way forward for forestation and restoration in drylands (illustrated by pictures, maps, boxes and case studies);
• operational guidelines for the restoration of degraded forests and lands in drylands;
• a roadmap for further steps including the possibility of extending the project portfolio on forestation and forest restoration of degraded lands in drylands.
Outline of the first international workshop in Turkey 2012

The first international workshop will be co-organized by the Government of Turkey and FAO in spring 2012 with the following objectives:

- setting the scene – sharing know-how from different countries/regions on forest restoration in drylands;
- identifying key elements of success and failure to improve effectiveness in forest restoration of drylands;
- contributing to the development of a comprehensive monitoring tool to guide implementers in the planning and implementation of field projects/programmes, assess success and facilitate the sharing of knowhow;
- contributing to the development of operational guidelines;
- getting recommendations on the next steps/process for the formulation of project ideas within the framework of existing cooperation initiatives.

Stakeholders, parties and practitioners willing to share their experiences and lessons learnt from forestation and forest restoration projects/programs are:

- Government departments in charge of forestry, rural development and the environment;
- Research Institutions and networks active in restoration work (including forest/tree seeds centres, CIFOR, IUFRO, ICRAF);
- Private and corporate investors in arid zone forestry;
- Development and environmental NGOs active in forest restoration, rural development and conservation projects and/or community forestry;
- Members of international collaboration frameworks, such as the Collaborative Partnership on Forests (CPF); the members of the Committee on Mediterranean Forestry Questions - *Silva Mediterranea*; the Collaborative Partnership on Mediterranean Forests; the Global Partnership on Forest Landscape Restoration; the Great Green Wall for the Sahara and the Sahel Initiative; and the Millennium Seed Bank Partnership coordinated by the Botanical Garden Kew;
- Development and cooperation organizations such as GIZ, IFAD, IUCN, UNEP and UNEP-WCMC, UNDP and UNDP Drylands Programme Centre, AECID;
- The afforestation and reforestation working group of CDM.

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