



**drynet**

www.dry-net.org

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# News from Drynet

*A global initiative giving future to drylands*

Drynet is a project of 15 organisations from all over the world. They work together to combat land degradation

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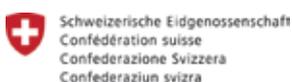
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**DRYLANDS  
COORDINATION  
GROUP**



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## Drynet Update

Welcome to the tenth issue of "News from DRYNET", a newsletter from the DRYNET network on local concerns and views about drylands. The attention of this issue is on DRYNET's recent presence at the 6<sup>th</sup> World Water Forum (WWF) in Marseilles, France which aimed to raise the attention to water management issues in drylands and oases. While the water issue is acute on the planet, it is particularly sensitive to lifestyles in regions where the resource is limited or rare. In such case access and water management are strategic and sometimes survival issues. That is why DRYNET partner CARI created in Marseilles a space dedicated to Drylands and Oases - to better understand the issues specific to these environments and to envisage solutions

for implementation. The network actively participated in the "Drylands and Oases space" where DRYNET had a day-long dedicated event, packed with presentations, panel discussions and debates on water management issues in drylands.

Certainly one of the Forum's highlights was having Luc Gnacadja, the Executive Secretary of the United Nations Convention to Combat Desertification (UNCCD) giving a speech praising DRYNET's work. Parallel to the World Water Forum, DRYNET also came together for 2012's general annual meeting. The work to influence dryland development pushed forward as many key decisions were made for the network including marking its presence at the Rio+20 conference, at IUCN's World Conservation Congress and various climate change negotiations.

**DRYNET at the 6th World Water Forum, Marseilles**

Picture by: Both ENDS



## International Agenda 2012

### 20 - 22nd August • 2012

3rd International Conference on Research for Development (ICRD 2012) Research for Global Transformation, Bern, Switzerland: The aim of this Conference is to share and discuss most recent insights on development-oriented research conducted in North-South partnerships and to develop a research policy agenda for global transformation.

<http://www.icrd.ch/>

### 6 - 15th September • 2012

IUCN World Conservation Congress, Jeju, Republic of Korea: The IUCN World Conservation Congress is the world's largest and most important conservation event. Held every four years, it aims to improve how we manage our natural environment for human, social and economic development. Leaders from government, the public sector, non-governmental organizations, business, UN agencies and social organizations will discuss, debate and decide solutions for the world's most pressing environment and development issues. <http://www.iucnworldconservationcongress.org/>

### 26 November - 7th December • 2012

UNFCCC COP 18, Doha, Qatar: The 18th session of the Conference of the Parties (COP 18) to the UN Framework Convention on Climate Change (UNFCCC) and the eighth session of the Conference of the Parties serving as the Meeting of Parties to the Kyoto Protocol (COP/MOP 8), among other associated meetings, are scheduled to take place in Doha, Qatar. [http://unfccc.int/meetings/doha\\_nov\\_2012/meeting/6815.php](http://unfccc.int/meetings/doha_nov_2012/meeting/6815.php)

## DRYNET invited to the *Drylands and Oases* tent at the World Water Forum

*By DRYNET partner: Patrice Burger of CARI France*

The World Water Forum is the main international environmental event addressing global water issues, and has been organized every 3 years by the World Water Council since 1997. In this, its sixth year, the Forum was held in Marseilles from March 12<sup>th</sup> to March 17<sup>th</sup>, 2012. From the outset, this year's edition of the event held the intention of being exceptional, as expressed by the Forum's slogan: "Time for Solutions". To serve this purpose, the Forum program was exceptionally dense and a new Grassroots & Citizenship Commission was created, destined to reinforce civil society participation, in particular that of youth. The Forum attracted 35 000 visitors, held over 400 debates and resulted in 8 million Euros in revenue for the City of Marseilles. However, in terms of actual solutions implemented for the planet and its water resources, the event's true impact will probably be difficult to ascertain, as is the case for

many such international events. CARI chose this particular forum to make the Drylands and Oases voice heard on the international scene. This was achieved through the creation of an entire space dedicated to Drylands and Oases. This 'village' was made up of seven tents, in which debates were staged, films screened and exhibitions shown. Documentation on oases and drylands was provided. The tents were surrounded by a message tree, a Saharan well, a comb-shaped irrigation water distributor for oases... To create this space, CARI worked in partnership with DRYNET, with the support of Both ENDS, the Grassroots & Citizenship Commission and a number of financial backers, including the French Ministry of Foreign Affairs (DGM/ DAECT), the French Ecology and Sustainable Development Ministry, the French Development Agency, the Rhône Méditerranée Corse Water Agency, the

*Drylands and Oases tent at the World Water Forum* Picture by: Patrice Burger - CARI



- Catholic Committee against Hunger and for Development, the pS-Eau network and the Seine-Saint-Denis Department *Conseil Général*.

## EXCHANGES BETWEEN DRYLAND ACTORS

From Monday through to Saturday, 11 panel discussions and 5 multi-stakeholder debates took place with as their common theme "Water for the development of countries affected by aridity and drought".

During the first panel discussion, R. Escadafal (IRD/CSFD) opened proceedings by presenting the water cycle and its constraints in dry and arid areas.

F. Maraux (CIRAD/CSFD) emphasized the importance of the « water vapor transpired by plants, as it is the plants who produce biomass ». The importance of optimal water use was further emphasized by M. Dufumier (FNH) during another panel discussion, as he reminded everybody that « in order to be able to photosynthesize, plants need to evapo-transpire ». In this context, P. Koohafkan (FAO) denounced the agricultural development policies of the last 50 years, and their harmful consequences on water, and especially insisted upon the 12% increase in cultivated lands and the 70% increase in water consumption by agriculture. Other panelists focused upon solutions. Citing a study of dryland production systems, compiled using the findings of 30 case studies performed throughout the world, P. Deygout (IRAM) emphasized the need for « strategies built inherently around risk management », as well as the need for continued innovation development, and for determined public policies, that take into account « land multi-functionality and integrated approaches ». M. Savadogo, of ARFA

Burkina Faso, also insisted upon this idea, and strongly encouraged « collaboration with farmers in their working environments » and the introduction of « the 5<sup>th</sup> element, that is to say the natural protection of cultures ».

A number of practical solutions were brought to the forefront, including the approach implemented by oasis peoples, who « draw upon an exceptional heritage in terms of adaptation capacities » - a heritage that should be recognized as beholding added value in « a context in which water exploitation rates approach 159% (Tunisia) ».

In this context, one can but agree with M. Lahbib, Mayor of Tata in Morocco, as he calls for the « increased support to oases and their local governments » which will be necessary to achieve « integrated water resource management and recognition of oases as a world heritage ». On a positive note, L. Gnacadja, UNCCD Executive Secretary, expressed his surprise and satisfaction at the « important decentralized cooperation capacities that exist between Northern and Southern local authorities, and, in particular, the financial leverage that such cooperation enables ».



*Drylands and Oases space at the World Water Forum* Picture by: Both ENDS

## DRYNET AT THE FAIR

Over twenty representatives of the various DRYNET member organizations attended the World Water Forum, with two specific objectives at heart: their participation in a day-long event dedicated entirely to DRYNET and to drylands on March 16<sup>th</sup>, and their participation in the consortium's annual meeting on March 18<sup>th</sup> and 19<sup>th</sup>. DRYNET members from Iran and Pakistan had to handle now customary hurdles in the visa obtaining process. Once these obstacles were overcome, all DRYNET members were able to bring together their respective documentation and exhibition panels in the dedicated area, and to participate fully in the forum and in the debates organized between water actors from across the world. Several members of the network also attended the Alternative Global Water Forum, which was being held on the docks of Marseille. The alternative forum had a more controversial message, critical of the official Forum, and contesting multinational monopoly, water right violations and the threat that privatizations pose to water access for the poorest populations.

On Friday March 16<sup>th</sup>, DRYNET members organized a fair, offering in particular

► local products that they had brought with them: Turkish dry fruits and Lokum, Iranian dairy products, South African Rooibos tea, Kazakh hand crafts. The fair facilitated the initiation of a dialogue with the general public. During the afternoon, two discussion panels were organized. One focused upon civil society mobilization around multilateral environmental agreements, and the other looked at integrated water management in dry areas. The existence of many good water management practices - including inherited traditional practices, such as the Zaï irrigation holes in Burkina Faso or the Karez irrigation canals in Pakistan, and innovative practices such as the impluviums in Madagascar – was recognized. However, more controversial approaches were discussed and questioned, such as the multiplication of dams in Iran on the Quasqai territory, and the associated negative impacts including the drying out of streams and rivers, erosion, threats to biodiversity, and the expulsion of local communities. Finally, a debate organized between DRYNET and various

fair trade actors, including Max Haavelar, looked at how the creation of added value can contribute to the funding of public services, including water services. Minimum price guarantees for producers and assistance in the establishment of democratic decision-making processes were reported to be particularly beneficial factors. The day ended to the sounds of a concert given by the Orchestra of the Senegal River, which attracted a large public.

### **RENDEZ-VOUS WITH THE GENERAL PUBLIC**

A 12-question quiz, distributed during the event, the winner of which was awarded a prize, helped raise people's awareness of the issues. Two publications also contributed to raising awareness: the MAEE publication « Sustainable Production Systems in Dry Areas » that questions a good number of generally accepted ideas, and the GTD publication regarding « How Advocacy Strengthens Action ».

CARI's guests, hailing from 25 different

countries, and including NGOs, researchers, local municipality elected representatives, financial backers, representatives of governmental and intergovernmental organizations such as FAO and UNCCD, brought with them national produce, animated debates and answered the questions of the many visitors, who were surprised and satisfied by this direct contact. The week was animated and punctuated by highlights such as a forum theater on the theme of water governance, cooperative games on the theme of oases, and a musical evening with the Orchestra of the Senegal River. Different personalities, such as the Desertification Convention Executive Secretary, the agronomist Marc Dufumier and Yann Arthus Bertrand, also contributed. Two major sources of satisfaction for DRYNET members are worthy of mention: their participation in an international event on a crucial subject for arid zones and the initiation of dialogue with the general public, in particular with children.

## Water and food security

*By DRYNET partner: Drylands Coordination Group based on DCG's factsheet on water harvesting available at <http://www.drylands-group.org>*

Ensuring food security for people in the drylands is a challenge. Lack of soil fertility and water stress are two main factors limiting agricultural production and food security. Rainfed agriculture is characteristic of the drylands (from 300mm rainfall per year), and is highly vulnerable to climate change, leading to more erratic and

rare rainfall. Harvesting of rain and runoff, and effective management of water are ancestral concerns of populations whose expertise in this area is important. But traditional techniques are now threatened by the pace and unpredictability of the changes. The identification and study of these methods, their improvement and exchange between regions are significant steps in realizing their full potential, especially for small farmers. Water harvesting and conservation are becoming two essential priorities of any national and local program aiming at ensuring food security in the drylands.

*Techniques for water stress mitigation  
Many traditional techniques for capturing rainwater and runoff exist locally in the drylands and can be shared and improved. Their adoption requires farmers being active in the selection and adaptation of these techniques.*

### **PLANTING BASINS OR ZAI**

Simple technique, although workforce-demanding at the beginning, zai (tassa in haussa) are 20 to 30cm diameter for 10 to 15cm deep basins, dug in hard soils with limited permeability. The excavated earth is placed downstream of the hole. The number of zai varies

▶ between 12 and 15 000 per hectare. Zai concentrates and retains rainwater and runoff, and allows economic use of organic matter (f.ex. 1g of manure per zai). Seeds can be sown early and growth starts immediately after the first heavy rain. Yields are often higher than in non-treated areas already from the first year. Increase in yields of millet or sorghum can vary between 55 and 170%. Zai are particularly useful for the rehabilitation of severely degraded land in areas receiving between 400 and 800mm rainfall. The size of the basins must generally be adapted to the rainfall and to the needs for water storage.

### **STONE BUNDS ON CONTOUR**

Coming from the traditional technique of aligned stones, stone bunds are a semi-permeable line allowing water to run through the field while limiting erosion. Stones are placed along contour lines that are easily located by using a water hose. About 40 tons of stone are needed per hectare depending on distance between the lines. Tree seeds accumulate in front of the lines and often cause spontaneous regeneration

of trees and shrubs, further contributing to the stabilization of the field and to the rise of the groundwater, and increasing crop yields. Stone bunds are often complementary to zai.

### **HALF-MOONS**

Half-moons are larger basins staggered and separated by a space used as a catchment area. They allow greater yields than zai, but require more investment and maintenance. The tendency of farmers to reduce their size and the space between them makes it a technique of water conservation rather than a method of water harvesting. Half-moons are also used for reforestation on degraded land.

### **MICRO-BASINS**

Delimited by earth ridges forming 50cm to 2m squares depending on the slope, micro-basins are designed to retain all rainwater. This technique is appropriate on land where runoff is minimal and allows the natural regeneration of trees. A portion of the basin is cultivated while the other serves as catchment area.

### **CONTOUR PLOUGHING**

This method consists of making earthen ridges along the contours using a drawn plow, and keeping them under a permanent grass cover. Crops are grown between the lines where the rainwater is retained before seeping or running off on the side of the field. This technique is suitable for soils with less than 85% sand and with a slope greater than 1%. It reduces runoff by 40% and increase yields by 30% (50% when combined with the use of organic-mineral fertilizer). Suitable to rehabilitate degraded land and regenerate biodiversity, it also contributes to recharge groundwater (up to 150%) which leads to the rise of water in wells.

### **BENCHES**

Benches are 60cm high earthworks with a base of 120cm and a length of 100m. With 15m wings pointing upstream, benches offer a 1500m<sup>2</sup> cultivable area. A 30m space between them serves as catchment area. The establishment of benches requires the intervention of a tractor. They can be covered with stones and planted with trees to limit maintenance. With seven benches per hectare, it is possible to rehabilitate denuded soils into sylvopastoral and sylvoagricultural lands.

### **SAND DAMS**

Built in riverbeds where water flows only temporarily after the rain, these small dams fix erosion sand resulting from heavy rains. The sand accumulated upstream of the dams is a water reservoir and slowing down water evaporation. When conditions are favorable (presence of shallow bedrock, convertible banks, river width, distance to the village, etc.) water can be extracted up to 35% of the sand

Picture by: Drylands Coordination Group



▶ volume. Series of dams reduce costs and make quality filtered water available all year round at short. The dams also help recharge the water table and increase crop yields

## RETENTION PONDS

These 12 by 12m for 3m deep ponds are used to collect runoff and conserve water for about three months after the end of the rains. Their bottom and slopes are covered with plastic, cement, clay or geotextile to reduce percolation. Although water is not potable, ponds allow watering animals, gardening, watering crops and even fish farming. Because of their size and constraints for construction and maintenance - including preventing proliferation of mosquitoes carrying malaria - the appropriation of ponds by users is critical.

## ROOF WATER HARVESTING

The practice of roof water harvesting is more common in East and North Africa than in the West, although it is being introduced in the latter. Technically it is about bringing to a tank the water collected on roofs - usually corrugated iron - used as a catchment area. The size of the system depends on building type (school, hangar, house, etc..) and requires different management systems: collective or family based.

When catchment area is available, the main task is to build a tank. Tank construction costs represent 70 to 90% of total building costs. The remainder includes water pipes to the tank and devices for fetching water, overflow and drainage. Some systems incorporate a filter to further improve the water quality. Annual maintenance costs amount to about 7% of initial construction cost.

The tank size and type is determined according to the needs of consumers. Aboveground tanks can be built using plants (e.g. bamboo) that are cemented, ferro-cement or bricks. Aboveground types are often preferred for family tanks since they require little or no excavation work and they help reducing the risk of contamination. Rectangular underground storage tanks from which water is extracted with a pump - can reach larger sizes (20 to 90m<sup>3</sup> or more) which makes it adapted for community use.

## IMPROVING FOOD SECURITY

Techniques for capturing and storing rainwater and runoff described above contribute, when adapted to local conditions, to reducing crop vulnerability to climate hazards, to increasing crops diversity - including through development of gardens and orchards - and to improving water quality and availability for human and animal consumption.

As long as these techniques are part of an agricultural and economic development plan articulating individual and collective needs with local institutional and commercial factors, they can contribute to poverty eradication as well as to gender equity, through gardens, kitchens and local sale points initiated by women freed from the constraints of carrying water.

## BEYOND THE TECHNICAL ASPECTS: THE HUMAN FACTOR

Increasing agricultural production and food security by improving water harvesting and storage goes beyond technical aspects. Selection and adaptation of the techniques to local conditions, maintenance of



Picture by: Drylands Coordination Group

equipment and facilities, regulation of human and animal activities around the water storage, and collected water management and use are mainly rest on communities, local authorities, farmers' organizations, farmers and their families. In the case of roof water harvesting systems for example, users' awareness about hygiene and trainings of people responsible for maintenance are central and often require the setting-up of a local management committee. Effectiveness and sustainability of the efforts to improve availability of quality water require active, informed and voluntary participation of all stakeholders, including end users, and particularly the most vulnerable among them.

Of course it is of great importance to include the development, extension and improvement of rainwater and runoff harvesting and storage techniques as priorities in national food security policies. Studies show that such policies do not reach their goal if they adopt an exclusive top-down approach. Information sharing and support in decision making should be implemented at all levels aiming at helping individuals becoming actors of their own development and that of their country.

## How can we manage our land to achieve food security?

*Synthesis based on the paper "How can we manage our land to achieve food security?" written by Karen Witsenburg of Both ENDS Netherlands*

Improved food security around the world is one of the main issues articulated nationally and internationally as a top priority for sustainable development. Nowadays, there is a growing international consensus that access to food should be considered a universal human right. The increasing need for food, fodder and fuel will eventually lead to higher demands on land, a more intensive use of existing farmland, as well as the need to rehabilitate degraded land. Considering that we need to feed the world, the costs of losing farmland due to degradation are too high to bear.

One of the most noticeable causes behind food insecurity is outmigration. This seems to be in line with the global trend of rural depopulation. The effects of migration on agriculture are highly diverse - migration can be a negative phenomenon that creates labour shortage in rural areas, leaving the land abandoned; or it can mitigate population pressure and resource use, and the remittances from family members can boost agricultural development. Outmigration also causes a collapse in the social set-up of village life which disregards social capital and the transfer of indigenous knowledge to the next generation.

Other drivers of food insecurity such as the shift from traditional agricultural practices to capital intensive, large scale monocultural agricultural systems; concomitant high prices of agricultural commodities; low rural incomes and lack of service provision in rural areas has led to the marginalisation of dry lands and its inhabitants. It is true however, that drivers such as outmigration and land use change can be highly influenced by global trends in trade and policy. Nonetheless, in the global policy arena drylands get surprisingly little attention even though around 70% of the world's food comes from drylands. This is remarkable, given the focus on food security in policy circles, and the important role of small-scale farmers in agricultural food production. Food security is high on the 'development' agenda, but the focus is on humid areas instead of on drylands.

**What did DESIRE project results teach us about food security?** *The DESIRE project: set up to establish promising alternative land use and conservation strategies based on a close participation of scientists with stakeholder groups in 18 degradation and desertification hotspots around the world.*

It has been suggested that insecure ownership regimes contributes to the lack of incentives to invest in proper land management techniques. In general, secure land tenure has been shown to improve the conditions for Sustainable Land Management (SLM) and hence improve food production as well as livelihoods and ecosystems. What became apparent from the DESIRE project multi-stakeholder meetings is that most land users seem to not be motivated to carry the initial



Picture by: DESIRE project

investment costs of SLM unless returns are immediate. Our experiences from the DESIRE project also tell us that the only SLM techniques which are widely adopted by farmers are the ones that are easy to implement, that show direct increases in revenues, that are not too costly and that have demonstrated results. These techniques include for example horizontal ploughing, crop rotation or planting Atriplex on slopes.

Seeing that land degradation and consequently food security is primarily a management issue, it is just as well that current socio-economic trends are changing the perception of who is responsible for maintaining the quality of the land. If sustainable land management is only seen as a private concern, it will remain a marginal phenomenon. This is a concern as the DESIRE project shows us that sustainability is an investment too costly in terms of money and/or labour for individual farmers to bear. If fertile land has common good qualities, it makes sense to design public policy that incorporates fertile land as an outcome. As it turns out, most study site teams in DESIRE indeed mention some sort of subsidy schemes to pay for land conservation and protection measures as a solution for land degradation. This does nevertheless pose some pertinent

- ▶ policy questions regarding the relevance of DESIRE results for poorer countries, especially in Sub-Saharan Africa where public funding can be an issue.

## **POLICY ADDRESSING DEGRADED LAND AND DRYLANDS**

There is a need for policies that address the root causes of livelihood deterioration in rural areas, land degradation, low productivity and simultaneously establish socially acceptable mechanisms for encouragement or enforcement of Sustainable Land Management. Improving food security in the drylands therefore requires policy that: values labour, improves market access for farmers, rehabilitates degraded land, invests in education and infrastructure, diversifies agricultural products and restores biodiversity in surrounding green belts. Moreover, food security is improved if there are strategies in place that deal with factors that are beyond the farmers' control, be it climatic variability or becoming less dependent on (inter)national market fluctuations. A serious reorientation towards small-scale producers and greener agriculture should be part of any solution addressing global food insecurity and poverty. Yet, not all small-scale producers own land. Food security can only significantly improve if policy does not target land owners alone. Food accessibility for all inhabitants of dry lands needs to be enhanced, by sound purchasing power policy and market accessibility. Multi-stakeholder processes should also be facilitated. Part of the solution comes from enabling an environment where land users, communities, NGOs, policy makers and scientists have open dialogues, and where the needs of farmer's remain centre stage. Achieving development



Picture by:  
DESIRE project

and sustainability goals calls for national and international regulations to address the multiple economic, environmental and social dimensions of these transboundary issues.

As agricultural lands in drylands have common good qualities, they are eligible for regional, or better yet, national plans of action which apply various integrated technologies and approaches. Such plans should not be perceived as a top-down design of imposed technologies attached to social policy to rescue poor farmers. These should be plans in which farmer's initiatives, cooperatives, partnerships and innovations are facilitated in order to achieve a greater common goal; improve livelihoods, restore ecosystems, and promote increased participation in local markets and decision making fora. Adoption rates of SLM techniques by farmers are greatly improved if the proposed techniques fit into a regional plan. Integration of remediation strategies into regional or national action plans

for combating desertification is also important. Soil improvement action plans for combating desertification have always been on the development aid agenda of European countries. There are many good reasons to keep these themes on the agenda. The European Union has committed to contribute to greater food security in Africa, and the current interest in promoting agriculture is promising. However, food security policy in the drylands is not sufficiently developed seeing that agronomists are focused more on the humid areas.

Combating desertification and improving food security are two sides of the same coin. Not combining food security policy with dry land rehabilitation is a missed chance; if drylands are better protected against desertification, livelihoods in the drylands will improve and this will have positive effects on the environment, on local economies, on livelihood and wellbeing of people living in drylands.

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