

# Saffron Flowers and Sunken Gardens

*Inspiring Initiatives Reversing Dryland  
Degradation and Strengthening Livelihoods*



**drynet**



# **Saffron Flowers and Sunken Gardens**

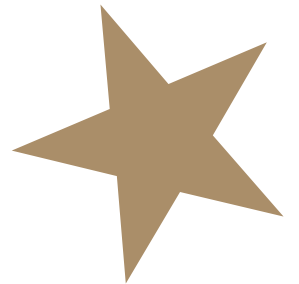


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# The Importance of Local Initiatives: Drynet's Vision

Peoples' perceptions about drylands are often dominated by stories of doom and gloom. Although some areas do face serious problems there is also reason for optimism as grassroots initiatives in many regions have positively transformed the environment and living conditions with people finding ways to earn their living that do not cause degradation. Drynet partners around the world have been involved in, and are documenting all sorts of inspiring initiatives from around the world, this publication highlights just a small selection of them. These examples show that positive change is possible and they will hopefully inspire the many people working in or for drylands. Yet they are also an important advocacy tool, as they show the policies and actions that need to be adapted to reverse dryland degradation.

Local grassroots initiatives often fall under the radar of policy makers and it is one of Drynet's objectives to make these initiatives more visible. Such initiatives vary enormously in their content, approach, scale and focus. Equally, they are initiated and supported by a wide variety of organisations and groups. Despite this variety, all the cases in this report reflect the vision of Drynet and its partners. What are the key elements of this vision?

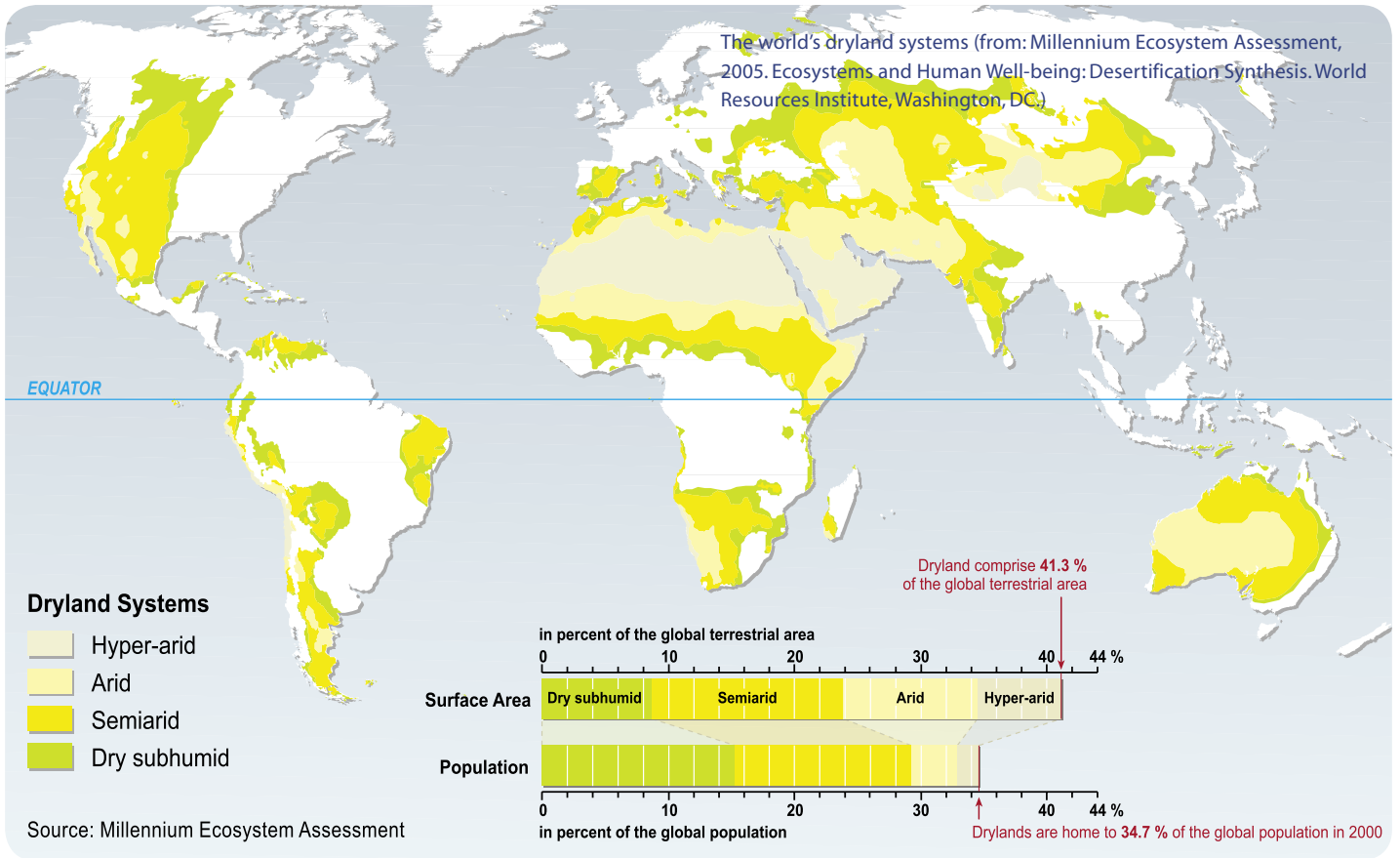
Firstly, we believe that it is worth investing in drylands because they have intrinsic value. Drylands harbour unique biodiversity, which provides unique products and valuable ecosystem services. They provide a valuable gene pool of many species and varieties that are well-adapted to dry conditions. Many of the initiatives in this report reflect this reality. The story of Turkish Saffron is a good example.

Secondly, we are convinced that grassroots initiatives provide innovative alternatives to present-day mainstream development efforts in drylands. Such initiatives are either taken by a local community itself or by organisations which support the local community in shaping, implementing and 'owning' the initiative. The case of the fog nets in Chile is a good example of this.

Lastly, if development efforts are to be sustainable, it is essential that dryland communities are centrally involved in their design and implementation. Policy processes for fostering sustainable development in drylands need to be based on dialogue with all relevant stakeholders and should adopt a genuine participatory approach. This is the only way for developing policies that will work for and be supported by local communities, the people responsible for sustaining them in the long term. This is the only way to integrate local socio-economic conditions and preferences alongside ecological or technical aspects of policies or programmes and the only way of finding solutions that will be supported by the people whose lives are affected by them. This vision is illustrated well by the case on participatory afforestation in Birjand, Iran.

All the initiatives in this report reflect these three elements of Drynet's vision. This publication is intended to inspire readers with the wealth of diverse initiatives that are happening all over the world. It is also meant to expose a wider audience to the work that Drynet and its partners are doing, to share Drynet's drive and vision, its commitment to drylands and their communities and the benefits of collaborative work. These 'stories from the field' are backed up by testimonies from a number of individuals from organisations which have collaborated with Drynet partners in recent years.

The world's dryland systems (from: Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Desertification Synthesis. World Resources Institute, Washington, DC.)



### DRYLANDS: FACTS AND FIGURES

Some 40% of the earth's land surface is covered by semi-arid and arid ecosystems, otherwise known as drylands. More than two thirds of Africa and virtually all of the Middle East are classified as drylands. The majority of people who live in these regions are highly dependent on rearing livestock and on cultivation, activities which rely on the quality of (and continued access to) natural resources, especially land and water. In most dryland countries these activities account for 30–50% of Gross Domestic Product and an even higher proportion of people's livelihoods. At the present time some 70% of the world's drylands are affected by degradation.

The first Millennium Development Goal focuses on reducing poverty and enhancing food security by 2015. Today, 70% of people suffering from serious and permanent under-nourishment (an estimated 1 billion people) live in semi-arid and arid zones, especially in Africa. This highlights the importance of investing in the ability of the people living in these areas to restore the productive capacity of the dryland ecosystems on which they depend.

The world's dryland systems (from: Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Desertification Synthesis. World Resources Institute, Washington, DC.)

Land degradation and desertification reduce the biological and productive potential of the land. The causes can be natural, man-made or a combination of the two. Dryland ecosystems have a specific and well-evolved balance between plants, animals, soils, water and people, but it is a fragile balance that is more easily disturbed than in other ecosystems. Once disturbed, the balance is hard to restore, which is why it is so important to try to prevent degradation and desertification before they occur.

Drylands are susceptible to droughts and to climatic variations, which in recent years have become more frequent and extreme with climate change. Increasingly dryland communities are having to find ways to adapt to these climatic changes. More localised causes of degradation, such as the overexploitation of resources, frequently occur but these can often be addressed, sometimes quite easily. Sometimes they are driven by short-term financial gain (for example large-scale mono-cropping, or mining). At other times more complex socio-economic circumstances drive people to overuse the land and its resources. For example, nomadic cattle herders are often forced to graze their cattle on ever smaller patches of land, when others lay claim to the land that they once used. This leads to overgrazing and land degradation. Issues of tenure, user rights and protective laws all strongly influence the opportunities that people have to use the land and its resources sustainably.



Drylands harbour a unique, well-adapted biodiversity and are very rich in endemic species. Equally, the people who live in these environments have also adapted to them in inventive and creative ways. Many drylands are marginalised, rural, areas which attract little attention from central decision-makers and donors. As such, it is often down to the communities themselves to draw on their own resources and ingenuity to find their own solutions to land degradation and drought. Many of these solutions are innovative and inspiring and deserve more attention. Most investments in drylands come from within dryland communities.

Farmers have the most interest in investing in their own fields, provided that they have tenure rights (see, for example, the case from Niger). Communities often draw up their own management and delivery systems with relatively low costs, contributing labour, materials and skills (see for example the case from Brazil). Such solutions are usually well-adapted to the local context and possibilities, answer local needs and show innovativeness in their use of local materials or in adapting technologies. With limited means these communities tackle the problems threatening their survival in ways that no policy-maker could design behind a desk.

#### **LOOKING FORWARD**

Drynet started in 2007 and currently receives financial support from the European Union, the Global Mechanism, IUCN NL and PSO, a Dutch capacity-building organisation. Drynet's partners have embarked on building dialogue, networks and cooperative structures within their countries. Drynet has established civil society platforms in some of the countries most affected by desertification and land degradation. These have now established their own momentum and are expected to continue to thrive beyond the term of the current project. Faced with accelerating climatic change, governments are increasingly recognising the need to take action, to respond to major crises or prevent them from happening. They can only do so effectively with the help and support of the people for whom they are working. The strong platforms consisting of civil society organisations (CSOs) that Drynet has build will provide a crucial tool to promote collaboration between civil society and policy makers, scientists and the private sector. They will provide a unique access point to local sources of knowledge on drylands and the unique resources that they harbour. They lay the foundation for national cooperation, which is the basis for any meaningful representation in policy processes at the international level.

#### **NOTES FOR THE READER**

This publication describes just a few of the many initiatives that Drynet and its partners are involved in, or have documented and catalogued.

The case studies focus on the unique or innovative aspects of each example. Fuller descriptions of these studies and other inspiring initiatives can be found at [www.dry-net.org](http://www.dry-net.org). From the site you can link back to the Drynet partner who knows most about each case and find further information and contacts. The website also gives details on all the activities in which Drynet's partners are involved in and their achievements. It provides access to Drynet newsletters in 14 languages, dryland-related news from all over the world, and Drynet's position on a number of topics such as adaptation to climate change or biofuel production in drylands.

Land degradation takes different forms, and has different causes, in different areas, countries and regions.

The WOCAT publication "Where the Land is Greener" (2007, editors: Hanspeter Liniger and William Critchley) provides a useful definition of land degradation, and the different forms it takes, as shown in the box at the right.



## LAND DEGRADATION

**Degraded land is defined as land that, due to natural processes or human activity, is no longer able to sustain properly an economic function and/or the original ecological function. There are a number of inter-related land degradation components, all of which may contribute to a decline in agricultural production and other ecosystem services. The most important are:**

**SOIL DEGRADATION** - decline in the productive capacity of the soil as a result of soil erosion and changes in the hydrological, biological, chemical and physical functions of the soil. The major types include water erosion (such as inter-rill erosion, gully erosion, mass movement, off-site sedimentation), wind erosion, chemical deterioration (such as fertility decline, reduced organic matter, acidification, salinisation, soil pollution) and physical deterioration (such as soil compaction, surface sealing and crusting, water logging).

**VEGETATION DEGRADATION** - decline in the quantity and/or quality (species composition, diversity, etc) of the natural biomass and decrease in the vegetative ground cover.

**WATER DEGRADATION** - decline in the quantity and/or quality of both surface and groundwater resources (such as aridification and soil moisture problem).

**CLIMATE DETERIORATION** - changes in the micro- and macro-climatic conditions that increase the risk of crop failure.

**LOSSES TO URBAN/INDUSTRIAL DEVELOPMENT** - decline in the total area of land used, or with potential for agricultural production as a result of arable land being converted to urban, industrial and infrastructure uses. It needs to be stressed that there are many interactions and interdependencies between these components, and measures to combat land degradation and promote sustainable land management will commonly address more than one at a time.

**Source:** Food and Agriculture Organization of the United Nations, WOCAT, Where the Land is Greener (2007, editors: Liniger & Critchley)



BASIC CASE INFO



**Inspiring Initiative:** Harvesting  
Drinking Water in North East Brazil

**Land:** Brazil

**Land degradation:** Water degradation

**Initiative by:** Articulação do Semi-Árido Brasileiro

**Initiative supported by:** Instituto Sertão

# *Building One Million Water Cisterns*



PHOTO: EDUARDO QUEIROGA.



## A SIMPLE AND EFFECTIVE TECHNOLOGY

The system was originally designed by a local mason in the 1960s. Underground cisterns, which are constructed in situ by local artisans, are built to store the water that falls on rooftops during the rainy season. The cisterns consist of curved cement plates, made using simple wooden frames and then sunk about 2/3rds of their height into the ground. After the walls have set a cement plaster floor is laid, the protruding walls are protected with rammed earth and plaster and the tank is crowned with a cement roof. On average the tanks store 16,000 litres - enough to ensure cooking and drinking water for a family of five for up to eight months.



DRAWING: CARLOS MACHADO.

## SETTING THE INITIATIVE

Some 11% of Brazil (almost 900,000 sq. km) - mostly in the North East of the country - is semi arid. These areas, with a rainfall of between 600-1200mm p.a., are home to some 12 million rural dwellers who have no means of storing this rainfall to meet their domestic water needs. During the dry season - or when the rains fail - these families must rely on either trucked-in water or on stagnant, poor quality water dredged from the bottom of dams. Diarrhoea, caused by drinking contaminated water is responsible for one in four child mortalities in the region. Ten years ago at the 3rd Conference of the Parties of the Convention to Combat Desertification (held in Recife, Brazil) a group of civil society organisations came together to form the Articulação do Semi-Árido Brasileiro ASA (the Coalition of the Semi-Arid Regions of Brazil) and adopted the goal of guaranteeing access to safe water for rural households. Based on the experience of some member organizations ASA began a pilot project of building cement water cisterns.

Between 2001 and 2003 the programme grew from a pilot scheme to one that is now mainstreamed. At the last count (July 2009) nearly a quarter of a million water cisterns had been constructed in north-eastern Brazil, at an average cost of \$900 per unit. These cisterns have improved the health of more than a million people and reduced the labour burden of women - who previously had to trek long distances in search of water. In addition they have reduced the dependence of these families on local landowners and politicians, who use access to water as a means of securing patronage, and the cost of trucking in water.

## MAKING THE DIFFERENCE

The simplicity of the design, and the participatory approach, in which local craftsmen are trained in building the cisterns and families trained in their maintenance, are key elements in the success of the project. To date around 5,000 local builders have been trained in cistern-construction, thereby adding to the local skills base and earning capacity. But perhaps the major key to the success of the project has been the involvement of a wide range of stakeholders. The ASA is an umbrella organisation involving some 800 CSOs (ranging from faith-based groups to trade unions and rural workers associations) and as such has a large outreach. In addition the ASA has built strong links with national government, which has made a ten year commitment to funding the scheme; with local authorities, which manage the training aspects and select beneficiaries; and with the private sector, with the Brazilian Federation of Banks providing financial and administrative assistance. Such extensive co-operation has created the necessary political conditions, particularly transparency and efficiency, to enable its continued implementation - a factor that is equally as important as the simplicity of the technology and the continued flow of funds for raw materials, training and administration.





**Inspiring Initiative:** The Çütlük Saffron Project

**Land:** Turkey

**Land degradation:** Soil and Water degradation by mono-cropping

**Initiative by:** TEMA, Harran University

# *Using a Flower to Combat Desertification*



CREDITS: ELIAS PIRASTEH

*“Saffron only requires 10% of the water that cotton needs and offers a potential for local value-adding”*



### SETTING THE INITIATIVE

Çütlük lies in a semi-arid upland region on the southern edge of Turkey, close to the Syrian and Iraqi borders. Local agriculture is dominated by cotton mono-cropping, which accounts for 70% of agricultural production, but requires frequent irrigation (seven to eight times a year). This leads to increased salinity and the loss of nutrients in an already water-scarce area.

Against this background, TEMA (The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Construction of Natural Habitats) joined forces with experts at Harran University to explore the viability of re-introducing commercial saffron cultivation into the area. Saffron is one of the most expensive spices in the world. It takes 500 kilograms of bulbs to produce just 200 grams of flower stamens. The plant grows in the wild in the area, which is thought to be a valuable pool of saffron gene resources. Saffron only requires 10% of the water that cotton needs and offers a potential for local value-adding.

The project had both local and more strategic objectives. At the local level it aimed to make local agriculture more sustainable by encouraging saffron cultivation, and to use this as a basis for building small enterprises and improving social, economic, employment and educational opportunities in the village. On a more strategic level it aimed to improve the conservation of saffron cultivars by drawing on the local gene pool, to encourage the Ministry of Agriculture to consider supporting saffron producers, to stimulate more research into saffron agriculture, and to attract potential buyers and contribute to Turkey becoming a net exporter.

### MAKING THE DIFFERENCE

The project initiators thought that the Harran Plateau was a potentially interesting place to experiment with saffron production, as it has the right combination of climate and soil conditions and a pool of natural cultivars, which they hoped to tap into. They carried out soil tests before discussing the idea with villagers and offering them a package of training on saffron production, access to bulbs, and the facilities to store and protect them.

Farmers who took up saffron cultivation found that they doubled or tripled their incomes. The project has also led to women taking a larger role in cultivation and harvesting (both types of work are quite intricate and demand much patience and dexterity, attributes locally ascribed to women). As a result the social status of women has improved. Far less irrigation water is now used in the village and the soils are showing signs of recovery. This has led villagers to develop a better relationship with the landowners from whom they rent their land.

Other communities in the region have become aware of the benefits of saffron production and a number of similar projects have been established, some externally funded (for example by the EU) and others internally (by farmers' associations or the local municipality). This, in turn, is creating new markets for selling bulbs as well as the opportunity to develop a more effective marketing structure for the spice.

Though small in scope, this project has received national and international acclaim and has raised the profile of saffron production both within Turkey and further afield. It has been awarded prizes by several international associations, including the United Nations and the International Public Relations Association. The project shows how replacing an imported crop (cotton) with a locally adapted variety can have very positive economic and ecological benefits, and highlights the value of local sources of dryland biodiversity.

BASIC CASE INFO



**Inspiring Initiative:** Building on a Green Revolution in the Sahel

**Land:** Niger

**Land degradation:** Vegetation degradation

**Initiative by:** CIS/VU University



# *The Largest Reforestation Effort in Africa Goes Unnoticed*



GALMA, NIGER, 1975



GALMA, NIGER, 2003



“Estimates suggest that some 5 million hectares have more vegetative cover than before as a result of an estimated 4 million farmers protecting trees. This makes it the largest reforestation initiative ever to have occurred in Africa.”



## SETTING THE INITIATIVE

A recent study by the Centre for International Cooperation of the Free University of Amsterdam shows that vast areas of land in Niger and parts of Burkina Faso now have more vegetative cover than 20 years ago. The researchers discovered that this is due to farmers in densely populated regions of these countries protecting and managing trees that naturally seed themselves on their farms. The research showed that this practice has been taken up in neighbouring parts.

The scale of this re-greening is quite remarkable. Estimates suggest that some 5 million hectares have more vegetative cover than before as a result of an estimated 4 million farmers protecting trees. At an average density of 40 trees per hectare the study estimates that some 20 million trees have been nurtured and protected from grazing cattle. This makes it the largest reforestation initiative ever to have occurred in Africa - and one carried out largely through farmers' own initiatives; in fact, the government and international agencies were hardly aware that it was happening.

While conventional wisdom holds that population pressure has a negative effect on the natural resource base of drylands, this initiative suggests otherwise. It seems that farmers are adjusting their farming practices to accommodate an increasing population. For example, they manage their livestock more intensively by controlling their grazing, so they do not damage young saplings. When mature the trees can provide additional fodder for the livestock, which in turn produce more manure which can be used to increase the fertility of the fields. The trees also help protect crops particularly in their early growth stages, from desert winds, fix nitrogen, stabilise the soil, raise the water table and provide a source of wood. Their proximity to people's homes means that women spend much less time gathering wood.

Studies show that protecting trees increases the efficiency of both the cropping and husbandry systems, considerably

improving the incomes of participating farmers. Moreover it reduces vulnerability to drought. Following the drought of 2005, farmers with more trees on their land had better harvests and were able to support themselves through the hungry season by selling firewood to buy food. Research in one village in the Maradi region shows that villagers protect 37 different tree species, suggesting that complex ecosystems are re-emerging.

## MAKING THE DIFFERENCE

Three factors seem to have led farmers to recognise the benefits of protecting trees. Firstly, the drought years of the 1970s and 1980s convinced farmers of the need for protection against dust and sand storms, land degradation and decreasing crop yields. Secondly, there has been a shift in perceptions about the ownership of trees - while they remain the property of the state farmers now have de facto usufruct rights over them and are prepared to invest in protecting them. Finally, farmers recognised the need to intensify production systems in reaction to strong demographic growth. A series of informal farmer-to-farmer exchanges slowly led to a spread in the practice that provides farmers with a capital asset for use in times of hardship, and a regular stream of benefits.

Clearly many lessons can be learnt from this movement, not least because of its sheer size and the spontaneous manner in which it has been taken up. It shows potential for addressing the food crisis, continued degradation of dryland areas and climate change (trees sequester carbon). Farmers can be supported in taking up these initiatives by changes in user rights, by including farmer-led regeneration approaches within existing and new projects, by promoting farmer exchange visits and publicising this success story through the mass media and extension services.

## BASIC CASE INFO

4

**Inspiring Initiative:** Drynet: Building Platforms and Fostering Dialogues

**Land:** The Netherlands, France, Germany, Turkey, Bolivia, Chile, Brazil, Senegal, Mauritania, South Africa, Iran, Pakistan, India, Kazakhstan

**Initiative by:** Both ENDS, OLCA, PROBIOMA, IS, ENDA, TENMIYA, EMG, CAREC, CENESTA LPPS, LPP, CARI, SCOPE, TEMA



# *Drynet: a Global Initiative, Giving Future to Drylands*







## SETTING THE INITIATIVE

Initiatives to develop and rehabilitate drylands face many challenges. In part, this is because these objectives have been poorly integrated into overall development strategies and aid agreements. In addition, there are poor links between the policy community and the communities working at a grassroots level. Policy makers are often unaware of what is happening at the grassroots level and fail to recognise and ensure the mastery, management and, even ownership of local natural resources by local communities. The process of including these communities in the decision making structure is very weak, even though most of these processes will be made in their name and for their benefits. Equally community organisations, particularly CSOs, have limited access to knowledge and information on best practices and relevant scientific research on drylands.

Yet grassroots CSOs can provide a crucial link between local land users and national and international decision makers. They are the eyes and the ears of the local population, implementing activities at a grassroots level, conserving, documenting and spreading traditional knowledge and monitoring change. They are well placed to voice the concerns and needs of local communities to policy makers, although they often lack the organisational capacity to take up the role of translating local needs, realities and solutions into viable policy recommendations. This gap was recognised by a group of 14 CSOs who came together to form Drynet, a network which aims to strengthen civil society at national levels and to provide them with access to the information and skills needed to enhance their knowledge and visibility so they can positively influence policies. A second aim of Drynet has been to build international links between CSOs so that they can learn from each others' experiences and share knowledge.

## MAKING THE DIFFERENCE

Drynet brings together organisations working on issues such as soil remediation, rights for pastoral peoples and climate adaptation. The organisations come from different cultural and geographic backgrounds: from Chile and Uzbekistan to Mauritania and Iran. Yet they defy these cultural and language barriers in an effort to develop a stronger civil society, to raise public and political attention for drylands and to ensure more participatory approaches to policy making and project implementation.

Drynet's members share a common vision and have developed a way of working that allows them to build platforms within their own countries and also link with partners around the world. Together they have designed a methodology for building the capacity of CSOs involved in drylands. This follows a four-step process 1) identification of all relevant stakeholders and interests, 2) analysis of current policy, development and aid processes, 3) bringing stakeholders together to share knowledge and identify priorities for improving participation in relevant policy processes, 4) identification of gaps in knowledge and skills of CSOs are then addressed by training and other forms of capacity building. Positive examples are highlighted to provide inspiration and there is attention for the possibilities for up scaling. This methodology has been consistently followed. It has led to improved contact among stakeholders, awareness of stakeholders on the various local issues, and to dialogue between stakeholders. It also led to changes in the authorities' attitudes towards participatory approaches.

The three European members play a role in monitoring international policies and programmes likely to effect development efforts in dryland environments and provide a conduit between grassroots organisations and the international policy community. At the international level, Drynet has been able to express common positions and influence decision-making, and this in turn has given southern partners more visibility and leverage within their own countries.



BASIC CASE INFO

5

**Inspiring Initiative:** Responsible Soy Bean Management

**Land:** Bolivia

**Land degradation:** Soil degradation by chemical contamination and monocropping

**Initiative by:** PROBIOMA and farmers associations



# *A Greener Approach to Cultivating the 'Golden Grain'*



"Our objective is to produce at the lowest costs and to use less toxins"

*Juan Patzi (sugar cane farmer)*

"We want to raise consciousness about taking care of our health and that of our people" (soy farmer)



### SETTING THE INITIATIVE

In the past 15 years soy has become Bolivia's major export crop. Almost one million hectares of land, mostly in the Department of Santa Cruz, is now dedicated to soy production, which has grown exponentially in recent years. Some 70% of this land was previously virgin forest. According to the National Soil Usage Plan (based on FAO criteria and adopted by law in 1996) 30% of this land was unsuitable for conversion to agriculture. In 2005 alone more than 100,000 hectares of land was deforested for soy cultivation. But while more land is being brought into production, large tracts of land - some 300,000 hectares - have been abandoned in an advanced state of desertification, as soy cultivation has rapidly depleted the fertility and structure of these fragile forest soils. Worryingly, this destructive production model continues to advance on virgin lands, threatening to leave even larger tracts of desertified land in its wake.

The majority of farmers in this region are smallholders with less than 50 hectares and their livelihoods are as fragile as the soils they work. Soy, and particularly genetically modified varieties, is a capital-intensive crop, requiring farmers to buy seed and agrochemicals. -Yet most farmers have limited financial reserves and can only finance each year's planting by using their machinery, land or homes as collateral. If the crop fails the farmers face losing their assets and their livelihoods and being bought out by bigger players.

In response to this situation PROBIOMA established a multi-stakeholder forum to identify ways to control the environmental impacts of soybean production and to strengthen the position of small-scale farmers. This forum led to the launch of the Programme for the Responsible Management of Soybeans in 2005. The programme involves changing farming practices and the social and economic environment in which farming is carried out. This two-pronged approach is helping small-scale farmers step off the treadmill of mono-cropping, to reduce their dependency on external inputs and reverse environmental degradation.

### MAKING THE DIFFERENCE

At the farm level these changes involve establishing standards for ecological cultivation on small plots which incorporate windbreaks, encourage crop rotation and diversification, discourage the use of artificial agrochemicals and avoid the use of genetically modified varieties. This has been backed up by developing a training programme on organic and low external input soy production, establishing demonstration plots, distributing biological control agents and providing technical assistance for participating farmers.

At the policy level the programme works to establish policy standards which respect designated natural areas, indigenous territories and the recommendations of the National Soil Usage Plan. At the organisational level it involves building the capacity of agricultural cooperatives and syndicates, so they can exert more influence on decision making, and building a multi-stakeholder alliance to increase transparency and improve governance. Other aspects of the programme include establishing a broadcasting and advocacy campaign to raise awareness about agricultural issues and developing a certification and marketing system that rewards responsible soy production.

Within three and half years the programme has attracted almost 1,500 individual farmers and ten farmers' associations and has led to almost 60,000 hectares of land being farmed in a more ecological manner. Many farmers now realise the benefits of responsible soy production and farmers' experiences demonstrate that one of the biological micro-organisms used to treat seeds also shows signs of improving the soils degraded by the use of agrochemicals.

The programme shows that it is possible to engage with a form of agriculture that causes widespread environmental and social damage and to 'reform it from within'. Aspects of this model, in particular the development of social and environmental criteria, are now being adapted by Quinoa farmers' associations in the Bolivian highlands.



## BASIC CASE INFO

6

**Inspiring Initiative:** Participatory Afforestation, Ecological Restoration and Carbon Sequestration in Birjand

**Land:** Iran

**Land degradation:** Vegetation degradation by overgrazing and fuel wood gathering

**Initiative by:** Iranian Ministry of Agriculture, UNDP, Global Environment Facility / **Initiative supported by:** CENESTA



# *Villages and the Iranian Government Aligning their Interests*





“Over five years (2004-2008) the groups have rehabilitated some 12,000 hectares of degraded rangelands”



### SETTING THE INITIATIVE

The Islamic Republic of Iran is one of the countries most affected by desertification and, consequently, has made the rehabilitation of degraded lands a top priority. The government has established an innovative community afforestation project in Birjand, a heavily degraded and sparsely populated area near the Afghan border. The project area covers some 148,000 hectares, most of it hilly and rocky land. It supports a small population of 164 families spread across almost 30 villages.

Animal herding is the main occupation, although the land is so degraded that local herders are often forced to graze their flocks in other areas for long periods of time. Land degradation is due to overgrazing and excessive fuel wood gathering which, for a while, was exacerbated by the temporary presence of refugees from neighbouring Afghanistan. As a result the area has been left with hardly any woody biomass; the only remaining wood was a shrub that the livestock find unpalatable. The shortage of vegetation increases the damage caused by the strong sand-laden winds, which are prevalent in the region, causing erosion and damaging crops.

The project seeks to restore these rangelands through participatory planting and seeding, combating desertification, improving the welfare of local communities and also contributing to carbon sequestration - thereby aligning local, national and global political objectives.

### MAKING THE DIFFERENCE

This programme, which was set up in 2004, is unusual in that it was initiated by a national government working closely with the local community. Village Development Groups (VDGs) have been set up in almost every village and almost 50% of the members are women, an unusual feature in a male-dominated culture. The VDGs have been involved in all aspects of the programme, from site and species selection, to planting and protecting the areas and then gathering seeds from these areas for planting in the following year.

Over five years (2004-2008) the groups have rehabilitated some 12,000 hectares of degraded rangelands, leading to a significant increase in vegetative cover which has increased the availability of fodder and reduced the need to take the animals elsewhere to graze. The programme is recognized as the most successful intervention that the UNDP has supported in Iran so far.

As well as improving the resilience of the local ecology, the project also seeks to reduce pressure on local resources, particularly the demand for fuel wood. Most villages have received a gas oven suitable for baking Nan bread (a staple in the local diet). In one of the larger villages a solar-powered bathhouse has been established.

Other spin-offs from the scheme, and particularly the mobilisation of the VDGs, have included the establishment of micro-credit and village savings schemes, which are mostly used to establish and develop micro-enterprises including artisanal activities such as carpet weaving. Local artisans have also received their first opportunity for national exposure and for accessing wider markets by exhibiting in a national crafts fair in Tehran.

The Iranian government plans to scale up this approach in other parts of the country facing problems of desertification and vegetation loss and has declared an interest in approaching neighbouring countries to explore adopting these methods. It is hoped that at least some of the money needed to finance this expansion will be provided by the Global Climate Fund.



**Inspiring Initiative:** Promoting Camel Products as a Specialty and Health Food

**Land:** India

**Initiative by:** LPPS

# *From Heirloom to Unique Selling Point*



The Chief Minister of Rajasthan, India, committed her government to saving the camel and its potential for supporting livelihoods in the Thar Desert, after reading about the situation in the local Drynet Newsletter.



### SETTING THE INITIATIVE

The camel is part and parcel of Rajasthan's culture and tradition. They were once the lifeline of the rural population, providing transportation, doing heavy agricultural work and providing a bulwark against droughts. Traditional camel husbandry is an ingenious way of converting the scattered and seasonally varying vegetation of the Thar Desert into protein and energy. Camels roam freely throughout most of the year, foraging where they can and are only supervised during the breeding season and when crops are growing during the monsoon months. But with the growth of irrigated agriculture and the increased availability of motorised transport, rural dwellers have come to see camels as outmoded, and even a threat to farmers. As a consequence the camel population of Rajasthan has dwindled by almost 50% in the past decade, to about 400,000.

A local NGO, Lokhit Pashu-Palak Sansthan (LPPS) is involved in finding new ways for villagers to benefit from keeping camels. Camel milk is one product that has a potential to transform the way local people view camels. Their milk is increasingly recognised as having many medicinal effects, including anti-bacterial and anti-viral properties that help people fight diseases; it also contains an insulin-like substance that reduces blood sugar levels in diabetes patients. In nutritional terms, it has three times as much Vitamin C as cow milk, is low in calories and is suitable for people who are lactose intolerant. There is growing demand for camel milk (and female camels) in the Gulf States, and the Food and Agricultural Organisation of the United Nations estimates that the global market potential for camel milk could be worth billions of dollars. But this is not the only camel product with potential. Camels also provide a range of other products (hair, skin and bones for traditional crafts), and camel safaris offer opportunities for pastoralists to participate in India's booming tourist economy.

### MAKING THE DIFFERENCE

LPPS is adapting a two-pronged approach toward valorising camel products, raising public awareness about camel products and working with camel breeders to help them tap into these new niche markets. Only a few years ago, most Indians would have been disgusted by the idea of drinking camel milk. LPPS has successfully worked with the media to make its medicinal value known. It organised an international workshop in Jaipur, the state capital, in which camel experts and medical researchers participated, and which was well covered in the national media. It has also promoted camel milk and ice cream ("a low calorie desert dessert") in the regional media, receiving much attention for these products.

At the same time LPPS is working with camel breeders to make them aware of new opportunities. It began by organising community outreach meetings which led to the formation of six clusters of self-help groups of camel breeders. LPPS is now training camel breeders in hygienic milk production and is working on building a supply chain and a recognizable branding for camel milk. It has also built up a client base of 35 diabetes patients in the nearby city of Jaisalmer who receive regular deliveries of camel milk, which helps them to reduce their dependency on medicines. Most recently they have been working with a renowned artisanal paper maker in using camel dung to make paper which is then fashioned into diaries and cards. These products were launched at the Pushkar camel fair in November 2008 to much acclaim. These initial achievements now need backing up by appropriate government policies and targeted research efforts.





**Inspiring Initiative:** Partnership for Sustainable Agriculture

**Land:** South Africa

**Land degradation:** Soil degradation by poor landuse practices and overcrowding

**Initiative by:** University of Kwazulu-Natal, Farmer Support Group / **Initiative supported by:** EMG

# *Working the Fields for Healthy Soils*



## PARTICIPATORY LEARNING

The approach was highly participatory, unlike the rather top-down and prescriptive approach that has previously dominated extension work in the region. Most sessions took place in the farmers' own fields, with an emphasis on practical learning - (e.g. building compost heaps, run-on ditches, trench beds, or on the use of mulches and cover crops). Several visits were also organised to see and evaluate innovations (e.g. approaches to vegetable gardening and water harvesting techniques) implemented by farmers elsewhere. Participatory monitoring and evaluation by the farmers themselves was also a key aspect of the learning process. Photography was used as a central element in building and sharing knowledge.



## SETTING THE INITIATIVE

Potshini lies at the foothills of the Drakenburg Mountains, close to the border with Lesotho. Subsistence agriculture is widely practised - although most people rely more on external sources of income, such as social grants or remittances for their livelihoods. Crops are grown in the summer - when the cattle range on communal lands - and in winter the cattle graze the crop residues in the fields. Decades of overcrowding (the legacy of apartheid) and poor land-use practices are taking their toll on the landscape, which is suffering from erosion, soil loss and nutrient depletion.

The Smallholder Systems Innovations Project was established by two departments at the University of KwaZulu-Natal: the Farmer Support Group (FSG, the community development and outreach division of the Centre for the Environment, Agriculture and Development) and the School of Bioresources Engineering and Environmental Hydrology. The FSG had worked in the area before and had good links with the local community. They built on two existing farmers' groups to establish two Farmer Learner Groups, each with about thirty participating members. These groups shared and experimented with new technologies in farming, using Farmer Life Schools, an innovative way of working with groups, that uses participatory action research, and cross visits. The main aim of these schools was to involve farmers in seeking and adopting appropriate soil and water management innovations, drawing on their own experience and knowledge. Discussions between farmers and facilitators led to the development of a curriculum covering subjects such as soil and water management, seedling production, tree planting, food processing, nutrition, marketing and the challenges of HIV/AIDS.

## MAKING THE DIFFERENCE

The project was well accepted in the community, primarily because it was designed and carried out in a participative fashion and was shaped by the farmers' needs and priorities. Interactions between stakeholders were not institutionalized but remained informal and led to improved knowledge about soil and water management and other aspects of agriculture and rural livelihoods. Participants said that the programme improved their knowledge about water conservation, making gardens, seeds, soil fertility, pest control and organic farming.

The project contributed significantly to a decrease in water run-off and soil erosion and an increase in tree planting. Better management also saw participants increase their maize yields (by an average of 168%), household food security and incomes (through marketing vegetables). People were clearly better able to meet household expenses - with many able to improve or repair their homes or other buildings in their compound or being able to send their children to school. The process also strengthened communications between members of the groups and with neighbours and family members who had not been able to participate.





**Inspiring Initiative:** Media Tour Uzbekistan -  
Raising Environmental Awareness

**Land:** Uzbekistan

**Land degradation:** Salinisation, water degradation  
(quantity), vegetation degradation

**Initiative by:** Tashkent Environment Information  
Centre / **Initiative supported by:** CAREC



# *NGO's and Journalists Making Land Degradation Public*





A media tour to Verkhnechirchiksky hydro station in March of 2003 had been organized in partnership with the Basin Water Organization "Syrdarya", which is responsible for this waterworks facility. After the journalists inspected the waterworks facility, which controls the supply of water into a channel, there was a discussion of the topic "How to manage water resources?". Experts were talking about automation of the water management industry in Uzbekistan and Central Asia, introduction of the integrated water resources

management system in Ferghana Valley, desertification in the Aral Sea area. Then the bus headed for Charvak water reservoir. Journalists were getting information on the way there, too. The "open microphone" provided the opportunity for most of the participants to express their opinions regarding the subject of the media tour and the "round table", as well as to touch upon other urgent issues related to the environment of Uzbekistan.

### SETTING THE INITIATIVE

Uzbekistan is a landlocked country in the Asian steppes. The country is experiencing considerable land degradation and desertification. Water resources are declining and subject to increased pressure and competition, while waste disposal and loss of biodiversity pose other environmental challenges.

Despite a large media presence in the country, environmental issues receive little national publicity. The main sources of information, an environmental bulletin and a government newsletter, are very little read outside government circles. Against this background a group of journalists and environmentalists came together in 2002 to form the Tashkent Environment Information Centre. Its aim is to build links between the media and environmental professionals from NGOs and the government, in order to raise public and political awareness about environmental problems. The idea is to give professional environmentalists more access to media channels and to provide journalists with the information to communicate about the often complex intertwining of natural and social forces that shape contemporary environmental problems.

Since its founding, the Centre has produced a number of environmental almanacs that provide reference material for journalists and broadcasters. It has also organised fifteen round tables for environmental professionals and the media and arranged five tours to key environmental sites, including a hydro-power station, research institutes and national parks. Between thirty and forty journalists or broadcasters participated in each of these tours. More recently, the Centre has established a website as a source for breaking environmental stories and background material. In 2008 the Centre won a state-run competition for supporting NGOs, which has enabled it to consolidate its work and shows official support for its groundbreaking efforts.

### MAKING THE DIFFERENCE

Environmentalists are aware that generating publicity about environmental issues is an essential part of their work, yet they often lack the training in effective communication with a broader lay-audience. Printed press releases may attract passing interest, but they need to be short to capture and hold a journalist's attention. However press releases often do not properly describe the complexity of many environmental issues. Environmental groups and journalists therefore have sought new mechanisms for disseminating information about environmental issues. Initially these started off as roundtables where experts handed out reports to the journalists, informed them about existing problems and answered their questions. This rather formal format was later augmented by media tours, which allowed the media to 'see' the issues at first hand, a particular important aspect for TV broadcasters who look for visual cues to back up the facts. The tours also provide opportunities for more interaction between the two groups. An 'open-microphone' on the tour bus allows participants to discuss the issues in more depth and the tours also provide opportunities for informal networking.

Through giving broadcasters and journalists first-hand exposure to some of the key sites where land degradation issues are being played out, there has been a significant increase in media coverage. The tours and roundtables were followed by TV programmes, radio broadcasts and newspaper articles dedicated to the problems of water apportioning, land degradation, desertification, conserving wildlife and climate change. The tours have enabled journalists to better understand the issues and to communicate them with greater clarity. Environmental organisations are keen to participate in these events as they realise they create publicity and give them more political leverage. Ongoing dialogues have arisen about how to improve two-way information flows, as environmentalists sometimes feel that the issues are not reported with sufficient accuracy or detail.

**Inspiring Initiative:** Conserving the Sunken Fruit Gardens of Southern Iran

**Land:** Iran

**Land degradation:** Soil degradation by water erosion, losses to urban development

**Initiative by:** CENESTA



# *A Living Example of Traditional Knowledge*



*“In the past grape vines were widespread here. In our village there used to be some 150 underground gardens. I used to have seven myself! My forefather Gholam Reza planted them five generations ago.”*

### **SETTING THE INITIATIVE**

Bushire, a province in southern Iran, has an extremely hot and arid climate where temperatures can reach more than 50 degrees. Rainfall is very low (between 200 and 250mm per year) and usually occurs in flash floods with most of the water running off. Despite these harsh conditions the area has been settled for more than 5,000 years. There is some agriculture, though its spread is limited to within close proximity of wells, often 20-30m deep, from which water is still raised using animal traction.

Despite its harshness this environment has given rise to ingenious techniques for harvesting precious rainwater and using it to grow high-value fruit crops. One method, of building sunken fruit gardens, dates back 4,000 years. It appears very simple, yet it shows a deep understanding of the climate and geology of the area. These methods have endured for generations, with the garden pits and the knowledge needed to manage them being passed on from father to son. One local farmer recounts: “In the past grape vines were widespread here. In our village there used to be some 150 underground gardens. I used to have seven myself! My forefather Gholam Reza planted them five generations ago.”

Whereas there were once several thousand sunken fruit gardens in the province, their continued existence has come under threat. Urban development and the construction of a military complex in the heart of the area where these sunken gardens have existed for generations have reduced the number to less than ten. Following a lobbying campaign from the Iranian NGO CENESTA the government has decided to declare these few remaining gardens as sites of cultural heritage. It is hoped that the traditional knowledge embodied in these gardens can also be brought back to life.

### **MAKING THE DIFFERENCE**

This traditional method of harvesting rainwater from flash floods involves digging a pit some 2-3 metres wide and 5-6 metres deep until a layer of greasy soil, locally known as *shol* is reached. The pits are dug in slightly lower areas of land where the flash flood water is most likely to gather, and the surrounding areas are landscaped to maximise the flow of water. The pits also provide a moist and cool environment. The bottom of the chamber is then lined with branches and the chamber half filled with top soil and young vines or fruit tree saplings are planted in them. For the first year the saplings require watering by hand, but afterward the sunken gardens are recharged with water from underground sources.

Above the ground the pits are protected from grazing animals by fences which are surrounded by thorn bushes. As the fruit trees grow they are trained out over a series of stone stands or pillars (see photo) that provide a lattice framework. This keeps the fruit off of the ground and makes harvesting easier. The sunken gardens are known to produce yields of up to two tons of fruit each year, providing high-value cash crops for local farmers. This method produces plants that are not only highly productive but also very long-lasting: some vines are thought to be more than five hundred years old. Despite the harsh climate, the region has much agro-biological diversity. Seven distinct varieties of grapes were found in these sunken gardens, all adapted to this climate. Now that the conservation of the garden beds and methods has been achieved, the task is to conserve these fruit varieties and to keep alive the knowledge that made this remarkable regeneration possible.





**Inspiring Initiative:** Fog Collectors in the Coastal Border of the Atacama Desert

**Land:** Chile

**Land degradation:** Water degradation (quality) by mining

**Initiative by:** Fishermen of the Caletas community, Chañaral Municipality, Pontificia Universidad Católica de Chile / **Initiative reported by:** OLCA

# *Fishermen Catching Clouds for an Alternative Livelihood*



## A LOW COST, LOW MAINTENANCE TECHNOLOGY

The fog catchers are constructed from polypropylene netting (widely used in Chile as a wind break) strung between eucalyptus trees or poles so that the nets face into the wind and 'catch' the clouds of fog. The fog condenses on the surface of the netting and the water drips down into a basin dug underneath the net, from where it can be canalized or piped downhill into storage. They are extremely simple and cheap to construct and rely on gravity to do most of the work. Their initial vulnerability to occasional high wind speeds has been corrected, and now the nets can be taken down during storms.



### SETTING THE INITIATIVE

The Atacama Desert, in the north of Chile, is one of the most arid regions of the world. Communities living by the sea used to rely on subsistence fishing for their livelihoods - but waste from local mining operations decimated local fish stocks and threatened their livelihoods forcing them to look for alternatives.

Throughout the year heavy mists blow off the sea, shrouding the high local cliffs and mountains. The fishermen wondered if there was some way to capture the water in the mist and use it for irrigation, thereby creating an alternative livelihood. They enlisted the help of the Geography Department at the Catholic University to set up a study to explore if fog nets (*atrapanieblas*) would provide sufficient water to sustain viable agricultural businesses.

Other similar projects had been tried elsewhere in Chile and had proved technically feasible. However the economics of them depended on the local topography (which dictated the amount of piping needed). In addition there was insufficient local social support to maintain the fog nets, so they quickly fell into disrepair. In this case the topography was favourable and the project was initiated by the beneficiaries so there seemed a better chance of sustaining the project.

### MAKING THE DIFFERENCE

The fishermen initially experimented with six fog collectors, with a surface area of 264 square metres which were positioned six hundred metres above the plots intended to be used for agriculture. They found that these nets captured more than 1,000 litres of water per day enough to establish plastic greenhouses where they grow tomatoes and aloe vera. Since this first experiment they have built a further eight fog collectors, more than doubling their water harvesting capacity. As the project was initiated by the fishing community itself they have a vested interest in sustaining it and in building new alliances with different donors and other support organisations. The nets now also provide water to tourists visiting the nearby Pan de Azúcar National Park and there are possibilities for developing eco-tourism related enterprises.

The potential of fog nets has been recognized again and is being discussed with other communities in Chile with similar topographic conditions. One of the researchers involved in the project has been involved in establishing fog nets technology in other Latin American countries as well as in Namibia, South Africa and Nepal. This simple technology is replicable in other arid areas with dramatic altitude differences and the right weather conditions.



**Inspiring Initiative:** Combating Desertification Through Agro-Pastoralism

**Land:** Pakistan

**Land degradation:** Vegetation degradation by overgrazing and over-exploitation of timber resources

**Initiative by:** Society for Conservation and Protection of Environment (SCOPE), Arid Zone Research Institute (AZRI)

# *Adapting to Climate Change: a Multi-Functional Response*





“Fifteen agro-pastoral farms have been set up in the district, each covering 2-3 hectares. These farms combine food crops, agro-forestry and managed grazing. They are set up both as productive units and also as demonstration farms which other farmers can visit and learn new techniques.”



### SETTING THE INITIATIVE

Tharparkar, in Sindh Province, Southeast Pakistan, is a semi-arid zone, containing much of the Pakistani portion of the Thar Desert. Rainfall is very low (200-250mm a year in good years) and seasonal; it rains for just 60-75 days per year. The inhabitants - who mostly combine semi-nomadic livestock keeping with small-scale agriculture, are highly dependent on these rains for the regeneration of grassland and woody vegetation for their grazing animals, the recharging of ground water supplies and for subsistence agriculture. The district is rich in biodiversity - it has more than 700 varieties of grasses, shrubs and trees - but is also the most food insecure area in Pakistan. Families are locked into a vicious circle of poor nutrition, poor health, seasonal migration, indebtedness and illiteracy. This spiral is often triggered by droughts, which are increasing in frequency and severity, and which reduce food and water supplies and available grazing. Overgrazing and over-exploitation of timber resources (for both fuel and construction) are also undermining the productivity of the rangelands and leading to desertification.

### MAKING THE DIFFERENCE

SCOPE is a local non-governmental organisation working to meet the objectives of the United Nations Convention to Combat Desertification. It has established a pastoral livelihood support programme to help local communities improve food security and to combat drought and desertification. Fifteen agro-pastoral farms have been set up in the district, each covering 2-3 hectares. These farms combine food crops, agro-forestry and managed grazing. They are set up both as productive units and also as demonstration farms which other farmers can visit to learn new techniques. The main crops grown are millet, wheat, sorghum, pulses and vegetables. These are combined with tree and bush species that provide fodder for the livestock and the cultivation of saplings that can be used for reforesting the surrounding area. Planting of *Prosopis Cineraria* is encouraged as this is a hardy tree species that provides fodder during times of drought.

One key aspect of these farms is the use they make of natural fencing using trees and shrubs. This provides valuable sources of food, gum, fodder, shelter and nutrients, and protects the crops and saplings from grazing animals. The system allows the animals to be kept within the compound for much of the year where they are fed on cuttings from the planted trees. This in turn allows farmers to make better use of their manure and so build up soil fertility. Working with national and regional governments and the Arid Zone Research Institute (AZRI), the project has identified suitable drought-resistant crops (millet and pulses) and water conservation techniques that are being adopted by the communities. Education about the importance of local shrubs and trees is also an important part of the project. The communities are responsible for the management of the farms. They have formed co-operative societies and meet once a month to discuss new ideas and technologies.

The project, which is located in a very remote, inhospitable and poor area, is seeking to improve resource use among farmers by showing them the benefits of adopting an agro-pastoral system and improving water management. Through such methods it is hoped that local farmers can adapt to climate change, improve their food production and reverse environmental degradation.



**Inspiring Initiative:** Peasant Farming Schools in Senegal

**Land:** Senegal

**Land degradation:** Water degradation by agrochemicals, vegetation degradation by deforestation

**Initiative by:** ENDA PRONAT

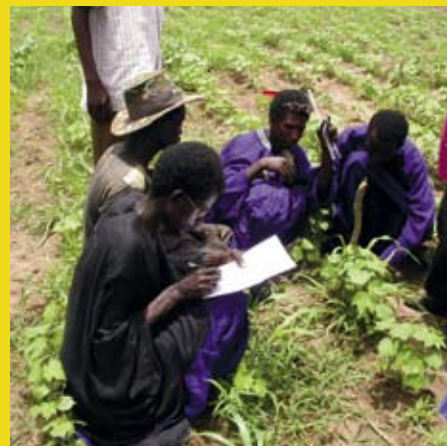
**Initiative supported by:** ENDA Senegal

# *Fine-Tuning Farming Techniques through Farmer Schools*





“The farmers began to form their own Integrated Farmer Schools where they could continue their experiments with ways of combating desertification.”



### SETTING THE INITIATIVE

Farmers in the central part of the Senegal Valley face many threats to their livelihoods.

Several droughts have weakened the Sahelian ecosystem and this, combined with overexploitation of natural resources, has reduced the natural productivity of the region. The construction of a dam on the Senegal River placed further pressure on traditional farming methods, leading to changes in farming practices and a widespread uptake of irrigated farming, which required the use of external inputs such as fertilisers and pesticides.

Pronat is a branch of the international NGO ENDA. It has been working with farmers in the Guédé area for more than twenty years, sensitising them to the problems of climate change, desertification and modern input-intensive farming methods and encouraging them to adopt agroecological farming methods. To popularise these approaches Pronat introduced Peasant Farming Schools (Champs École Paysan- CEP), an approach that has proved highly effective in other parts of the world, particularly Asia. This is an informal system of education where a limited number of voluntary farmers (up to about twenty) meet on a small piece of land for discussions, research, experimentation, capacity building and learning new techniques.

The schools give farmers an opportunity to test new methods and techniques before applying them on their farms. The farms are also working farms ('farms of application'), which generate an income by selling the produce they grow, and are thus self supporting. When the initial project funding ran out, the farmers decided to continue with running the schools themselves. They saw that the schools and the peasants' associations that had sprung up around them gave them a structure for working and learning together.

### MAKING THE DIFFERENCE

The farmers began to form their own Integrated Farmer Schools (IFS) where they could continue their experiments with ways of combating desertification, adapting to visible climatic changes and improving productivity through agroecological farming. Together they have continued to learn about seed selection and propagation, pest control and water harvesting and management, fine-tuning the techniques that they learnt before and adapting them to the local situation. Working collectively they are also able to address larger issues that affect the farming community: problems which range from maintaining communal resources (e. water pumps or wells) to working out viable strategies for commercialising their products, to posing a united front against land developments that harm their interests. By using agroecological techniques such as composting, companion planting, and natural pest control these farms have been able to substantially reduce their input costs. On modernising farms these costs represent some two thirds of revenue generated - but on the application farms these costs are less than 20%.

A local federation of peasants associations (Ngatamaare Tooro) has been created to enable these IFSs to continue to expand. The federation provides a valuable point of contact with the outside world (for example for finding the expertise that farmers want tap into). In addition a network of twelve eco-schools has been created, wherein children are involved in kitchen gardening, learning ecological farming techniques and growing food which can be used for school meals with any surplus being sold. The organisation is looking for ways to tap into the bountiful supplies of natural energy, particularly solar and wind, a currently unused resource. ENDA Pronat continues to work with Ngatamaare Tooro, helping it grow in confidence and capacity.





**Inspiring Initiative:** Planning for Urban Market Gardens in Nouakchott  
**Land:** Mauritania  
**Land degradation:** Water degradation (quantity), urban development  
**Initiative by:** TENMIYA

# *Reviving the Green Lungs of the City*



“Farmers are now more aware of their role in the urban ecosystem and are committed to farming in a more sustainable way. In turn, the local authority has developed a plan to encourage urban farming.”

### **SETTING THE INITIATIVE**

Nouakchott is the capital of Mauritania, one of the countries in the Sahel most affected by drought and desertification. Rainfall is low, with less than 300 mm per year. The country experienced prolonged droughts in the 1970s and 1980s. These contributed to a massive exodus of rural dwellers to Nouakchott and led to the establishment of numerous urban market gardens, some close to the centre of the city, but mostly in Dar Naim, a municipality on the edge of the capital. Some of these new migrants established market gardens which provided an important source of livelihood for people whose main experience and skills lay in agriculture. Some 6,000 people now work in production and distribution. They also provide an important supply of fresh vegetables for the city as well as helping to stabilise the sand dunes surrounding the city and providing green oases in the urban environment.

Yet in recent years, competition for two scarce resources, water and land, have threatened the successful continuation of these market gardens. There were concerns that the gardens were drawing too much water from local aquifers, a precious and finite resource, and the alternative of reusing urban wastewater clearly posed major health risks. At the same time, the expansion of the city put increasing pressure on land resources, with more land being bought up for development. As the city expanded, the market gardens, once located on the outskirts of the city, became surrounded by built-up areas and became attractive sites for future development. In one area the local municipality went as far as to ban market gardening.

### **MAKING THE DIFFERENCE**

TENMIYA, a local NGO and research centre, became involved in resolving these conflicts by facilitating a strategic research action plan involving the Urban community of Nouakchott, the local municipalities, departments in the Ministry of Agriculture, the National Institute of Public Health, the local offices of some international organisations (WHO and UNDP) and the market gardeners of Nouakchott. Its first task was to evaluate the importance of market gardening in terms of socio-economics, the environment, health and food security and how market gardening fitted with the existing local municipal plans. This highlighted the importance of market gardening and the issues it was giving rise to, which in turn led to the development of a local plan to support and maintain these market gardens and resolve the problems. Water management was the key issue, and the report highlighted the need to improve the efficiency of water use and the potential of drip irrigation systems in achieving this. Finance was found to install drip irrigation systems, considerably reducing the burden that the gardeners put on local water resources and the need to recycle potentially polluted waste water.

As a result of this collaboration, farmers are now more aware of their role in the urban ecosystem and are committed to farming in a more sustainable way, improving water management and maintaining the city's 'green lungs'. In turn, the local authority has developed a plan to encourage urban farming, has taken development pressure off of the plots run by farmers and is supportive of grant applications by farmers to develop their skills and resources. The result has been a fruitful partnership between the market gardeners and the municipality of Dar Naim. The market gardens look set to provide a continued supply of local fresh vegetables, thereby helping to maintain the food supply and nutritional security of Nouakchott.



**Inspiring Initiative:** Windbreak Hedges

**Land:** Madagascar

**Land degradation:** Soil degradation by wind erosion

**Initiative by:** Groupe de Recherches et d'Échanges Technologique (GRET)

**Initiative supported by:** ENDA Madagascar

# *Fighting the Tiokatimo Winds: Farmers Experiment*





“The farmers who have participated in the initiative see the windbreak hedges as a way of protecting their plots against wind erosion and drifting sands, thereby increasing their income.”



### SETTING THE INITIATIVE

The south of Madagascar is a semi-arid region with very low rainfall and very little ground water. The coastal area in the Androy region is subject to fierce winds - the Tiokatimo winds - that blow in off the sea. These winds dry out an already arid area, damage crops, cause soil erosion and shift sandbanks. This increases the problems of small scale farmers, especially in the areas close to the coast where cultivated plots of land can quickly be inundated with sand. In addition, the land closest to the sea was eroded many years ago through ploughing.

The FASARA project - initiated by the organisations GRET and ENDA - instigated a series of village meetings and communal workshops in order to explore the agricultural practices, choices and preferences of communities and individual farmers. Issues such as erosion, shifting sandbanks and declining soil fertility were top of the villagers' concerns. Farmers had already formed some responses to these problems such as planting prickly pear or aloe vera to mark their farm boundaries and to keep out grazing cattle; these also provided fruit for livestock. Yet they also often burned these back after the end of the growing season, when the plots are most exposed to the wind.

### MAKING THE DIFFERENCE

FASARA set up an initiative with several interested farmers to explore the possibility of using wind break hedges to mitigate the erosive effects of the strong south easterly winds. At the same time these wind breaks could also protect the plots from roaming cattle and wildlife and be a source of fruit, fodder and fuel. FASARA worked with farmer groups, discussing the suitability of different species and identified several with a potential for success. Choosing the best species was often complex, and different groups and families had different preferences.

Two women's associations initially supported by the project took on responsibility for establishing nurseries and growing the seedlings. However, some plants were difficult to cultivate in the nursery, others grew too slowly in the field and others did not bear foliage in the windy season. In the early years the mortality rate of trees was very high (50%). The lines of trees which were planted in staggered rows one metre apart, grew quite slowly and villagers and project researchers decided to combine the two approaches, planting a line of cactuses on the windward side of the fences to give them additional protection in the first year or two.

The combination of approaches proved successful. In the four year period between 2005 and 2009 the nursery groups have supplied more than 170,000 trees which have led to the planting of around 150 km of living fences by around 200 different farm households. The farmers who have participated in the initiative see the windbreak hedges as a way of protecting their plots against wind erosion and drifting sands, thereby increasing their income. However it takes some time to prepare the ground before planting the windbreaks and this probably contributed to the high mortality rates of the saplings. Despite these teething difficulties FASARA has established a good dialogue with local communities and in the coming years aims to encourage farmers to plant in slack times during the agricultural calendar, to ensure the provision of replacement seedlings for those saplings that died, and to encourage more farmers to join.

**Inspiring Initiative:** Restoring Biodiversity with Native Plants / **Land:** Chile

**Land degradation:** Vegetation degradation by extensive forestry monoculture, soil and water degradation by agro-chemical use

**Initiative by:** Hguallen Pelu Mapu

**Initiative reported by:** OLCA



# *Indigenous Communities Responding to Monoculture Tree Plantations*



People from the surrounding area are invited to participate in the development of the tree nursery; to visit places where combinations of selected native species are helping to protect water sources. The destructive effects of monoculture and the ways to restore biodiversity are also explained in programmes broadcast on local radio stations.



## SETTING THE INITIATIVE

In the past twenty years or so large areas of Chile have been afforested with large plantations of fast growing timber crops, such as eucalyptus and pine. While some of these plantations have been established on deforested land, others were planted on lands traditionally used by indigenous peoples, in particular the Mapuche. Chile now has some 2 million hectares of land planted with fast growing timber species, which make huge demands on local water resources. The scale and density of these operations has played havoc with the local ecology. Rivers and streams which the Mapuche used to rely on for domestic consumption, for fishing and for their agriculture have dried up and have become polluted by agrochemicals used in different phases of developing the plantations and aerial spraying. Many places where the Mapuche used to collect mushrooms and herbal and medicinal plants have been planted over. New animal species, introduced by the timber companies to control rabbit and hare populations, have disrupted the food chain.

These problems have led to many Mapuche abandoning their traditional lands and way of life, often going to live in larger cities, where they end in poverty. In one community, Los Sauces, the population declined by 16% between 1992 and 2002. In some places whole settlements have been abandoned because of a lack of water. In other places the Mapuche people have had to abandon traditional mixed farming practices and start growing the same species to sell to wood mills of the timber companies. Many communities now rely on deliveries of water in order to survive. The dense plantations also pose a fire hazard to the homes and villages of the Mapuche, as they often come right to the edge of their settlements. Finally, the size and scale of the plantations give rise to a sense of cultural dislocation among the native people, who no longer feel at home in the environment - especially when the trees are cut for timber, leaving vast barren swathes of hillside.

## MAKING THE DIFFERENCE

In response to the challenges, a local community organisation, Hgualen Pelu Mapu, has established a programme entitled "Water and wisdom, dialogues for life." They began by studying ways of addressing the exhaustion of water sources. They gathered one of the affected communities and established a dialogue with an organisation of foresters. This dialogue led to an experimental project to reforest specific places with native species to protect water sources, with the idea of using the knowledge acquired to replicate the same process in other rural areas affected by lack of water, deforestation and land degradation.

This programme was established in the rural municipality of Keuke, whose river had dried up. The programme had two key aims. The first was to sensitise local people about what was happening and of the possibility of changing the situation. The second, more practical, aspect was to establish a tree nursery for local indigenous varieties and then to start replanting these varieties on lands still owned by the communities close to the river's sources.

The initiative is primarily an educational programme. People from the surrounding area are invited to participate in the development of the tree nursery; to visit places where combinations of selected native species are helping to protect water sources. Workshops are organised for sharing experiences and discussing ways of addressing the problems caused by tree plantations. These issues are also explained in programmes broadcasted on local radio stations. A nursery has been established with a capacity for producing 6-10,000 local saplings and it is hoped that the planting programme will help protect the Keuke basin and bring sufficient clean water back to the villagers.





**Inspiring Initiative:** Civil Society Driven  
Conservation Legislation

**Land:** Turkey

**Initiative by:** TEMA and other Turkish civil society groups

# *One Million Signatures for Soil Conservation*



“After seven years of preparation and lobbying the Law on Soil Protection and Improvement was ratified by parliament in July 2005. This was a historic moment as it was the first time that an NGO in Turkey has played the lead role in drawing up environmental legislation and getting it passed through parliament.”



## SETTING THE INITIATIVE

While Turkey is a signatory to the United Nations Convention to Combat Desertification, it has lacked the legal framework to fully meet its obligations under the convention. There were laws on soils and agricultural lands, but there was no specific mandate for soil protection and land improvement, no mechanism for designating at-risk areas and no system of governance for managing land sensitive to erosion, particularly grazing lands.

TEMA is Turkey's largest environmental NGO and has for years been involved in projects to protect threatened areas and raising public awareness about the dangers of erosion and desertification. However, without a proper legislative framework for soil protection and the institutional framework to carry this out, TEMA realised that these approaches were drops in the ocean. As a result it embarked on a campaign to introduce new legislation.

## MAKING THE DIFFERENCE

TEMA began a process of mobilising public opinion and seeking to win over policy makers and experts. They started by identifying key partners to participate in discussions at national level and by arranging a series of workshops in collaboration with the Chambers of Agriculture, universities and other stakeholders over how to draft a law on soil protection and land improvement. Particular attention was paid to involving farmers and others whose livelihoods are dependent on healthy soils in the consultations and workshops.

This process was accompanied by media events, such as a TV presentation on the draft law, and a national campaign, which was led by local TEMA representatives who collected more than a million signatures in support of TEMA's proposal. Following this, a team of experts led by TEMA consultant Mahir Gürbüz drew up a first draft of the law. Followed by a period of lobbying the National Assembly and the President and providing briefings to the parliamentary groups in the National Assembly.

After seven years of preparation and lobbying the Law on Soil Protection and Improvement was ratified by parliament in July 2005. This was a historic moment as it was the first time that an NGO in Turkey had played the lead role in drawing up environmental legislation and getting it passed through parliament. However, this wasn't the end of the process. The legislation has established local Soil Conservation Councils responsible for drawing up soil plans, designating areas at risk, putting appropriate controls in place to protect land in these areas and restoring land which is already degraded. These councils have a broad membership, including local planners, representatives of Chambers of Agriculture, other land-users and academics together with local civil society groups and NGOs. In most areas local TEMA volunteers have become actively involved with these councils and the TEMA Foundation continues to support these local representatives by providing them with expert advice on technical and legal matters. They now face the challenge of implementing the new legislation at the grassroots level.

TEMA's achievements demonstrate the growing importance of civil society in Turkey. They also provide an example of how NGOs and CSOs in other places can work towards encouraging their governments to adopt the legislation needed to back up their commitments to international environmental treaties.



## BASIC CASE INFO

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**Inspiring Initiative:** Domestic Biogas Production in Mauritania / **Land:** Mauritania

**Land degradation:** Vegetation degradation by overgrazing and deforestation; Climate deterioration

**Initiative by:** Development), OESS (Organisation for the Enhancement of the Senegal Stream)

**Initiative supported by:** Tenmiya



# Cooking Up Fuel Solutions



CREDITS: ONEVILLAGE INITIATIVE



## MAKING THE BEST OF LOCAL RESOURCES

The compact biogas units are constructed in people's back yards and it is relatively easy to learn how to put them together. An air tight reservoir is filled with a mixture of cow dung and water and is left to ferment, with the gas being piped into canisters where it is stored. The materials needed for each unit cost around \$250. To ensure a steady supply of gas the owners need to add 2-3 kg of cow dung from the cattle that they keep in their compounds overnight.

### SETTING THE INITIATIVE

The valley of the Senegal Stream in southern Mauritania is a fragile and over-exploited environment. A narrow strip of land, less than 20km long, it is the country's main agricultural area and is also the most densely populated. Wood is the most commonly used fuel and 80% of the wood cut is used for cooking. Alternatives are either unavailable or are too expensive. Over-harvesting of wood, combined with recent droughts and overgrazing are leading to deforestation. As a result women have to travel increasing distances (an average of 10km per day) to collect wood for cooking. Women also suffer poor health as a result of cooking with wood or charcoal. Respiratory diseases are one of the major causes of mortality in the Sahel and sub-Saharan Africa.

In response to these problems, the Mauritanian Association for Autonomous Development has set up a pilot domestic biogas project. The project, sponsored by UNDP, is located in a village inhabited by pastoralists and aims to convert the plentiful supplies of animal manure into cooking gas. In doing so the project creates economic, environmental and health benefits. In economic terms, it reduces the workload of women in collecting firewood and provides a high-quality compost which can be used on their kitchen gardens or sold. In environmental terms, it reduces pressure on the remaining woodlands, allowing them to regenerate. It also improves environmental quality and hygiene by reducing the amount of animal waste in the village. And, finally, in health terms, it reduces exposure to fumes from burning solid fuel in unventilated spaces.

### MAKING THE DIFFERENCE

This project was initiated in partnership with a women's co-operative with more than 500 members, with units initially being installed in some 50 households in one village (Ari Haara). The women there have been trained in assembling and maintaining the kits. The women of Ari Haara conducted a communication campaign in neighbouring villages, telling them about the new technology and inviting women's organisations to come to visit them to see the units in practice. The village now acts as a demonstration site where women from other villages can come and witness the improvements to village life. The women from Ari Haara are now involved in training women in other villages in how to set up their own systems. One group in another village, Djoudé Djeri, received support from the Organisation for the Enhancement of the Senegal Stream to install thirty units in their village. Since this time women in this village have built another twenty units, which they have financed themselves.

Grassroots support and women's commitment to the idea is essential in maintaining a momentum which extends beyond the lifespan of the initial project. The women who have adopted the technology are delighted with the outcomes and their new role as ambassadors for the technology. Future challenges include setting up functioning village level micro-credit systems so more households can avail themselves of this technology without being dependent upon external funding.

**The Bakhtiari is the largest of all the Persian tribes. They are Shia Muslims and are famous for their courage and independence. Women enjoy a high position in the patrilineal society.**

**Every year the Bakhtiari and their herds migrate from their Garmsir or winter quarters in Khuzestan, to their Sardsir, or summer pastures in south-west of Esfahan, a journey that takes between four to six weeks. It is an epic of human courage and endurance in which men, women and children of all ages, their animals and household goods follow one of five different migration routes across some of the most difficult mountain terrain in Iran in their search for grass.**

**This story is told by a Bakhtiari woman.**

*My name is Mahnessa, I am a nomadic pastoralist woman. For years and years, we have been the custodians of the rangelands of the Bakhtiari Region. In the past, we moved from our wintering ground to our summer pastures. It was a long journey, about seven hundred kilometres, and we spent a whole month making the journey. When we were children, we played on these lands; we know every single nook and cranny.*

*We always had very strong systems for the management of natural resources. Most important was the ownership of rangelands. In my childhood, I remember being beaten by my father whenever I played outside the boundaries of our own land. There was nothing visible between our tent and the neighbour's tent. I couldn't see anything. I was always astonished as to why I was beaten. There was something there that only the grownups could see, and I would also see much later. The separation line between us and our neighbour was a customary law, agreed upon long before my father and his father were born. Only two siding stones marked this separation. From early childhood, our elders engraved the belief in our minds and souls that we should take care of this land sustainably and take care not to degrade it.*

*My mother was a wonderful, very skilled and active woman, especially during the time of biannual migration. When migrating in autumn, I remember following her when she, along with other women of our tribe, collected grass seeds to replenish the rangelands for the following year's migration. When we reached our winter grazing grounds, all of the women sat together and used their skill and expertise to select the best seeds. After that, they made leather pouches with several holes and filled them with the chosen seeds. The following year, in*

*spring, they fixed the pouches under the stomach of specially trained head goats. As they roamed through the grasslands, the goats spread the seeds, followed by the rest of the herd, who fertilised them with their excrement, and ploughed the land by trampling the soil. In this way our forebears actively preserved the rangelands, managing them sustainably, and avoiding desertification and land degradation.*

*I am telling you this story to let you know how strong and sustainable our management system of natural resources has been since the dawn of our way of nomadic pastoralism, some 12,000 years ago. We must recognise the value of this system as a sustainable way of life; respect and protect pastoralists' rights to land resources and their participation in decision-making regarding the land; recognise the important economic role of pastoralists at all levels; and finally, respect pastoralists' cultural identity.*

Nomadic pastoralists, or livestock raisers, have been called the custodians of arid and semi-arid lands, and the role of women in managing these lands in a sustainable way has always been, and still remains, crucial.

# Epilogue

*By Christian Mersmann, Managing Director,  
The Global Mechanism of the UNCCD*

The experiences in this volume are truly inspiring. They illustrate the complex social, economic and political nature of land degradation and the impacts of losses in the biological or economic productivity of croplands, pastures and forests. And they demonstrate the commitment and investments of civil society organisations (CSOs), in collaboration with individuals, communities and businesses, as they work to preserve land for production, livelihoods, and build resilience to climate shocks.

As the Global Mechanism of the UNCCD, we support the efforts of developing country governments to mobilise financing for sustainable land management (SLM). Our team works with governments and development partners to mainstream SLM in productive sectors, to integrate National Action Programmes to Combat Desertification (NAPs) in national development plans, and to mobilise public and private partners. The challenges are significant. While decision makers understand that long-term, cross-sectoral and integrated actions are necessary for development, today's economies are built on short term returns between competing sectors.

Convincing officials and enabling land users to invest in the medium and long term in land requires knowledge, advocacy, and support from a range of partners. CSOs are very important allies in these efforts. The public interest mandate of CSOs, and the rights based approaches that they adopt mean that they have a keen interest in enabling communities and businesses to invest in natural capital. And their experiences in supporting small scale dryland farmers and pastoralists enrich the efforts to develop appropriate policies and programmes. Accordingly, CSOs have an important role that is recognised in the UNCCD, as political, financial, and technical actors.

To capitalize on the experiences and knowledge of CSOs for better public and private investments in land management, CSOs need to engage in policy dialogue and programme implementation. This includes the development and implementation of Integrated Investment Frameworks for UNCCD and SLM and translating these into development programmes and projects, public finance and private sector investment. Developing these packages is a key aspect of the 2008-2018 UNCCD Strategy. They are arrived at through a diagnostic and consultative process led by national governments and facilitated by the

GM, called the Integrated Financing Strategy, through which ministries, private sector and development partners come together around a joint, national response to the land degradation challenge.

Locally-based and international CSOs are stakeholders in the Integrated Financing Strategy process and the GM encourages and facilitates their engagement. The approach is in line with the improving international development aid and similar to Drynet's, in terms of building and strengthening national coalitions that advocate the implementation of the UNCCD and leverage resources for sustainable land management. Accordingly, the GM established a partnership with Drynet in 2007 to share and capitalise our experiences. We have been working with the partners to develop tools, share lessons and strengthen the role of CSOs at national level. In turn, we have applied this in our work with partner countries.

Drynet is preparing for a second phase. We will continue to work with Drynet partners to consolidate their achievements, develop new national coalitions and strengthen existing ones. Drynet seeks to strengthen CSOs and ensure they have a meaningful role in multi-stakeholder coalitions. The GM encourages these efforts and will facilitate their engagement with government and business partners. We will seek to stimulate more integrated, coordinated, and appropriate actions that respond to the imperatives of rural development, climate change adaptation and mitigation, poverty reduction and rational economic development.

The food, financial and climate crises have now captured the attention of decision makers - we are reminded that short-term thinking produces poor results. We have an opportunity to assess how resources are allocated, the returns and to develop a long term vision. Governments and development aid agencies are increasing spending on agricultural development and climate change adaptation and mitigation. How will those funds be spent? We applaud the efforts of Drynet partners in supporting dryland communities and achieving greater impact by building national coalitions. Let's be inspired by their experiences, share their knowledge and work together to see investments that benefit economic development and human well being, across generations and communities.



# Epilogue

*By Jozias Blok, DG Development,  
The European Union*

## **CIVIL SOCIETY HOLDS THE KEY IN FIGHT AGAINST POVERTY, CLIMATE CHANGE AND DESERTIFICATION**

Climate change and destructive land use mean that drylands in developing countries are degrading faster than ever, resulting in poverty and migration. In response, local farmer's organisations and other civil society organisations (CSOs) have developed alternative land management strategies. Many of their approaches have achieved notable success, but these successes need to be brought to the attention of policy makers and other stakeholders. Through our cooperation with the organisations working together in Drynet, the European Commission is helping to promote innovative advocacy and knowledge sharing experiences.

The EU encourages the strengthening of civil society, building on the knowledge of local organisations. A large part of European development assistance is channelled through CSO's in sectors such as reconstruction after conflicts and natural disasters, health, environmental protection, rural development, education and women's rights. The initiatives described in this publication have been implemented by CSOs and documented with support from the Drynet project, which the European Commission has funded by a total amount of € 2,296,000. The project aims to integrate environment issues within development cooperation frameworks through civil society action while reinforcing the capacity of civil society to participate effectively in discussions about sustainable land management policy at international and lower levels.

The programme is a prime example of the importance that the European Commission attaches to civil society involvement, both in finding innovative solutions to challenges as well as in ensuring that successful innovations find their way into national and international strategies.

At the core of EU development policy are the principles of ownership and participation. These principles are ingrained in all of the European Commission's development programmes. In this context the "Non-State Actors (NSAs) and Local Authorities in Development" programme deserves a special mention. It is an "actor-oriented" programme aimed at capacity-building through support to "own" initiatives by non-state actors and local authorities in both the EU and partner countries.

Drynet has strengthened South-South and North-South cooperation with a global scope. The project has been financed through the EC Programme for Environment and Tropical Forests in Developing Countries, now replaced by the Thematic Programme for the Environment and Natural Resources (ENRTP). This programme also promotes cooperation with non-governmental organisations and associations representing local people and communities. Through the Call for Proposals under which the Drynet project was financed, the EC sought to finance dryland projects supporting participatory processes in affected areas involving all stakeholders including local civil society representatives.

Through support from Drynet, southern CSOs have found answers to the needs that they themselves identified in the past. Drynet has proved to be a successful initiative, able to stimulate and generate other similar experiences, linking with other stakeholders and generating momentum and replicable experiences in sustainable land management.

# Epilogue

*By Sarah Anyoti, Programme Specialist  
Drylands Development Centre, UNDP*

## **SUPPORTING DEVELOPMENT IN THE DRYLANDS OF THE WORLD**

It is both humbling and exciting to read the inspiring examples in this publication. UNDP's job is to inspire innovation in development and help people to find their way out of poverty. We have offices in almost every developing and middle-income country, including those countries with large areas of drylands. UNDP's Drylands Development Centre is a specialised centre in UNDP supporting country offices to develop and manage drylands development programmes.

We work at many levels. We play our role in developing global policy, and have always been active within the desertification convention, participating in Conferences of the Parties and working with our partners to develop policy. We identify issues that are of major importance to poor people living in the drylands. For example, for several years we have promoted the importance of land tenure in the drylands. In the past, governance and tenure arrangements have allowed pastoralists to use huge areas of pasture very efficiently and with minimum degradation. Local land governance issues have protected rights to use resources such as water points, and have helped communities to manage fragile resources such as forests and grasslands. These land governance agreements are under threat in many places, with pastoralists' lands being eaten up by expanding farms and individual titles being issued at the expense of the sustainable governance of resources. UNDP's Drylands Development Centre is pleased to have provided the technical support that allowed SADC to establish a Southern Africa Land Reform Facility. The Centre has also worked with the African Union, the Economic Commission for Africa and the African Development Bank to support the development of continent-wide guidelines on land reform.

The Drylands Development Centre has also identified market access as a major impediment to people living in drylands escaping from poverty. Despite the fact that the drylands have

considerable economic potential, millions of people are isolated from the markets they need to transform their products and livestock into cash. With support from the European Union, the Drylands Development Centre has led a Market Access Project in East Africa. The project has focused on building capacities for the production and marketing of drylands products including livestock and livestock products, honey, drylands crops, high value trees and herbs –e.g. Aloe; ecotourism and handicrafts; addressing legislative and policy issues that hinder market access; improving market information linkages; exploring opportunities for providing micro-credit; documenting and disseminating lessons learned; contributing to reduction in conflicts over shared natural resources; and strengthening regional cooperation. The overall results of this initiative in the target population have been very positive. At least 8 different categories of enterprises have been initiated or strengthened. Key results include an increase in the economic opportunities available to communities (diversification of livelihoods from predominantly livestock rearing for cultural purposes to market oriented livestock management and diversification to other economic opportunities such as beekeeping and aloe products). By way of example, capacity building initiatives have led people living in the Na-manga region, in Kenya to improve their economic status. Individual handicrafts group members are now generating average sales of Sh.3000 (about 25 euro) per month from value-added products. Empowerment of product group members and the institutions that support them in developing local enterprises (in production, value-addition and marketing aspects) have led the groups, with more than 2,000 members, to take up new entrepreneurial, and other development, activities and to more sustainably manage the natural resources that form the basis of their livelihoods.

UNDP will continue to support innovation in development, and the Drylands Development Centre will continue to provide specialized inputs to the dry areas of the world. The case studies in this publication show that there is no lack of potential among the communities we support.



**Instituto Sertão**  
 Pelo Desenvolvimento Humano e Meio Ambiente



LEAGUE FOR  
 PASTORAL PEOPLES  
 AND ENDOGENOUS  
 LIVESTOCK DEVELOPMENT

**Cenesta**  
 Centre for Sustainable Development



**PROBIOMA**  
 Productividad Biológica y Medio Ambiente



**EMG**  
 Environmental  
 Monitoring Group



**Both ENDS**  
 Environment and Development Service



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**Special thanks to:** Christian Mersmann (the Global Mechanism), Jozias Blok (the European Union) and Sarah Anyoti (UNDP)

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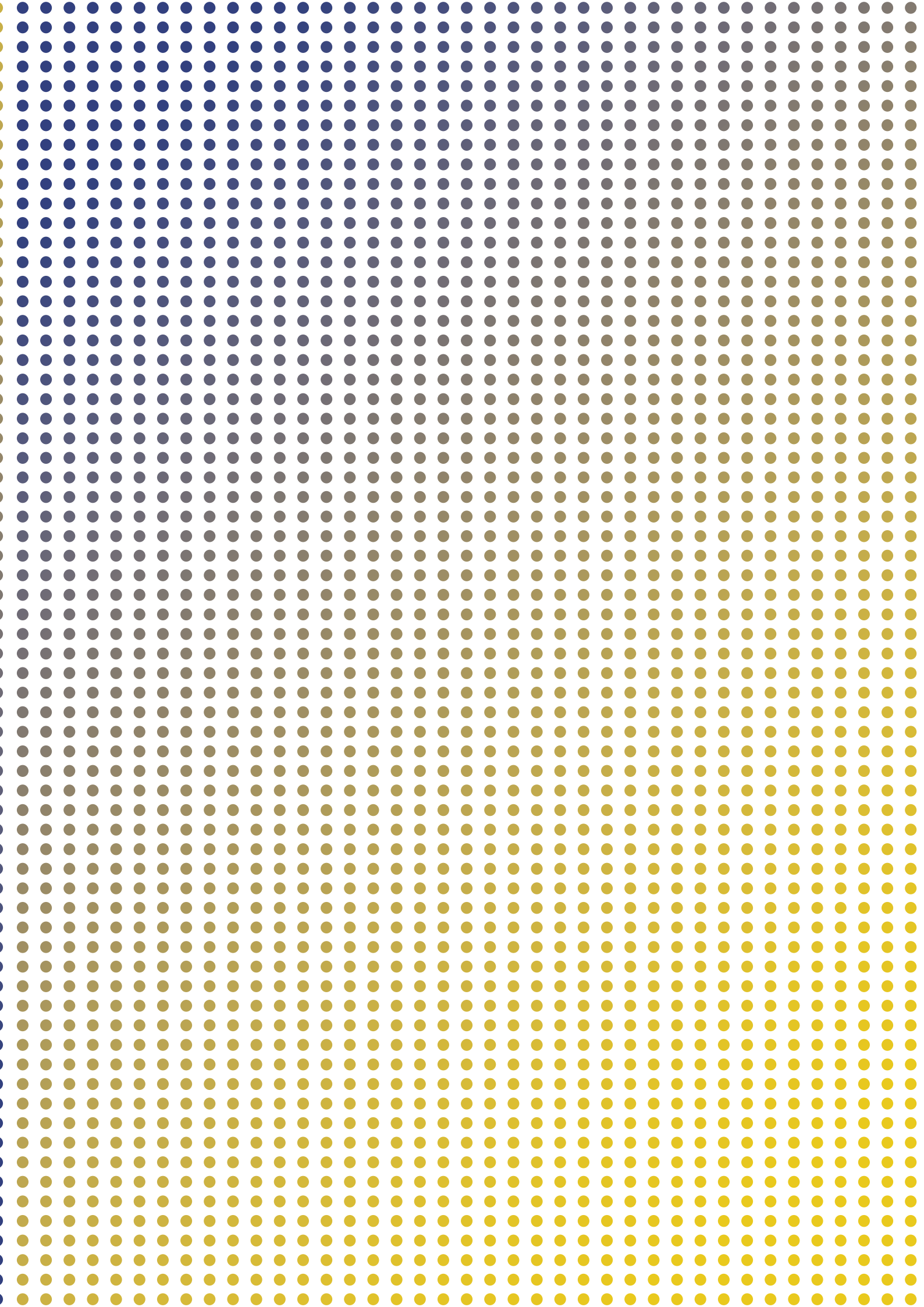
**Design:** [www.margovlamings.nl](http://www.margovlamings.nl)

**Translations:** French by Carole Vauthrin; Spanish by Maria Candela Conforti

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This Drynet publication presents information on important environmental and developmental issues. Readers are encouraged to quote or use material from the publication for their own publications or articles, but we would like to request acknowledgement and a copy of the publication. This publication is also available on the web: [www.dry-net.org](http://www.dry-net.org).





Drylands are rich in plant and animal species that are specifically adapted to living in arid and harsh conditions. Drylands also are home to resilient peoples, who make use of the dryland resources and seek to maintain the precarious balance between soils, water, vegetation, animals and people. These people have a long history of living with their environment, not just living from it.

Today with climate change, growing populations and more frequent conflicts over resources, the fragile balance of dryland ecosystems is increasingly in danger. Yet, all over the world, dryland communities are finding ways to maintain or restore this balance, adapting their practices and coming up with innovative and inspiring responses to reverse the constant threats of land degradation, desertification and subsequent loss in the productivity of the land. These examples show us the value of investing in drylands, which contain many valuable resources, provide valuable services and play a key role in meeting global food requirements. Such investment is all the more urgent since two-thirds of people suffering from serious and permanent under-nourishment live in drylands, 70% of which are currently being degraded.

Drynet is a network of committed civil society organisations that work together with dryland communities. This report highlights a few of the many positive developments happening in dryland regions that Drynet's partners are either involved in or have documented. These examples show us how, with sufficient dedication and inventiveness, drylands can be sustainably managed and livelihoods strengthened, thereby helping to reduce (or eradicate) poverty and hunger.

Drynet will continue to represent the views and experiences of dryland communities and people. Our aim is to build strong civil society platforms that are capable of bridging the gap between local dryland realities and political and development processes. We invite everyone concerned with the well-being of dryland communities and environments to become involved and join us in these efforts.