ICARDA
Science for Better Livelihoods in Dry Areas

Working Paper 18

Capturing and disseminating Lessons Learned from Integrated Natural Resource Management Projects in the Middle East and North Africa

IFAD
INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT

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MENARID Gateway
Strengthening and scaling up Integrated Natural Resource Management across MENA

Acknowledgements

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Editorial support: Paul Neate, Jack Durrell (ICARDA), Michael Devlin (ICARDA)

This document is a synthesis of outcomes from a knowledge process that was a collaborative effort involving researchers, scientists, and technicians from Iran, Jordan, Morocco, Tunisia and Yemen. The following partners contributed to this effort (in alphabetical order): Abderrahim Boutaleb (UNIDO); Aden Aw-Hassan (ICARDA); Ali Mhiri (SSO, Tunisia); Awatef Messai (Ministry of environment, Tunisia); Bilquis A. Sattar (Ministry of Water and Environment, Yemen); Djamel Latrech (SSO, Tunisia); Hedi Hamrouni (Ministry of Agriculture, Tunisia); Hichem Lakhdhar (Ministry of Agriculture, Tunisia); Houshang Jazi (FRWMO, Iran); Hugo Remaury (ICARDA); Jack Durrell (ICARDA); Khaled Habashneh (Ministry of Agriculture, Jordan); Lamia Jemeli (Ministry of Agriculture, Tunisia); Mamoon Al Adaileh (Ministry of Agriculture, Jordan); Mehdi Farahpour (FRWMO, Iran) ; Michael Devlin (ICARDA) ; Mohamed Ouessar (IRA, Tunisia); Nabil Hamada (Ministry of environment, Tunisia); Noman Abdullah Abdulqader Ahmed (Ministry of Water and Environment, Yemen); Ouiame Rhazi (ADA, Morocco); Paul Neate; Rafla Attia (Ministry of Agriculture, Tunisia); Roberto Telleria (ICARDA); Stefanie Christmann (ICARDA).

ICARDA and the authors of this document would like to thank all those involved whose contributions have made this activity a success.

ICARDA Working Papers document the progress of the ICARDA research program and its support to country partners in more than 40 drylands countries. Working Papers are one of ICARDA's global public goods; they capture and share knowledge and learning from projects and research partnerships. Each paper is internally reviewed as part of the center's publishing process**.**

ISBN: 92–9127–453-4

Key words: MENARID; INRM development projects; rural development projects; MENA; knowledge exchange; knowledge management platform

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Contents

Executive Summary

Testing a process for capturing and sharing knowledge and practical experience from natural resource management projects

This report documents a process to encourage learning and sharing practical knowledge between Global Environmental Fund (GEF) recipients of national Integrated Natural Resource Management (INRM) development grants to address land degradation, climate change, biodiversity and international water issues in six countries. The goal of the process is to help disseminate existing knowledge to benefit additional communities, including those in other countries living in similar agro-ecosystems.

The process includes three elements: (1) a self-analysis of each project by the national project leaders based on a Strengths, Weaknesses, Opportunities and Threats (SWOT) approach; (2) a live review; and (3) a synthesis session based on a "writeshop" activity.

The process was used during the MENAIRD Knowledge Exchange Workshop held in Tunisia, in March 2013. The topic for the workshop was "Lessons learned from Integrated Natural Resource Management in the Middle East and North Africa Region." An in-depth and lively discussion occurred at the workshop, where 23 partners presented their project ideas. The workshop also discussed monitoring and evaluation methodologies, which was of great importance to the participants. However, this working document focuses on the techniques used to build the capacity of project leaders to capture, synthesize and present the experience of their Natural Resource Management projects

Overall, the MENAIRD Knowledge Exchange Workshop demonstrated how rich knowledge is embedded in the results of rural development projects, but is often not shared with others that would benefit. Dispersal of this valuable information is important, particularly because many of these approaches have the potential to be scaled up to benefit additional communities.

1. Introduction

The Integrated Natural Resources Management in the Middle East and North Africa (MENARID) brings national investment projects in six countries (Iran, Yemen, Jordan, Morocco, Algeria, and Tunisia). Each country is running a portfolio of GEF funded INRM development projects ranging from sustainable land and water management, community-based income generation activities, farming practices, and related rural development approaches. These total some ten projects across the six partner countries.

Each national project has developed a wealth of practical examples that have the potential to bring rural communities increase farm productivity, better resilience to climate change, and overall improved household and community food security. To date, these ideas and interventions have only been tested and used at the local level for individual projects. Many of these approaches have the potential to be scaled up to benefit many more people in their countries and to be used by communities living in similar agro-ecosystems in other locations in dry lands regions.

Recognizing this potential and the rich – but untapped – knowledge produced in these country rural development projects, the MENARID project team set up a process to build the capacity of project leaders to capture, synthesize and present the experience of their Natural Resource Management projects – to make it more useful for a wider range of users in the Middle East and North Africa (MENA) region, and in a general way in dry lands areas.

The process was used during a special MENAIRD Knowledge Exchange Workshop held in Tunisia in 2013 - "*Lessons learned from Integrated Natural Resource Management in the Middle East and North Africa Region*."

About the MENARID umbrella program

The Integrated Nature Resources Management in the Middle East and North Africa Region program (MENARID) brings national investment projects in six countries (Iran, Yemen, Jordan, Morocco, Algeria, and Tunisia). It is funded under the umbrella of Global Environmental Facility (GEF) and the International Fund for Agricultural Development (IFAD). The MENARID umbrella program is twofold: to promote INRM in the production landscapes of the MENA region, and to improve the economic and social well-being of the targeted communities through the restoration and maintenance of ecosystem functions and productivity. This program includes ten projects dealing with topics such as land degradation, biodiversity, international waters, and climate change.

Role of ICARDA within the MENARID umbrella program

ICARDA is in charge of a medium-size project so-called "MENARID Cross Cutting M&E Functions and Knowledge Management for INRM within the MENARID Program Framework", and for which IFAD is the GEF executing agency. The objectives of this project are to generate tools for systematic cross cutting and aligned M&E functions throughout the MENARID framework, and to develop a user-friendly knowledge management (KM) platform promoting information dissemination, harmonization, and dissemination mechanisms of INRM best practices. Thus, ICARDA's goal is to create the knowledge networks linking up all relevant stakeholders, and to facilitate the coordination of shared activities in M&E and knowledge sharing across MENARID projects. ICARDA is responsible for the day-to-day management of this project.

2. Capturing and Sharing Knowledge and Practical Experience

The process to encourage learning and sharing practical knowledge between INRM grant recipients was designed and facilitated by ICARDA together with project leaders from Iran, Jordan, Morocco, Tunisia, and Yemen.

It contained three elements:

1) a self-analysis of each project by the national project leaders based on a SWOT approach;
2) a live review; and
3) a synthesis session based on a "writeshop" activity.

At the MENARID Knowledge Exchange Workshop, project ideas were framed by the following question: *What are the main benefits of your intervention, and in what other agro-ecosystems can this be scaled up?*

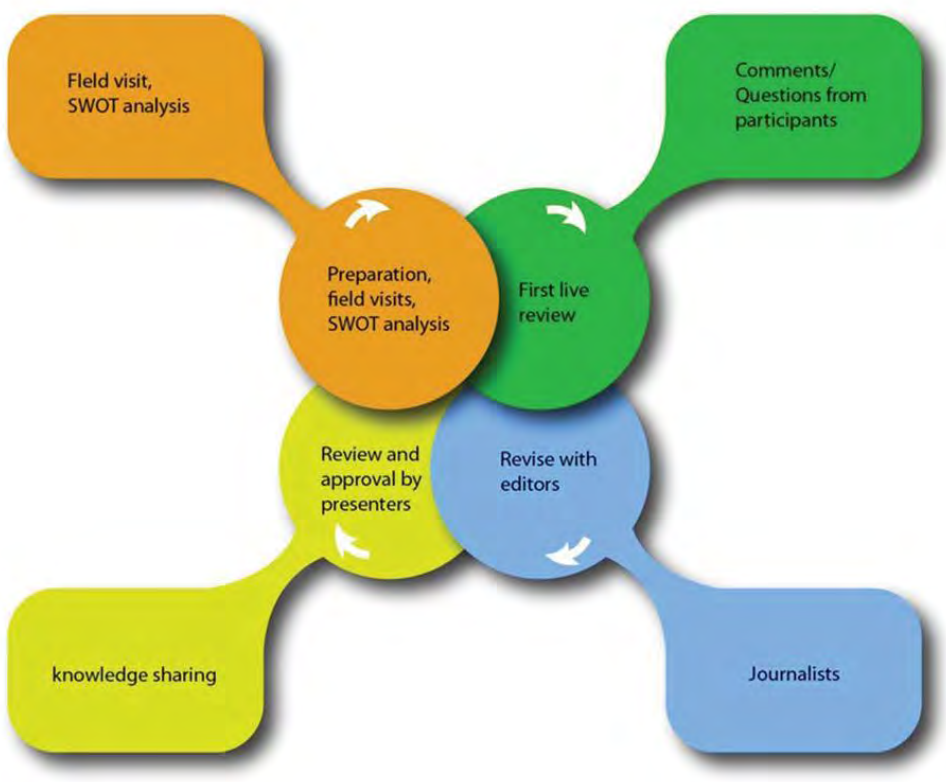

Diagram of the process for capturing and sharing knowledge

2.1 The self-analysis

The self-analysis occurred before participants arrived at the workshop. ICARDA helped prepare each participant for the live review and "writeshop" process by visiting the field sites. This also ensured that the objectives of the workshop were fully understood by the partners.

During these visits, the SWOT approach was introduced to the farmers, extension services and scientists to provide a structure for their analysis. More than solely describing the story itself, the goal of the SWOT approach was to identify key factors for success when implementing these INRM technologies. The SWOT approach included using a template to simplify the collection of high potential activity that is worth sharing for potential scaling up.

Along with general information about the technology, the template requested the following information:

- **STRENGTHS**: Describe the internal factors that made this technology a success by answering the following question: "Why did the characteristics of your structure give a comparative advantage over similar organization in implementing the technology?"
- **WEAKNESSES**: Describe the vulnerability/instability internal factors that needed to improve in order to reach a 100% effective technology.
- O**PPORTUNITIES**: Identify external factors that initiated the implementation of the innovation, including social, political, economic, legal, ecological or technological factors.
- **THREATS**: Describe external risks that faced the project implementation, including social, political, economic, legal, ecological or technological issues.

2.2 The live review

At the MENAIRD Knowledge Exchange Workshop, each project leader presented their work to the group and the concept was subjected to a "live review" by partners and members of the ICARDA Socio-Economics team. During the review, the project leader had 20 minutes to present an analysis of a given INRM technique that has been successfully implemented.

The presentation followed a PowerPoint template that included: (1) a technical description of the "innovation;" (2) its quantitative results and benefits for local communities; (3) an analysis of the strengths and weaknesses of implementing organization when putting the technique into practice; and (4) an analysis of opportunities and threats faced by the described activities. Finally, participants were asked to formulate recommendations to policy-makers to remove constraints for scaling-up. After the presentation, a 25 minute session allowed participants to comment on the technique presented, and to ask questions to the presenter.

Questions and debate covered issues of scaling potential of the interventions, requests for more clarity on the nature evidence offered, ideas for the policy aspects of technical interventions presented and queries to determine the real innovation or replicable facet the work. One presentation, for example, focused on the rehabilitation of village farming infrastructure. After group discussion and analysis, it transpired that the real innovation was not the rehabilitation intervention – which is also being done in a number of countries – but the unique way in which the community was engaged in designing the project, securing investment for the project and creating a framework for the long term management on the village infrastructure. The group found this element as unique learning that has the potential in other locations.

2.3 The “writeshop” process

The live review was linked to a ‘write-shop’ process, where the information validated by the research and was synthesized by a team of editors together with each presenter. After each review discussion, the presenter met with a writer for 30 minutes to clarify and complete the main points and messages from the presentation and prepare a project summary in the format developed by the group. The writeshop process asked the question of each project leader: ‘what is needed for your project results to be used by others and scaled-up; who can use them and in what circumstances’ – technical results and lessons learned were documented in some 20 information project summaries. Participants were asked to document their techniques, to put things in perspective, and to analyze their activities. The results of all project summaries were presented to the group, feedback and comments given and each project leader approved the final version of their summaries. Some 20 summaries were created, reviewed and published in this four-day session.

3. Summary of Presentations at the MENARID Knowledge Exchange Workshop

The MENARID Knowledge Exchange workshop was organized by ICARDA in cooperation with the International Fund for Agriculture Development (IFAD) and the GEF. The target group for this workshop was MENARID Project Managers and the technical advisor of each project. Almost all MENARID projects were represented in the workshop.

The process developed to encourage learning and sharing practical knowledge between INRM grant recipients was used to spread the knowledge learned in various projects. The main presentations from this meeting include:

(1) Water saving techniques through comprehensive activities and canal rehabilitation

Summary: The MENARID project "Mainstreaming Sustainable Land and Water Management Practices" in Jordan demonstrated that replacing traditional unlined irrigation canals with narrow, concrete-lined canals can double or triple the amount of water a farmer receives, boosting olive yields and allowing other high-value crops to be introduced into the farming system. Rehabilitating old olive trees further increases yields and farmer income.

Author: Mr. Mamoon Al Adaileh, Sustainable Land Management Officer and Technical Coordinator, Ministry of Agriculture, Jordan.

(2) Desalinization system thanks to inverse osmosis and modulation of water quality in regards to crops needs

Summary: The technique, within the framework of the MENARID project "Reducing risks to the sustainable management of the Northwest Sahara Aquifer System (NWSAS)", is an innovative demonstration pilot implemented in south-eastern Tunisia. It is exploiting geo-thermal water to irrigate high-value export crops. In a region suffering from water scarcity and the effects of aquifer depletion, this resource offers a precious life-line. A tripling of yields in recent trials demonstrates significant potential and the means to maintain crop production and sustain rural economies.

Author: Mr. Ali Mhiri, Technical Consultant for the "Observatoire du Sahara et du Sahel" (Algeria/Tunisia/Libya)

(3) Vallerani system as a tool to harvest water in dry rangelands

Summary: The MENARID project "Participatory Control of Desertification and Poverty Reduction in the Arid and Semi-Arid High Plateau Ecosystems of Eastern Morocco" has been working with pastoralist cooperatives in the Eastern Plateau of Morocco to test the Vallerani system—a special plow that produces a furrow consisting of crescent-shaped pits—as a means of harvesting rainfall and making it available to rangeland plants.

Author: Mr. Abderrhaim Boutaleb, National Coordinator for the GEF.

(4) Geothermal water re-use for irrigation in agriculture

Summary: The MENARID project "Reducing risks to the sustainable management of the Northwest Sahara Aquifer System (NWSAS)" has implemented a demonstration pilot using small-scale desalination, to clean brackish groundwater, provides the promise to rehabilitate degraded farm lands for communities in areas with less than 150 mm of rainfall per year.

Author: Mr. Ali Mhiri, Technical Consultant for the "Observatoire du Sahara et du Sahel" (Algeria/Tunisia/Libya)

(5) Water harvesting through furrows creation

Summary: The project "Participatory Control of Desertification and Poverty Reduction in the Arid and Semi-Arid High Plateau Ecosystems of Eastern Morocco", co-funded by the GEF, has successfully rehabilitated over 9000 hectares of degraded rangeland in eight rural communes on the high plateau of eastern Morocco since 2006. Much of this land had been abandoned by pastoralists as it produced too little forage to support their livestock. Some 21 pastoral cooperatives with more than 900 members have benefited from the project to date.

Author: Mr. Adberrahim Boutaleb, National Coordinator for the GEF MENARID project

(6) Water harvesting recharge wells in South Tunisia

Summary: In the frame of the MENARID project "Land and Water Optimization Project - PGRN2", recharging ground waters (using recharge wells) is a novel approach to water management in arid areas, controlling excess flood waters and injecting this into the precious ground water to replenish depleted aquifers and ensure a regular supply of water for farmers and other users. Dr. Ouessar suggested that this technique might be eligible for Payments for Ecosystem Services.

Author: Dr. Mohammed Ouessar, Researcher at the "Institut des Régions Arides", Médenine, Tunisia

(7) Solar panel heating system re-uses to meet community's needs

Summary: The MENARID project "Institutional Strengthening and Coherence for Integrated Natural Resources Management" adopted a participatory approach for Natural Resource Management topics with local communities. The re-use of old solar panels appeared as a priority for rural communities.

Author: Dr. Mehdi Farahpour, Monitoring & Evaluation expert.

(8) Innovation in responding to poverty alleviation in the rainfed community in Yemen: upgrading small scale community infrastructure as poverty alleviation

Summary: The MENARID project "Adaptation to climate change using agro-biodiversity resources in the rainfed highlands of Yemen" project has developed a scheme targeting the rehabilitation of water harvesting structures in the Saber district of Yemen has developed a novel participatory approach, empowering local communities and raising the potential for

long-term stability and success. Ultimately, this approach can lead to improved productivity and incomes in areas of implementation.

Author: Mrs. Bilquis A. Sattar, GEF/World Bank Project Manager

(9) Income generating activities for women and young graduates

Summary: Financed by the World Bank and initiated by the Ministry of Agriculture, the "MENARID Land and Water Optimization Project - PGRN2" program provides training which targets marginalized individuals - women and young graduates – and equips them with the skills and knowledge to set-up and maintain small-scale enterprises. Assistance is on-going for one-year, enabling individuals to consult project leaders and seek advice on a range of issues.

Author: Mrs. Lamia Jemmeli, National Coordinator

(10) Restoration of value added local products (Bargou peaches)

Summary: In the MENARID project "Support to Sustainable Land Management in the Siliana Governorate" (Tunisia), the Bargou peach has been grown by smallholder farmers in the Siliana district of north-western Tunisia for generations. Sweet and delicious, the fruits are popular with consumers, but farmers had lost interest in the variety because of disease, pests and agronomic problems that were reducing the quality and yields of fruit from their trees.

Author: Mr. Hichem Lahkhdar, Assistant Director for Planning

(11) Land degradation assessment through a biophysics and socio-economic approach

Summary: Despite the many measures to combat land degradation, this issue has continued to grow, claiming more land every year. It is all the more alarming since it is difficult to make a full and accurate assessment of the current degradation of land in Tunisia. The Land Degradation Assessment in Drylands (LADA) project developed a methodological approach to assess the degradation and sustainable management of land at the local level, and to promote good practices in combating land degradation.

Author: Mr. Hedi Hamrouni, LADA National coordinator and partner of the MENARID project "MENARID Land and Water Optimization Project - PGRN2" (Tunisia)

(12) Direct planting technique in the Rabat region

Summary: A member of the forthcoming MENARID project "A circular Economy Approach to Agro-biodiversity Conservation in the Souss Massa Draa region of Morocco" presented conservation agriculture technique that are aimed at reducing the effort and cost of farming in a way that protects and improves agricultural soils.

Author: Mrs. Ouiame Rhazi, Agence pour le Développement Agricole

(13) Income generating activities for rural Jordanian women

Summary: An initiative within the "Mainstreaming Sustainable Land and Water Management Practices" project targets women in southern Jordan. It is tapping traditional knowledge and the sustainable use of local resources to initiate small-scale enterprises capable of generating monthly incomes of 250 USD. These activities have the potential to raise household incomes, improve livelihoods, and strengthen the independence of women.

Author: Mr. Mamoon Al Adaileh, Sustainable Land Management Officer and Technical Coordinator, Ministry of Agriculture, Jordan.

(14) Implementation of a participatory Geographic Information System

Summary: The Iranian MENARID project has introduced an innovation in the Kamkueyeh village, Yazd province that consists of using a "Participatory Mapping" approach in to organize farmers towards better decisions for improved management of their natural resources.

Author: Dr. Houshang Jazi, National Project Manager

(15) Direct planting as an erosion fighting technique

Summary: Semi–direct sowing is a key aspect of conservation agriculture and a proven intervention for reducing soil erosion, improving soil structure and water retention, and ultimately raising productivity and yields. Recent trials at a site in Tinja, 45 km north of Tunis, demonstrate the gains that can be expected if the practice is extended to dry land regions in Tunisia and beyond.

Author: Mrs. Rattia Affla, partner of "MENARID Land and Water Optimization Project - PGRN2" project (Tunisia)

(16) A new sustainable approach for rangelands in the dry lands: integrated rangeland restoration based on local climate change adaptation strategies, seed isles and collective landscape governance

Summary: This project worked with villagers to raise awareness of the impending effects of climate change on their agricultural and livestock production systems, to develop ways to raise the productivity of the rangelands, and to build mechanisms to manage the rangelands for sustainable livestock production.

Author: Dr. Stefanie Christmann, Environmental Governance specialist at ICARDA, Uzbekistan

(17) Raising awareness activities for Natural Resource Management in rural areas

Summary: The forthcoming MENARID "Ecotourism and Conservation of Desert Biodiversity" project (Tunisia) is based on the fact that the first line of defence against ecosystem degradation is local communities: people living within or close to the concerned parks are included in conservation efforts and empowered to become guardians of their natural resources.

Author: Mr. Nabil Hammada, National Project Manager

5. Conclusion

Valuable information, including technical aspects and key factors for success and replication, was gathered and shared during the MENARID Knowledge Exchange workshop. This exchange of information demonstrated how rich knowledge is embedded in the results of rural development projects, but is often not shared with others that would benefit. The wealth of practical examples contained in these projects have the capability to bring rural communities increase farm productivity, better resilience to climate change, and overall improved household and community food security. Dispersal of this valuable information is essential, particularly because many of these approaches have the potential to be scaled up to benefit additional communities.

Further, the lively discussion that occurred during the workshop often clarified the nature of evidence offered by project managers, revealed ideas for the policy aspects of technical interventions presented, and resulted in additional innovations or replicable facets of the work being uncovered. Additionally, while the process used at this workshop was effective in disseminating information among INRM development grant recipients, the Knowledge Management Platform is one technique of helping spread this knowledge to an even larger audience.

Appendix

Annex1: Summaries produced during the workshop

MENARID Gateway

Strengthening and scaling up Integrated Natural Resource Management across MENA

March, 2013

KNOWLEDGE FACT SHEET 1

This MENARID project is a knowledge sharing and learning partnership for improved natural resource management, with Morocco, Algeria, Tunisia, Yemen, Jordan, and Iran. This briefing was produced during a special consultation of the group in March, 2013.

BACK FROM THE BRINK: RESCUING THE BARGOU PEACH IN TUNISIA

Preliminary results with water harvesting show promise for restoring the biodiversity and productivity of large areas of communal rangeland in eastern Morocco

The Bargou peach has been grown by smallholder farmers in the Siliana district of northwestern Tunisia for generations. Sweet and delicious, the fruits are popular with consumers, but farmers had lost interest in the variety because of disease, pests and agronomic problems that were reducing the quality and yields of fruit from their trees.drought tolerant.

A new beginning: a young Bargou peach tree holds promise for the future of this indigenous peach cultivar.

Source: "pictures from project managers"

Points to Consider

- Gaining the confidence of traditional farmers can be a slow and painstaking process.
- Reviving interest in orphan crops depends on a market for the product and sustained technical support to farmers.
- Measures such as protected product status may be needed to ensure sustainable economic benefits.

Purpose

This brief is intended to raise awareness among research and extension agencies, policy makers, donors and rural development specialists of the possibility of rescuing indigenous crops and their benefits for sustainable rural development.

Suitability

The approach employed by this project can be employed in all smallholder production systems, being based on thorough and rigorous diagnostic work, a participatory approach, clear targeting of investments, continued monitoring and evaluation, and flexibility to address emerging issues.

The project in numbers

- 75 farmers – the number of actual beneficiaries
- 20 hectares of Bargou peaches planted or restored
- US$85,000 – total project cost
- Threefold increase in yield (15–20 kg/tree to 45–65 kg/tree
- Threefold increase in price received (0.6–0.8 Dinar/kg to 1.5–2.5/kg)

Partners

PDARIJ, Ecole supérieur de l'agriculture du Kef, Arrondissement de la production végétale

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A survey in 1998 found that only two farmers were still actively managing Bargou peach trees; elsewhere it had been largely replaced by other, introduced varieties and by other fruit trees, such as apples and pears. Farmers in the zone cultivate only small areas—between 0.25 and 0.5 hectare—and have to make the most of the land they have.

The area under Bargou peach had declined from a peak of some 350 hectares in the 1950s to less than two hectares, and even those orchards were in a very poor state. The trees were all suffering from fungal diseases, the orchards were heavily overgrown, with undergrowth competing with the trees for water and nutrients, and irrigation systems had fallen into disrepair. Farmers were getting only 15–20 kilograms of small, poor-quality fruit per tree. At 0.6–0.8 Dinar per kilogram, the returns barely covered production costs.

A review of what was known of the Bargou peach found that it had received no research or development attention for at least 30 years, and little information was available on its agronomic needs.

The project brought in technical experts from the Ecole supérieur de l'agriculture du Kef to identify possible interventions that could revive the productivity of the existing trees and to develop a program for producing replacement trees. These led to the development of packages of improved management practices, including application of fungicides and herbicides, fertilizer recommendations, and appropriate irrigation amounts and timings. The project also started a program for multiplication of the Bargou peach, taking cuttings from abandoned trees throughout the former range of the variety and grafting them onto rootstocks in a nursery. Local farmers were trained in grafting, to ensure that they would be able to continue the work when the project ended.

Applying the recommended practices on the trees of the two farmers still production Bargou peach increased both the yields of the trees (45–65 kilograms per tree) and the quality of the fruit produced, which resulted in higher prices paid to the farmers (1.5–2.5 Dinar per kilogram), and much higher returns. This was more than sufficient to offset the increase in the production costs.

Neighboring farmers were quick to see the benefits of the improved practices and adopted the practices themselves, without direct financial support from the project (the project had paid the costs of the original trials, although the farmers provided labor as an in-kind contribution). By the time the project came to an end in 2006, 75 farmers were producing Bargou peach on more than 20 hectares of orchards, many of them having replaced other varieties and species with the Bargou peach trees.

The project has successfully rescued a valuable indigenous crop, restoring lost knowledge among both farmers and research and extension staff and improving farmers' livelihoods in this poor and underdeveloped part of Tunisia. The increased income has allowed many farmers to send their children to school, improving their future prospects. The project also served as a catalyst for interest in the zone, with other organizations now taking a greater interest in the needs of the area. More effort is still needed to protect the gains,

including measures to maintain the prices paid for Bargou peach, such as product labeling to identify "authentic" Bargou peaches from the region, and continued provision of assistance to the farmers.

The project identified numerous other indigenous varieties in need of rescue, including Kesra figs and cherries, Maktar cherries and walnuts and Westlati Olives. Funds are needed to continue this work.

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Enabling poor rural people to overcome poverty

MENARID Gateway
Strengthening and scaling up Integrated Natural Resource Management across MENA

March, 2013
KNOWLEDGE FACT SHEET

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BUILDING CLIMATE CHANGE RESILIENCE IN RANGELAND SYSTEMS IN UZBEKISTAN

An integrated rangeland restoration project in Uzbekistan is restoring degraded rangelands and helping pastoralists in Uzbekistan develop climate-change-resilient livelihoods systems

The rangelands of Central Asia, extending to some 260 million hectares, are facing imminent effects of climate change: temperature increases in the region are 40% above the global average. Average air temperature in Uzbekistan has already risen by 2°C over the last 80 years, and rainfall is predicted to decline by 25% by the middle of the century.

Before and after: the degraded rangeland (left) is devoid of cover, while restored areas (right) are beginning to show signs of recovery and promise for increased of rangelands carrying capacity.

Source: "pictures from project managers"

Points to Consider

- The approach depends on land-tenure institutions that permit pastoral user groups to have secure long-term land rights.
- Strong effective governance institutions (e.g. pastoral user groups) are required to manage restoration efforts and ensure sustainable use of restored rangelands.
- Seed of rangeland species must be available; ideally a market for seed should be developed.
- Research and extension agents must be trained in the approach to help villagers to assess the climate change impact in their livelihoods, to develop alternative scenarios and to build a common purpose to restore rangelands.

Rangelands in Uzbekistan are owned by the state and divided between agricultural cooperatives, areas leased by entrepreneurs, and open access areas used by villagers. Governance mechanisms are weak in control of open-access areas, and this has resulted in extensive overgrazing and rangelands are at risk of intensified desertification. Plant cover and diversity are declining, largely as a result of changes in livestock management since 1990 and the effects of climate change.

Purpose

This brief describes work on a pilot project aimed at restoring degraded rangelands in Uzbekistan and increasing climate-change resilience of local communities. It is aimed at policy-makers, donors, and other partners and supporters.

Suitability

The approach described is best suited to rehabilitation of sparsely-inhabited rangeland areas at risk of desertification. The low-cost method helps villagers adapt to climate change and contribute to three Rio conventions.

The project in numbers

- **500 people** in 2 villages
- **1200 hectares**
- **€ 100,000** over 2 years
- **56,000 hectares**

Partners

- Ministry of Agriculture and Water Resources, the Republic of Uzbekistan
- Navoi Branch of Uzbek Scientific Production Center for Agriculture
- District and regional administration of Navoi province
- Malikchul Shirkat farm
- 1 entrepreneur
- 2 villages (Gulbog and Obihyot)
- ICARDA
- Samarkand State University
- Uzbek Research Institute of Karakul Sheep Breeding and Desert Ecology

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Need to change

Many villagers in the study area (Qiziltepa region, Navoi province, the province with the greatest degree of rangeland degradation) keep cattle, growing alfalfa and sorghum under irrigation on their home-garden plots (0.08-0.2 hectares) feed them. But summer water supplies in the area depend extensively on melt-water from glaciers, many of which are projected to disappear by 2050. The current livestock production system, which is a major source of income in the region, is thus unsustainable even in the relatively short term, and efforts need to be made to develop a sustainable alternative.

The project worked with villagers to raise awareness of the impending effects of climate change on their agricultural and livestock production systems, to develop ways to raise the productivity of the rangelands, and to build mechanisms to manage the rangelands for sustainable livestock production. Participatory workshops involving residents in two villages (Gulbog and Obihyot) were used to raise awareness of the likely impact on villagers' livelihoods in the absence of any adaptation measures, and to encourage the villagers to envisage alternative scenarios. These highlighted the need to rehabilitate the rangeland and implement measures to manage it sustainably. Villagers established pastoral user groups (PUGs), discussed and agreed on collective action to restore range vegetation, and developed rangeland management plans based on seasonal grazing.

Rangeland rehabilitation is key

There is currently no mechanism whereby a collective group such as a PUG can lease land, though the regional administration encouraged this project to work.

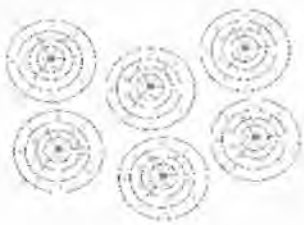
Seed isles, the approach selected for restoring rangeland vegetation consist of small (0.05-0.15 hectare) scattered patches of land sown with the desired rangeland species and protected from grazing and seed isles were seeded with perennial, drought-tolerant, productive native forage plants, all of which have wind-dispersed seeds.

Seed isles were established in 2012 on one third of the grazing area in the first year of the project, and this whole area is closed for grazing the first three years to allow the vegetation to gain a foothold and establish green biomass. The deep rooted plants produce little above ground biomass in the first year, focusing their energy on developing their root system. The restoration plan leaves two-thirds of the grazing area, currently unimproved, on which villagers can graze their livestock. In the fourth year, the area on which seed isles have been established will be opened for grazing, seed isles established, and the process repeated. Thus, after nine years seed isles will have been established on the whole grazing area.

Initial results are promising. the PUGs are functioning well and members are following the grazing management plans agreed. Seed isles are well established and signs of regeneration of the rangeland flora are apparent. Trials suggest that forage yields of over one tonne per hectare are achievable with careful long-term management of the restored range.

Only way forward

Restoring the rangelands and shifting from cattle fed on irrigated forage to range-fed sheep is the only way to sustain livestock production in the medium- and long-term in this region. This change will also free up home-gardens and the limited irrigation water for villagers to grow high-value crops such as tomatoes and other vegetables, either for sale or for home consumption, increasing the overall productivity of the production system.



Seed isles-the central «dots» here are small, scattered areas seeded with rangeland species that will restore the productivity and diversity of the rangeland. Seed is dispersed by the wind, gradually reseeding wider areas.

Source: "pictures from project managers"

Extending this pilot effort to wider areas will require a change in land-tenure policy in Uzbekistan, allowing PUGs to lease land and benefit from their efforts to restore the productivity of the range. Local officials and approach if it is to become the foundation of a sustainable development effort across the central Asian region.

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CARBON EMISSION DECREASE BY SOLAR WATER HEATING IN IRAN

Solar Panel heating system re-use to meet community needs

A pilot project using solar panels provides hot water to poor households in Iran at cheap cost, and avoids the use of gas cylinders that generate carbon emissions.

Project «Carbon emission decrease by solar water heating in Iran»

Source: "pictures from project managers"

Points to Consider

- A recognized and functioning governance mechanism, such as a cooperative or traditional institution, is essential to ensure the restored range is sustainably managed.
- A strong business case—financial or political—is needed to acquire the funds needed to set up the operation.
- Drivers and mechanics must be trained to use and maintain the Vallerani plow, and sources of spare parts identified or developed.
- Local communities will need to be trained in seed collection and production to support range regeneration. impact in their livelhoods, to develop alernative scenarios and to build a common purpose to restore rangelands.

In Asfij village, Yazd Province –harsh weather condition and extreme cold have prompted people from Yazd province to use fossil fuels (in the form of gas cylinders), fuel wood and rangelands bushes for water heating. This has become an issue in terms of environmental damage and financial cost. In average a family of four members would pay US$100 per month in order to get gas cylinders used for heating water for household consumption. Heavy deforestation has also

Purpose

This summary informs decision makers and planners at national and regional levels about a potential approach to use solar panels as a clean, cheap, sustainable source of energy. Solar panels can help in organizing communities for coordinated and improved wellbeing. It is also useful for extension planners and rural development groups (NGOs).

Suitability

This project is suitable for any community wanting to avoid falling into dependence of fossil fuels and reduce energy costs. Particularly the technology is useful for communities that are in remote locations where no electricity reaches, or where there are high transportation costs of gas cylinders.

The project in numbers

- The cost of the panel installed and functioning is US$ 800. Farmers benefiting from the project could cover the cost in as low as two months. Farmers not benefiting from the project would cover the investment in four months.
- 121 kg of carbon emission can be eluded by using the solar panels.
- The solar system benefits farmer for 10 years in averge.

Partners

- Ministry of Jihad-e-Agriculture
- UNDP
- ICARDA
- Forest Range and Watershed
- Management Organization

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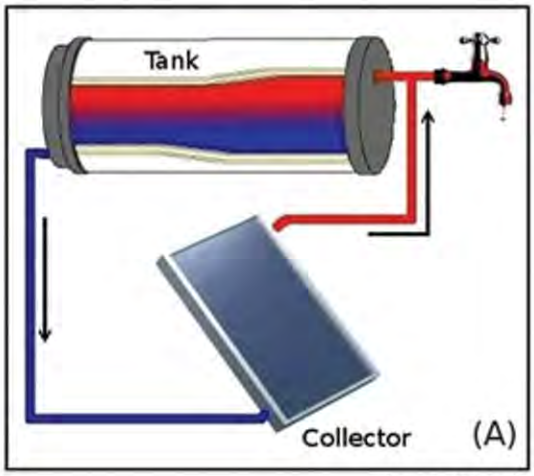
been reported in the province, though no precise figures have been obtained. The MENARID project "Institutional Strengthening and Coherence in Integrated Natural Resources Management" has been working on reducing the dependence on fossil fuels and on promoting the use of clean sources of energy. Thus an objective of the project has been reduction of pollution (CO_2 emissions) and increasing environmental awareness of concerned stakeholders.

Thus the project, in consultation with the local community and government officials, started with using solar panels mainly used to heat water. The main purpose of this panels were to reduce dependence on fossils fuels, increase welfare of households, reduce costs of energy, raise environmental awareness, and implement a replicable model for community-based managed of sustainable and efficient energy system. An unexpected benefit from the project has been reducing the burden of transportation and carrying heavy gas tanks, difficult for the elder and children that are the ones frequently remain in remote communities (the youth migrate to cities in search of better economic opportunities).

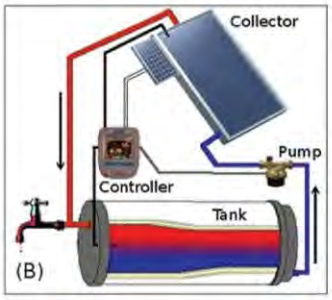
In Asfij village, the project had installed, in agreement with village members, 24 solar panels for individual households. The cost of installation for each solar panel was in average US$ 800 per household. The project agreed with a private company to install the panels and to provide training to two members of the community to repair and maintain the panels. The panels were accepted by villagers for two main reasons: the money they could save by investing in the panels, and the weight of the gas tanks. In addition, the project devised a micro credit found (named 'Village Development Fund'), under which community members became members by depositing small amounts of money, which in turn entitles them to get relatively large amounts of credit used to cover the cost of the panels.

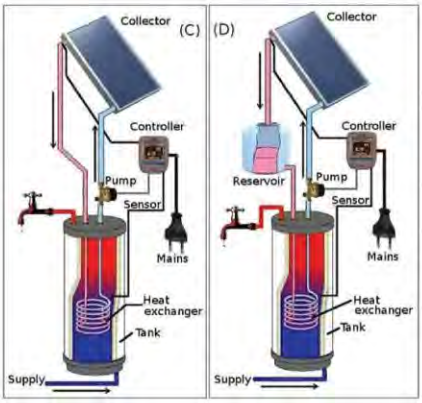
How the solar panel system works

Solar panel systems are installed in roofs. These collect heat from the sun and then heat up water stored in water tanks. A boiler or immersion heater can be used as a backup to heat the water further to reach the temperature needed.



Source: "Wikipedia"





Source: "Wikipedia"

Preventing from carbon emission can be achieved by replacing gas cylinders by solar panels. Surrounding villages have asked the project to help in the installation of solar panels in their households. The local authorities are considering installing 4,000 solar panels in the province following the model devised by the project.

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COMMUNITY EMPOWERMENT STRENGTHENS REHABILITATION EFFORTS IN YEMEN

A novel participatory approach to community engagement demonstrates significant gains in Saber District where rehabilitation efforts are strengthening rural networks, raising productivity, and reaping financial rewards

A scheme targeting the rehabilitation of water harvesting structures in the Saber district of Yemen has developed a novel participatory approach, empowering local communities and raising the potential for long-term stability and success. Ultimately, this approach can lead to improved productivity and incomes in areas of implementation.

A new beginning: a young Bargou peach tree holds promise for the future of this indigenous peach cultivar.

Source: "pictures from project managers"

Points to Consider

- Adopt participatory approaches: encourage beneficiaries to discuss their needs and contribute to the design and implementation of rehabilitation strategies
- Community institutionalization: encourage communities to form organizations that promote collaborative ways of working for maximum impact and long-term sustainability
- Gender-sensitivity: empower women as a means of strengthening their voices and responsibilities, and raising their education levels
- Draft community agreements: an effective way to outline responsibilities, timelines, and expected costs.

Purpose

This briefing describes preliminary work on a water harvesting rehabilitation project in Yemen that is implementing an innovative strategy of community engagement. It is aimed at policymakers, donors, and other potential partners and supporters.

Suitability

This intervention is suited to rehabilitation efforts in dry land areas which aim for a participatory approach that includes local communities in development plans.

The project in numbers

- Site specifics: 50 ha in Saber District
- Investment: 20,000 USD
- Potential Income generation: increased by 20-30 per cent
- Number of beneficiaries: 1100

Partners

- GEF
- Ministry of Agriculture, Government of Yemen

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A farmer association discusses needs and plans the way forward.

Source: "pictures from project managers"

The long-term success of this initiative depends on initial attempts to effectively and accurately assess existing conditions within a given community. 'Rapid rural assessments' provide a proven framework to quickly understand key physical and socio-economic indicators: poverty levels, employment, sources of income, for example, or annual rates of precipitation.

Subsequent needs assessments take an inclusive and participatory approach and are implemented in consultation with local communities. Open meetings provide an opportunity for community members to voice their concerns, discuss the problems and constraints they face, and plan appropriate strategies that are capable of reducing degradation and raising productivity.

Promoting community organization

Activities are implemented and monitored through community associations registered with the Ministry of Social Affairs – formal groups composed of residents and farmers which are committed to democracy and the election of representatives. These organizations are a requirement of the project: failure to form an association means that the initiative cannot progress. This approach promotes accountability and community responsibility, and by encouraging collaboration and knowledge-sharing, better ensures long-term sustainability.

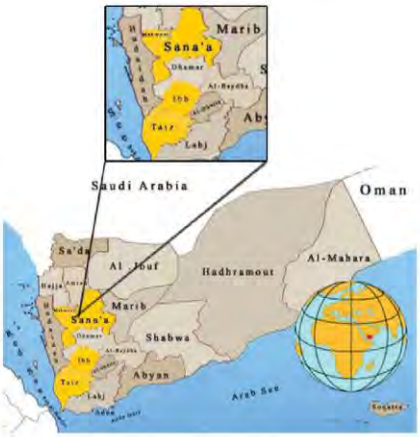
The formation of community-led associations also facilitates a process of empowerment which can strengthen the voice of once-marginalized people. This is further supported by a commitment to capacity development: implementing authorities impart knowledge on organizational effectiveness and improvement to maximize impacts.

An added gender-sensitive dimension has seen the establishment of women associations and efforts to match female extension staff and villagers to ensure that the needs and interests of women are considered. This has resulted in higher education levels among rural women, a greater appreciation of female rights and strengths, and heightened female contributions to decision-making processes.

Another innovative feature of this participatory approach are formal community agreements; 'contracts' that are used as a framework to guide negotiations with government bodies or officials. These are used to clearly outline costs, timelines, and the designation of responsibilities.

Promoting rehabilitation

The results of this form of community engagement have so far been impressive. The initiative has invested around 20,000 USD in the rehabilitation of terraces and reservoirs, reaching approximately 1100 beneficiaries and raising farmer incomes by up to 20-30 per cent. Families benefiting from the project are now capable of earning up to 2000 USD per season from the cultivation of tomatoes, and up to 500 USD from the sale of decorative flowers.



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DIRECT PLANTING: A POTENTIAL MEANS OF RAISING THE PRODUCTIVITY OF DRY LAND AGRICULTURE (TUNISIA)

Recent trials in Tunisia demonstrate the promise of direct seeding. Farmers who implement this system can expect higher incomes, greater profitability, and a more secure natural resource base

Direct seeding is a key aspect of conservation agriculture and a proven intervention for reducing soil erosion, improving soil structure and water retention, and ultimately raising productivity and yields. Recent trials at a site in Tinja, 45 km north of Tunis, demonstrate the gains that can be expected if the practice is extended to dry land regions in Tunisia and beyond.

Direct planting has decreased soil loss rates on fields planted with wheat and faba bean

Source: "pictures from project managers"

Points to Consider

- Navigate financial obstacles: investigate ways to reduce the costs of expensive machinery. Potential strategies could be encouraging farmers to form groups to share costs; providing government subsidies; and using local material and labor to construct more affordable machinery
- Convince farmers: to overcome resistance and skepticism a pro-active approach is needed to demonstrate to farmers the effectiveness of direct planting and the gains they can expect over more traditional and accepted forms of cultivation
- Consider appropriate interventions: results varied according to the topography of a given field. Due consideration should therefore be given to physical

Purpose

This briefing describes preliminary work on a pilot project in Tunisia that is investigating the efficacy of direct planting techniques. It is aimed at policymakers, donors, and other potential partners and supporters.

Suitability

This intervention is suited to areas where farmers are willing to adopt conservation agriculture and there are strategies in place to help farmers navigate financial hurdles.

The project in numbers

- Initiated: since 2000
- Soil loss rates: decreased from 3.2 g/l to 0 g/l for wheat, and 4g/l to 0g/l for faba beans
- Cost of a direct planting seeding machine: 40,000 DNT

Partners

- ESAK
- INAT
- DG ACTA
- PADAC

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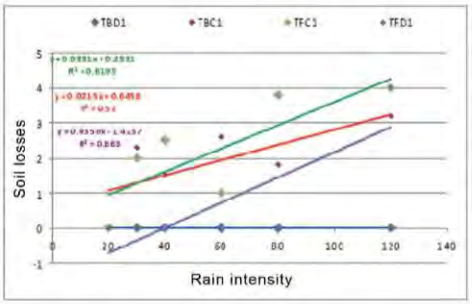

Figure 1: Fields planted with faba beans and wheat experienced significant improvements in soil loss rates on up-hill slopes – from 3.2 g/l to 0 g/l for wheat, and 4g/l to 0g/l for faba beans

Source: "pictures from project managers"

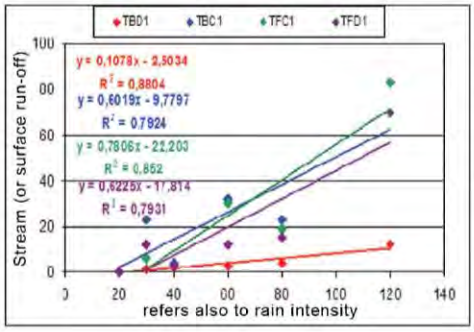

Figure 2: Direct planting also reduced surface run-off on up-hill fields: from 80 to 70 mm on fields planted with faba beans and from 60 to less than 20 mm on fields planted with wheat

Source: "pictures from project managers"

Direct planting - the practice of not plowing farmlands and leaving crop residue in the field for improved soil fertility and water conservation – is used by many farmers in middle and high-income countries. Research has confirmed that the technique brings optimal production at the best cost. In the world's dryland agro-ecosystems and the marginal farming areas of low-income countries, it can bring direct benefits to smallholder farmers. The practice has the potential to strengthen food security across Central and West Asia, the Middle East and in North and sub-Saharan Africa.

Recent trials at a single site north east of Tunis have demonstrated impressive results, raising the potential for extending this technique across the dry land areas of the Middle East and North Africa (MENA) region. Results demonstrate increases in the amount of organic matter, improved soil structure, and better water retention. Fields planted with faba beans and wheat experienced significant improvements in soil loss rates – from 3.2 g/l to 0 g/l for wheat, and 4g/l to 0g/l for faba beans. Direct planting also reduced surface run-off on up-hill fields: from 80 to 70 mm on fields planted with faba beans and from 60 to less than 20 mm on fields planted with wheat. Impacts were less promising on down-hill fields suggesting that topography is a controlling factor.

In addition to positive impacts on productivity, a reduced need for fertilizer and labor has the potential to lower the costs of production, thereby raising profitability. There are also important environmental gains: lowering the application rates of inorganic fertilizer helped to conserve natural resources and avoid damaging levels of environmental contamination.

Overcoming skepticism and resistance

Despite the potential of semi-direct sowing and conservation agriculture, there are a number of negative issues associated with the practice that have to be overcome if implementation is to be successful and sustained over the long-term. A key obstacle that often undermines attempts to implement conservation agriculture is the excessive costs of planting machines which can cost up to 25,000 USD. Efforts are therefore required to help farmers overcome this significant financial hurdle.

Fortunately, there are ways to effectively navigate this obstacle, facilitating the technique's implementation across more extensive swathes of the world's dry land regions. Subsidies provided by government could help to make the costs of seeders or planting machines more affordable for farmers. The formation of farmer groups could also be encouraged so that farmers are able to share costs. Another promising development are locally-produced planting machines which use local materials and labor and can therefore provide equipment at much lower prices.

Those promoting conservation agriculture may also confront inertia, a lack of awareness, and resistance among farmers who cling to more traditional and accepted forms of cultivation. Overcoming this requires a pro-active approach to convince farmers of the efficacy of semi-direct sowing and the long-term benefits – increased fertility and productivity - that this form of cultivation is capable of generating. This approach could be achieved through trainings – aimed at both farmers and extension workers – and an increased number of trials and demonstrations that clearly show the positive impacts of this system vis-à-vis more traditional forms of cultivation.

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ENCOURAGING LOCAL COMMUNITIES TO CONSERVE THEIR NATURAL ENVIRONMENTS (TUNISIA)

Empowering people to become guardians of their natural environments has the potential to promote conservation, strengthen ecosystem services, and raise rural incomes

An initiative focused on conservation efforts in three Tunisian nature parks is incorporating conservation and ecosystem services into regional economic development plans. These efforts are strengthening links with local communities who increasingly recognize the importance of sustainability and the potential economic impacts of a healthy natural resource base.

Bouhedma National Park, Sidi Bouzid, Tunisia

Source: "pictures from project managers"

Points to Consider

- Community consultation: include local communities in economic development plans, empowering them to become guardians of their natural environments, and providing them with an opportunity to devise strategies to shape their future and the future of younger generations.
- Institutionalization: Encourage local members of the community to form associations that can act as a liaison with government, charging these groups with the responsibility of raising awareness about conservation issues and protecting ecosystem services.
- Sustainable management: The local economy can only grow on a sustainable basis if local communities are committed to conservation and work together to eradicate damaging practices.

Purpose

This briefing describes preliminary work on a conservation project that is strengthening links with local communities and incorporating ecosystem services into regional economic development plans. It is aimed at policymakers, donors, and other potential partners and supporters.

Suitability

This intervention is suited to areas where there is potential for eco-system systems to contribute to economic development.

The project in numbers

- Number of beneficiaries: 4000
- Investment: 10,000 EU
- Number of parks targeted: 3
- Community groups: 5

Partners

- FEM
- BM
- Ministère de l'Agriculture,
- Minstère de l'Education Nationale,
- Ministère de la Recherche Scietifique,
- Ministère des Affaires Sociales
- NGOs

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This project's initial efforts are targeting three of Tunisia's national parks - L'Ichkeul, Bouhedma, and Jbil – which have been chosen because they represent distinct ecosystems. Although these parks enjoy a degree of protection, many still suffer from the effects of mismanagement and unsustainable practices. Poaching, deforestation, and herding are all capable of causing irreparable damage to the ecosystems of these areas. They must also contend with the effects of climate change in a region which is experiencing increasing water scarcity and rising temperatures.

The first line of defense against ecosystem degradation are local communities: people living within or close to the parks are included in conservation efforts and empowered to become guardians of their natural resources. Consultations with these communities stress the importance of ecosystem services and the potential economic gains to be derived from their sustainable and appropriate management.

Subsequent natural resource management plans were produced in coordination with the local population. These outlined opportunities for micro-projects and enterprises that could be implemented on a sustainable basis with minimal adverse impacts on the environment. Potential activities included rehabilitation efforts, the production of honey, and eco-tourism.

This participatory approach also emphasizes a process of community institutionalization and the formation of groups charged with the responsibility of managing natural resources and raising public awareness about conservation issues. These groups – termed environment clubs – also act as a liaison between government officials and bodies and the wider population.

The initial impacts of the initiative have been impressive. Approximately 4000 people have already been reached by the project in target areas and surveys suggest that community awareness about conservation and the need to protect the environment is increasing significantly. For example, 90 per cent of children surveyed in project areas in 2005 were considered 'weakly aware' of environmental issues. Yet two years later 91 per cent of children consulted were 'aware' or 'highly aware' of biodiversity topics.

There are plans for community responsibilities to evolve in the future so that environment clubs are able to participate in the management of parks and lead visitor tours. This greater role envisioned for local communities, and the socio-economic activities the nature parks are expected to sustain, are expected to be written into formal regulations.

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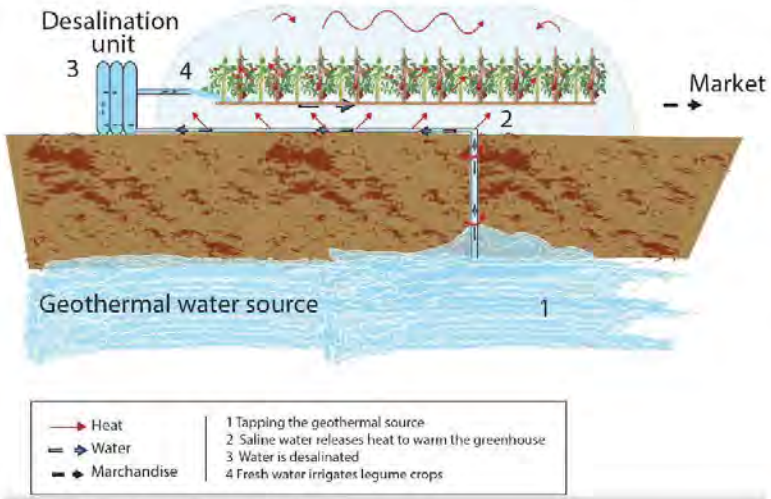
EXPLOITING GEO-THERMAL WATER TO SUSTAIN INTENSIVE IRRIGATION IN DRYLAND AREAS OF TUNISIA

The effective exploitation of geothermal springs has the potential to raise agricultural productivity and sustain rural economies in arid areas

An innovative demonstration pilot implemented in south-eastern Tunisia is exploiting geo-thermal water to irrigate high-value export crops. In a region suffering from water scarcity and the effects of aquifer depletion, this resource offers a precious life-line. A tripling of yields in recent trials demonstrates significant potential and the means to maintain crop production and sustain rural economies.



Geothermal irrigation value chain

Source: "pictures from project managers"

Points to Consider

- Secure funding: Exploitation can only occur where access to significant funding is available – through bank loans, subsidies, and donors.
- Hyper-intensive production: Investment is only realistic in hyper-intensive production systems geared towards the export of high-value export crops
- Farmer cooperatives: Organizing farmers into cooperatives can help to improve the management of export channels
- Sustainability: Incorporating this production system into export-development plans can ensure long-term investment and impacts
- Local conditions: Exploitation is only realistic in areas with significant geo-thermal resources

Purpose

This briefing describes preliminary work on a pilot project aimed at exploiting geo-thermal water for irrigated agriculture and the production of high-value export crops. It is aimed at policy-makers, donors, and other potential partners and supporters.

Suitability

This intervention is suited for high-value export production systems in areas where geo-thermal waters can be exploited.

The project in numbers

- Project size: Initial trials on 12 ha.
- Output: 20-30 kg/m3
- Income: 1-2.5 EU/kg
- Investment: 0.1 million EU/ha

Partners

- Observatoire du Sahara et du Sahel (OSS)
- GEF

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Decades of over-exploitation in Algeria, Libya, and Tunisia has significantly reduced water levels in the of the North West Sahara Aquifer System (NWSAS). Regional governments are therefore desperately seeking new sources of water that are capable of maintaining agricultural production and supporting the viability of rural communities. One source rarely considered by agricultural researchers is geo-thermal water.

Despite the significant amounts available, geo-thermal water is found below the world's surface – meaning that exploitation requires a significant financial investment. In most production systems excessive costs therefore prevent usage – tapping this resource remains beyond the means of the vast majority of smallholder farmers in developing countries. However, a pilot project near El Hamma de Gabes in Tunisia is demonstrating that in scenarios where initial costs can be covered, the use of this resource is a real possibility.

One possible area of application could be hyper-intensive production systems that cultivate high-value export crops such as tomatoes or aubergines. Production systems targeting developed countries are capable of retaining their competitive advantage and generating enough earnings to cover the costs of initiating geo-thermal usage. Project leaders therefore recommend incorporating the exploitation of geo-thermal water into regional export development plans.

Exploitation could also be financed by facilitating access to bank loans, government subsidies, or donor investments – the scheme is already attracting the attention of several large European donors. In addition, the establishment of farmer cooperatives helps to share the costs of initial investments. Moreover, costs may not seem excessive when potential returns are taken into consideration. Expected profits are more than capable of covering initial costs – returns are expected to occur within five years and are capable of reaching one million Euros for an initial investment on just 12 hectares.

Exploiting geo-thermal water

Geo-thermal water has a dual purpose: it can be used to heat greenhouses and achieve optimal growing conditions, and after cooling and undergoing a process of desalinization, provide a much-needed source of water in parched environments. Initial results have been impressive: the quality of produce has been excellent and farms have produced between 20 and 30 kg of produce per m3. The system also generates wider socio-economic impacts. The construction and maintenance of infrastructure needed to exploit geo-thermal water effectively is capable of supporting a significant number of jobs for the local population.

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Strengthening and scaling up Integrated Natural Resource Management across MENA

March, 2013
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INCOME-GENERATING ACTIVITIES FOR WOMEN AND YOUNG GRADUATES (TUNISIA)

This new initiative is creating income-generating activities and developing small businesses for women and young graduates, as a means of increasing food production, raising living standards, and preventing debilitating rates of out-migration

Financed by the World Bank and initiated by the Ministry of Agriculture, this program provides training which targets marginalized individuals - women and young graduates – and equips them with the skills and knowledge to set-up and maintain small-scale enterprises. Assistance is on-going for one-year, enabling individuals to consult project leaders and seek advice on a range of issues. of fruit from their trees.

Small-scale handicraft businesses were started in Tunisia's Kasserine and Medinin Governorates.

Source: "pictures from project managers"

Points to Consider

- Develop participatory forms of community out-reach - which involve local people themselves in development plans and initiatives aimed at achieving growth and development.
- Empower communities – develop in consultation with local people efforts to form focal groupings that can act as a liaison between government and local communities, conveying the interests and needs of community members, and providing guidance for local development plans. to ensure service and repair as needed.
- Training – provide effective training opportunities for individuals at the very beginning of the initiative, giving them the knowledge and skills to sustain the development of micro-enterprises and promote economic growth within their communities.
- Funding – secure sources of funding that can initiate and sustain the development of micro-enterprises, ensuring that beneficiaries have continual access to consultancy and advice.

Purpose

This brief is intended to inform government decision makers, agencies and specialist groups involved in rural development and revenue generation activities for communities and women.

Suitability

This method and approach can benefit rural communities in many locations and settings.

The project in numbers

- 5600 micro projects
- 8 small-scale businesses
- 4320 income generating activities in the agricultural sector
- 2200 income generating activities
- 80 non-agricultural small-scale businesses
- 80 small-scale businesses

Partners

- World Bank
- Global Environmental Fund
- Ministry of Agriculture

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This is the second-phase of a two-phase initiative financed by the World Bank targeting three communities – WHICH – where poverty and destitution are widespread and individuals require further assistance to raise their incomes and livelihoods.

The first phase focused on sustainable agricultural interventions aimed at raising productivity and reducing degradation: water and soil conservation, irrigation schemes, tree planting and improved livestock production.

In the second phase these activities are being supplemented by income-generating activities in target communities, including livestock breeding opportunities, handicrafts, and honey-production. Service industries and businesses have also been created by communities. These include carpentry businesses that can help with the construction of agricultural inputs such as beehives, and mechanical and repair enterprises which can help to repair important types of machinery such as mechanical pumps.

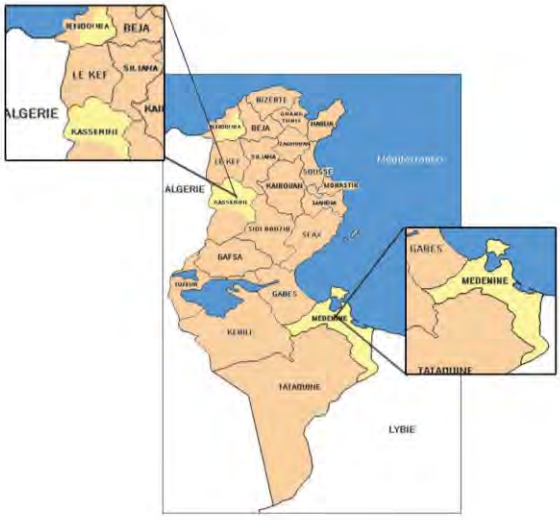
These are seen as a way of generating employment opportunities within communities – and thereby maximizing development impacts.

This initiative is participatory and inclusive, avoiding traditional top-down approaches, and includes lengthy consultations with local communities in target communities, seeking to understand their specific needs.

Also involved is a process of institutionalization. The initiative also encourages communities to form their own elected 'development committees' which act as a liaison between government officials and the local population. These work alongside government to develop local development plans, identifying potential areas of intervention, and also explore opportunities to access funding for these projects.

There is also a degree of central coordination with a designated management team at the Ministry of Agriculture.

These teams also have the responsibility of identifying suitable individuals who are capable of managing small-scale income-generating activities, tak-



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INITIATING AND MAINTAINING INCOME GENERATING ACTIVITIES FOR JORDANIAN WOMEN

Small-scale enterprises led by women in the dryland regions of southern Jordan have the potential to reduce poverty and boost rural incomes

An initiative targeting women in southern Jordan is tapping traditional knowledge and the sustainable use of local resources to initiate small-scale enterprises capable of generating monthly incomes of 250 USD. These activities have the potential to raise household incomes, improve livelihoods, and strengthen the independence of women.

A modest investment in dairy production can reap significant returns, helping to boost incomes and reduce poverty in target areas

Source: "pictures from project managers"

Points to Consider

- Participatory approaches: including women in the project design helps to effectively identify needs, the availability of resources, and existing expertise and knowledge
- Initial assessments: household economic surveys help to prioritize target beneficiaries; marketing assessments help to identify potential customers and markets
- Women associations: act as a liaison with government officials, providing women with a voice and helping to extend training and secure funding for beneficiaries
- On-going support: ensure that assistance and advice is provided after enterprises are initiated to ensure long-term sustainability and benefits

Purpose

This briefing describes preliminary work on a project that is providing income-generating opportunities for women in southern Jordan. It is aimed at policymakers, donors, and other potential partners and supporters.

Suitability

This intervention is suited for dry land areas where funding is available for the financing of small-scale income-generating activities.

The project in numbers

- Number of women receiving training: 1300
- Number of women establishing
- enterprises: 400
- Total investment in enterprises: 1.5
- million USD
- Cost of each enterprise: 500 – 5000 JD

Partners

Agriculture Credit Cooperative (ACC)
Mu'tah University

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This initiative is being implemented in three regions - Karak, Tafilah, and Ma'an - which suffer from high rates of household poverty and a range of debilitating environmental constraints: high rates of erosion, extreme water scarcity, and low annual precipitation rarely exceeding 300 mm/year. Communities also endure poor roads and infrastructure which limit access and income generated from agriculture.

Part of a much larger government scheme to raise agricultural productivity in degraded areas, this initiative complements efforts to promote conservation and rehabilitation in target areas.

Activities include food processing, dairy and pickle production, and the harvesting of mushrooms which are creating new economic opportunities for women who were previously marginalized and unable to contribute to household income.

Empowering women to manage small-scale income-generating enterprises has increased their independence, raising their status and helping them to more effectively participate in decision-making - at the community and household level. These positive developments are being sustained through training which is targeting 1300 women

Economic impacts have also been positive: approximately 400 women have initiated income-generating activities, and investments in businesses and enterprises exceed 1.5 million USD. Initial indicators suggest that women are already experiencing moderate returns on their investments. For example, an initial investment of 500 JD to finance bakeries is generating, on average, around 200 Jordanian Dinars (JD) per month. After loan repayments and other costs have been taken into account, female bakers can expect a net profit of up to 88 JD.

The project emerged during community consultations, a response to demands from women who requested assistance so they could more effectively contribute to household income and provide for their children and families.

Initial assessments investigated viability and potential economic opportunities – taking into considerable existing expertise, knowledge, and resources – and surveyed household characteristics in order to target poor and vulnerable women.

Activity	Investment cost	Running cost + loan repayment (monthly)	Total revenue (monthly)	Net profit
Food processing Shrak bread	500	122	200	88
Dryers, pastries and pickles	500	28	75	47
Raising sheep and dairy products	3000-5000	60	169	109
dairy products	800-1100	60	147	87
Mushroom production*	500	117	180	63
Chicen for egg production	500	0	35	35

TABLE: The returns on investment that target beneficiaries can expect

Source: "pictures from project managers"

An inclusive and participatory approach encourages women to form groups or associations which act as a liaison between communities and government officials. These groups are also charged with the responsibility of raising awareness – extending the concept to other villages and leading training sessions that equip other women with the know-how to implement and maintain their own enterprises.

Associations are also used to help beneficiaries navigate financial hurdles and obstacles. Access to funding can be facilitated through informal 'saving and credit' groups – groups composed of women who pool financial resources and provide 'start-up' funds to finance the projects and income-generating activities for each member.

These groups can also act as guarantor – helping to remove an obstacle that often prevents poor women accessing credit from financial institutions.

Finally, the initiative aims for long-term sustainability – support is on-going and participating women are able to access advice, support and feedback to improve the economic impact of their enterprises and ultimately raise their income.

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'PARTICIPATORY MAPPING' FOR LAND AND WATER MANAGEMENT (IRAN)

Implementation of a participatory Geographic Information System

The project "Participatory mapping for land and water management" has introduced an innovation in the Kamkueyeh village, Yazd province in Iran that consists of using a "Participatory Mapping" approach in order to organize farmers towards better decisions for improved management of their natural resources.

Preparing of the map in the field

Source: Project "Participatory GIS a tool for land and water management".

Points to Consider

- Indigenous knowledge and new technologies can be used in an integrated manner.
- Natural Resource Management activities need correct information, and should be prepared with local communities.
- Amonitoring system can be provided to local communities using maps and GIS.
- It is very important that local people are willing to adopt this new technology as a way to monitor and to better manage their resources. Support from partners and integration of local people in implementing GIS is crucial.

Purpose

This summary informs decision makers and planners at regional levels about participatory mapping as a tool to help communities in planning for better management of natural resources.

Suitability

The tool could be disseminated to communities that have the will to coordinate efforts for faster and better local development. Yet, the project still needs to evaluate how these maps can prompt to more agricultural efficienny in the community, which in turn should lead to higher income.

The project in numbers

- Mapping 359 farm parces.
- 32ha irrigation farm.
- Cost mapping contracting with local expert and rural people.
- inkind snairing (contribition)

Partners

- Ministry of Jihad
- Forests Rangand watershed managmenl org (FRWO).
- UNDP/GEF
- Rural people, society (MEPS).
- NGO Mountain Enviroment Protection

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The project is located in total area of 32 hectares that belong to about 70 farmers. Land tenure in this village is very low (less than 0.5 ha/farmer), and therefore careful planning of land, water and other resources is needed. The project consists of using participatory mapping approach to work out with farmers the location and size of their parcels. Based on maps, problems and main constrains as identified individually and collectively were overlap in order to visualize common issues and priority to undertake in both private and communal actions.

Undertaking participatory mapping

Source: Project "Participatory GIS a tool for land and water management"

Maps and overlaps

Participatory mapping worked out very well in the project as it managed to capture the main problems the community has been facing over mid and long term period. The tool allowed ranking the problems and undertaking measures based on a priority list of problems. The map below is the result of famer's work. Participatory mapping has the capability of integrating indigenous and modern knowledge in relation to resource management. For example, indigenous knowledge was captured by the mapping in terms of identifying bordering parcels that can be used for joint plantation among neighboring farmers. As modern knowledge, the maps helped in identifying the most efficient locations to build water stream channels that benefit most of the farmers with more efficient irrigation systems and based on parcel size and water crop demand. Thus, participatory mapping enabled community planning for improved irrigation and household water consumption.

The participatory mapping even helped in identifying and solving disputes over land ownership. The village has experienced for many years disputes with the government over ownership of certain parcels marked in red in the below map. The government claimed that these parcels were state lands, whereas farmers claimed that those were lands belonging to them since many years back. The maps as drawn by the community, and grounded on historical basis, helped to convince government and community officials that the boundaries as set were the right ones.

Project in results

- The participatory mapping provided members of the village the possibility of visualizing the location of their parcels within the overall village, which helped to overlap the different layers of problems and opportunities to the community. In turn, participatory mapping allowed discussing alternative solutions in a holistic and integrated manner;

- The participatory mapping tool helped in raising support from NGOs and government authorities as problems identified by the community were clearly presented and prioritized;

- The tool helped in introducing community issues into the agenda of the local governorate. For example, the boundary problem with the government was introduced into the government agenda thanks to the participatory mapping that showed the overlapping in disputed lands;

- The maps have provide a sense of 'ownership' and 'belongings' to the community members that visualized themselves as part of an integrated system where the resources, such water, are needed to be managed collectively, efficiently and with equity considerations;

- Pattern of cultivation within the community has improved due to participatory mapping. Now the community allocates water in a more organized way, and based on crop requirements and parcel size;

- The participatory mapping has created database for the community and other stakeholders, which later will be used as basis for monitoring and evaluation;

- The tool created common grounds for government and local community discussions on land tenure, and community development. For example, the community is able to better plan the location for constructing of wells to pull water and benefit as much community members as possible. The tool prompts to more organized management of the wells.

Undertaking participatory mapping

Source: Project "Participatory GIS a tool for land and water management"

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REGENERATING RANGELANDS IN EASTERN MOROCCO

A rangeland rehabilitation project in eastern Morocco has increased fodder availability by seven times over a 9000 hectare area – while restoring biodiversity and reducing soil erosion

This project, co-funded by the Global Environment Facility, has successfully rehabilitated over 9000 hectares of degraded rangeland in eight rural communes on the high plateau of eastern Morocco since 2006. Much of this land had been abandoned by pastoralists as it produced too little forage to support their livestock. Some 21 pastoral cooperatives with more than 900 members have benefited from the project to date.

Pastoralists seeding furrows on newly prepared rangeland. Use of indigenous range species helps restore natural biodiversity and promotes sustainability.

Source: "pictures from project managers"

Points to Consider

- A recognized and functioning governance mechanism, such as a cooperative or traditional institution, is essential to ensure the restored range is sustainably managed.
- A strong business case—financial or political—is needed to acquire the funds needed to set up the operation.
- Local communities will need to be trained in seed collection and production to support range regeneration.

Purpose

This brief is intended to inform potential beneficiaries, development and extension agencies (including nongovernmental organizations), and decision-makers and planners of the availability of this successful innovation for rehabilitating large areas of rangeland in dry areas.

Suitability

This approach is suited to degraded rangeland areas on a wide range of soil types with slopes of up to 12%. It does, however, depend on effective governance mechanisms being in place to manage the utilization of the rehabilitated rangelands.

The project in numbers

- 9200 hectares rehabilitated
- Livestock carrying capacity increased sevenfold
- Over 900 beneficiaries in 21 pastoral cooperatives
- US$1.3 million – total cost
- US$140 – cost per hectare

Partners

- The High Commission on Water and Forests and for Efforts to Combat Desertification
- Ministry of Agriculture and Marine Fisheries
- United Nations Industrial Development Organization (UNIDO)
- Pastoral cooperatives

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Restored range. The area in the foreground is unrestored.

Source: "pictures from project managers"

Some 70% of the land in eastern Morocco is used collectively by local communities, largely for extensive grazing. But large areas have been stripped of their vegetation, and wind and water erosion are widespread. Key rangeland species are being lost, including Artemisia herba-alba, a shrub that is one of the most palatable range species and a major part of the diet of sheep and goats in the region, and alphagrass (Stipa tenacissima), a perennial grass species that is highly drought tolerant.

The project used a special plow pulled by a powerful tractor to carve furrows 50 cm wide and 40 cm deep along the contours of gently sloping land. Gaps are left in the furrows every 200 meters to facilitate the free movement of grazing animals. Stone bunds have been built across streambeds to reduce flow and erosion and increase infiltration of water into the soil. The furrows trap rainfall, run-off water, and drifting soil to create microenvironments that encourage the re-establishment of the rangeland plants. This process is helped along by the pastoralists, who collect seed of desirable local rangeland species and scatter them in the furrows. Shrubs, including saltbush (Atriplex nummularia) and artemisia (Artemisia herba-alba), are also planted in the furrows to provide additional, high-quality feed during the dry season. Artemisia, a characteristic plant of the zone, is one of the reasons why the region is so well known as a source of high-quality livestock, highly sought after in the market in Morocco.

Preparing the land in this way is not cheap—preparing 9200 hectares cost nearly US$1.3 million, a cost of roughly US$140 per hectare—but the costs are lower than alternative approaches such as seeding the range, and the returns are high. Fodder production has increased sevenfold. The earthworks are long lasting—some of the furrows were made nearly ten years ago and are still collecting seasonal rainfall and sustaining forage crop growth, year after year. At this scale the cost per hectare becomes very affordable—spread over ten years, it is less than the price of single sheep slaughtered each year.

The intervention has increased livestock production from the rangeland, increasing pastoralists' income, and restored formerly abandoned land to productive use. Soil condition and fertility have improved, a wide range of indigenous plant species has been restored, and animal biodiversity is increasing.

The cooperatives were keen to support this rangeland rehabilitation effort following earlier demonstration trials done on relatively small areas, i.e. 100 hectares. They have adopted grazing management practices aimed at ensuring the sustainable utilization of the range, foremost among which is avoiding grazing the herbage until after it has set and dropped its seed. They have also actively engaged in gathering seed of their preferred species and are working with the project to establish plots that they manage for seed production and harvesting.

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REHABILITATING IRRIGATION CANALS AND OLIVE TREES BOOSTS FARMER INCOME IN JORDAN

Improving irrigation canals and rejuvenating old olive trees have dramatically increased olive yields and farmers' income in the Karak region of Jordan

Traditional spring-fed irrigation systems in the Karak region of Jordan waste a lot of water, reducing productivity of olive orchards and the amount of land that can be irrigated. A MENARID project has demonstrated that replacing traditional unlined irrigation canals with narrow, concrete-lined canals can double or treble the amount of water a farmer receives, boosting olive yields and allowing other high-value crops to be introduced into the farming system. Rehabilitating old olive trees further increases yields and farmer income.

Large amounts of water are lost from unimproved irrigation canals (left). Concrete-lined canals (right) and plastic pipes avoid these losses, delivering more water to the farmers.

Source: "pictures from project managers"

Points to Consider

- Listen to local communities: involve farmers in identifying and prioritizing the problems they face.
- Identify and engage with key innovative farmers to demonstrate interventions and encourage others to follow suit.
- Encourage development of community-based organizations or water users' associations to ensure sustainability of interventions.
- Train community members in the skills they need to manage the organizations, maintain the interventions, and implement best practices.
- Monitor and address environmental and socio-economic impacts.

Purpose

This brief is intended to promote widespread improvement of water delivery systems and rejuvenation of old olive trees in spring-fed irrigation systems in Jordan and elsewhere with similar conditions to increase the amount of water available to farmers.

Suitability

The techniques and approach used can be beneficial wherever natural springs are used to irrigate tree crops on small farms.

The project in numbers

- 500 hectares of olive orchards rehabilitated
- 65 kilometers of cement canals and plastic pipes installed to deliver water from 115 springs
- Water losses reduced by up to 75%
- Olive yields increased by up to 100%
- Farmer income from olives increased by up to US$1800 per hectare per year
- US$450,000 for rehabilitating and establishing canals and plastic pipes
- US$290,000 for rejuvenating old olive trees

Partners

- Agricultural Resources Management Project (phase 2)
- Community-based organization and water users' association

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Agriculture in the Karak region of Jordan is dominated by olive orchards irrigated by water from natural springs. A study of the traditional irrigation system showed that a major problem was loss of water from the unlined irrigation canals taking water from the springs to farmers' fields. This, combined with the age of the trees—many were found to be more than 50 years old, with some of 100 years or more—was restricting olive yields and limiting farmers' cropping options.

Consultations with farmers resulted in plans to improve the irrigation canals by lining them with concrete or replacing them with plastic pipes and to rejuvenate older olive trees through pruning and improved management. These actions were supported with efforts to establish water users' associations or other community-based organizations to ensure the future maintenance and management of the springs and irrigation canals and training for the farmers in improved tree and land management practices. Costs of the interventions were shared between the project (70%) and the participating farmers (30%).

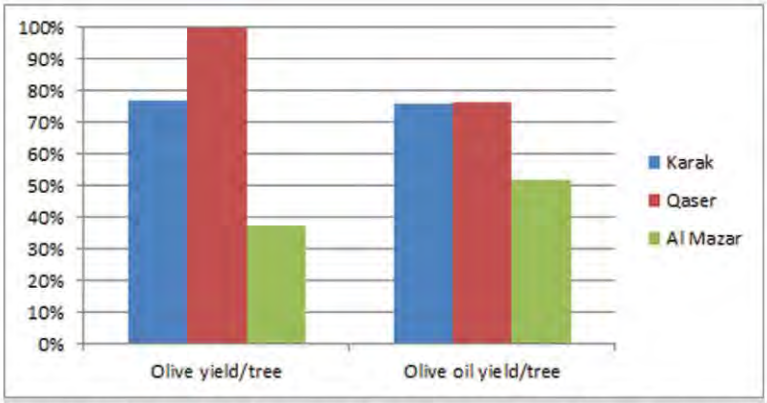
To date, the project has rehabilitated some 65 km of irrigation canals delivering water from 115 springs to some 500 hectares of olive orchards, benefiting nearly 2000 farmers.

The results have been spectacular. Improvements to the springs (holding tanks, walls to direct the water into irrigation canals, etc.) have increased flow of water from the springs by up to 74%, while improvements to the irrigation canals themselves have increased the amount of water delivered to the farmers per hour by up to 75%. This has dramatic implications for the amount of water each farmer receives: farmers are allocated the right to irrigate their land for a certain number of hours each week, the number of hours depending on the size of their land holding and the number of trees they have on it. So, if the flow rate of the canals is doubled as a result of reduced losses, farmers receive twice as much water. Yields of olives per tree increased by 76–100% in orchards with 130 to 140 trees per hectare, but by less than 40% in orchards with over 200 trees per hectare. This demonstrates the need for correct spacing of trees to avoid competition for light and water, and has led to recommendations to plant new orchards at a spacing of at least 8 × 8 meters.

With the increase in water coming to their farms, many farmers are growing additional crops, such as vegetables, or establishing new olive orchards.

Rehabilitating older olive trees through pruning and improved management proved a challenge—farmers were initially reluctant to allow project staff to prune the trees. But when a handful of farmers were persuaded to allow one or two of their trees to be pruned, the results spoke for themselves and more farmers came forward asking for their trees to receive the same treatment. The project had originally planned to rehabilitate the trees on 300 hectares, but demand was so high that more than 500 hectares have now been restored to production.

Doubling olive yields and increasing the area of olive orchards could cause a glut of olives, reducing producer prices, and the project is working with farmers, government agencies, and others to investigate ways to support producer prices and diversify income.



Increasing the amount of water applied and rejuvenating old trees increased yields of olives and olive oil per tree.

Source: "pictures from project managers"

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IMPROVING PASTORAL MANAGEMENT IN HIGHLAND EASTERN MOROCCO

Building on pre-existing indigenous institutions gives livestock farmers' cooperatives a solid foundation and legitimacy

The high plateaux of eastern Morocco are home to the Beni Guil, formerly pastoral nomads but now increasingly settled livestock farmers raising sheep on rangeland. But the productivity of their communally managed rangelands has been decreasing in recent years largely because of overgrazing.

Involvement of pastoral cooperatives crafted onto ethnic communities allow pastoral resources restoration in Morocco

Source: "pictures from project managers"

Points to Consider

- The communal ownership of the rangelands and cooperatives' lack of legal or customary authority to impose control measures may result in individuals overexploiting
- Poorly educated pastoral communities need guidance, assistance, and monitoring to help them establish viable cooperatives that meet their needs
- It is crucial to involve the whole local population, not only tribal leaders and other elites, in the establishment and management of cooperatives needed to ensure sustainable economic benefits.

Purpose

This brief is intended to inform development and extension agencies (including nongovernmental organizations) and decision-makers and planners about the achievements of this project, to highlight the factors that have contributed to its success, and to raise issues that may need further attention.

Suitability

The approach employed is suited to pastoral areas with strong indigenous institutions that can serve as foundations for cooperatives.

The project in numbers

- 44 pastoral cooperatives established with almost 9000 members
- 100,00 beneficiaries (animal farmers, women and children)
- 461,000 ha of land fenced off for rotational grazing
- 14,500 ha planted with fodder shrubs
- 60 watering points installed or rehabilitated

Partners

- Ministry of Agriculture and Maritime Fisheries
- Ministry of the Interior
- Ministry of Land, Water and Environment
- IFAD

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Since the 1970s, the Moroccan Ministry of Agriculture and Maritime Fisheries has been promoting farmer cooperatives as a mechanism for improving the management of these resources and boosting livestock production and farmer incomes. It also aims to raise awareness of the causes and consequences of the deterioration of the rangelands and the need to protect the environment.

However, many of these cooperatives failed to deliver equitable development; most were made up of small groups of relatively well-off herders who tried to take advantage of government subsidies. Poor, small-scale herders were largely excluded.

The Livestock and Pasture Development Project in the Eastern Region sought to address this imbalance and improve pasture management by developing cooperatives based on ethnic ties (family groups or subtribes, tribes and even tribal confederations) and allied to pre-existing indigenous institutions. The similarity in organization and values between cooperatives and indigenous institutions, in particular in terms of control over communal resources, consensus-based decision-making and solidarity among members, provides a solid foundation and legitimacy for the cooperatives.

Funded by the International Fund for Agricultural Development (IFAD) in two phases (1991–2001 and 2004–2010), the project succeeded in establishing 44 pastoral cooperatives that took on responsibility for managing some 3 million hectares of rangelands on the eastern plateaux.

The major objectives of the cooperatives were to improve rangeland management, both for livestock production and to protect the environment, increase and stabilize the incomes of livestock farmers, provide services to their members and act as a bridge between the community and providers of services, including the government. The cooperatives introduced a number of improved rangeland management practices, including controlled rotational grazing, fencing off nearly half a million hectares of range and planting nearly 15,000 hectares with fodder shrubs. Fodder availability in the fenced-off areas increased fivefold, from 150 kilograms of dry matter per hectare to 800 kilograms per hectare. They also installed or rehabilitated more than 60 watering points, halving the distance herds had to travel to water.

Herders pay a fee for using the watering points, which goes towards covering the cost of maintenance and operation. Access to broad-based parasite-treatment campaigns and veterinary extension services through the cooperatives has reduced livestock mortality significantly. In addition, the project has opened dialogue between herders and the Government and has formulated an approach that will allow range users' cooperatives to become increasingly self-reliant over the coming years.

Although successful in many respects, the cooperatives have faced a number of challenges. Under Moroccan law, and by custom, the ethnic communities are both owners of the common rangeland and free to pasture their herds there. The traditional institutions, including the jamaa (an assembly of delegates and prominent people), do not have the power to impose restrictions on the use of the rangelands. Neither do the cooperatives. As such, efforts to improve management of the rangelands have had to depend on consensus-building and persuasion, which is time-consuming and imperfect in its outcome, given the lack of a mandate to impose sanctions on those who abuse the resources.

The increasing degradation of the rangelands is raising awareness of the need for action to protect and preserve the environment among communities on the eastern plateaux, creating a favorable environment in which changes could be made to the legal frameworks under which the rangelands are used and managed.

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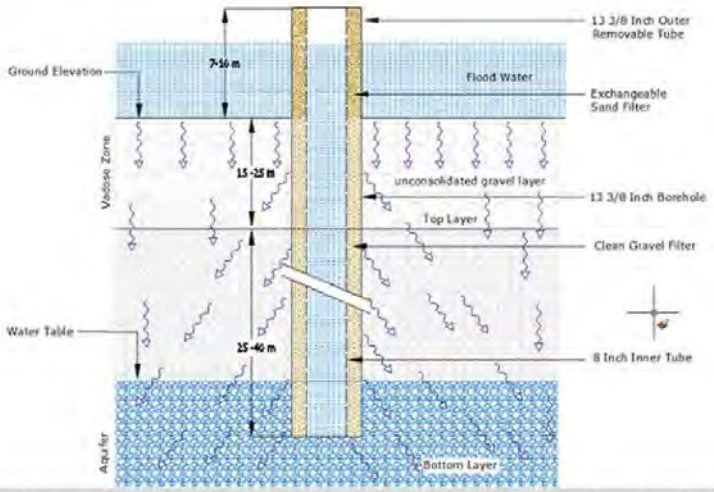
REPLENISHING DEPLETED AQUIFERS IN ARID AREAS (TUNISIA)

Recharge wells convey water to sub-strata levels to ease water constraints, raise productivity, and generate higher incomes

Recharge wells are a novel approach to water management in arid areas, controlling excess flood waters and injecting this precious resource below ground to replenish depleted aquifers and ensure a regular supply of water for farmers and other users.



Recharge wells convey excess floodwaters directly from the surface to sub-strata layers in a bid to replenish depleted aquifers.

Source: "pictures from project managers"

Points to Consider

- Aquifer characteristics – consideration must be given to the characteristics of an aquifer and whether the water contained within the aquifer is usable, contaminated, or too saline.
- Aquifer depth – the costs of drilling may be prohibitive if the aquifer is too deep
- Geology – assessments of the local geology is required to determine the permeability/impermeability of rocks lying above the
- Surface characteristics – surface characteristics such as topography will determine run-off rates and how much surface water can be retained.

Purpose

This briefing describes preliminary work on a pilot project aimed at constructing recharge wells to replenish depleted aquifers. It is aimed at policymakers, donors, and other potential partners and supporters.

Suitability

This intervention is suited to dry land areas where aquifers are depleted and the risk of contaminated floodwaters is minimal.

The project in numbers

- Investment: 100,000 TND
- Beneficiaries: 20,000 people
- Cost of recharge well: 10,000 TND
- Area: 270 km2
- Number of wells: 10
- Potential recharge rate: 1 liter/second

Partners

- CRDA Médenine
- IRA Médenine

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Initial costs may be high and require financial support. But the process of drilling and maintaining wells over time can generate local employment opportunities.

This intervention is currently being applied in the Koutine Watershed of Tunisia where evaporation rates are high – reaching between 1000 and 1300 mm/year – and groundwater is being rapidly depleted by competing users in the agriculture, industry, and tourism sectors.

This initiative is targeting 20,000 people and approximately 100,000 TND has already been invested.

The concept is simple and easy to implement in areas where aquifers are relatively close to the surface: flood waters are interrupted by small check dams as they flow across a surface area, and this accumulated water is diverted into wells and injected directly into aquifers, or indirectly into overlying permeable layers.

Drilling wells is necessary because check dams and the storage of water above ground are not realistic, given the high evaporation rates and the sedimentation that often accompanies the construction of check dams - a process that forms an impermeable surface layer and prevents the downward infiltration of water.

The wells include filters that effectively remove gravel and debris from floodwaters before it percolates down into the aquifer. These are movable and exchangeable and efforts are needed to train local people to replace or repair these features – thereby generating employment opportunities.

Although there is potential for water user associations to implement and maintain recharge wells, initial government investment is needed to cover costs that are likely to be above the means of most farmers – implementation is expected to reach approximately 10,000 USD.

Cost-benefit analyses have not yet been produced but there is significant potential to increase water availability in a region which is experiencing significant constraints. There is further potential to boost local employment opportunities – there is a need to drill the wells in the first instance and then to maintain the wells over time.

Source: "pictures from project managers"

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VILLAGES DEVELOP STRATEGIES TO ADAPT TO CLIMATE CHANGE (UZBEKISTAN)

A useful method for communities to ensure collective landscape governance, reforestation and new income options

An innovative process in Uzbekistan's foothill regions helps rural communities assess the effect of climate change on their land and water resources, so they can develop adaptation strategies to ensure food security and generate income. The approach offers useful lessons and an excellent blueprint for communities and rural development planners in many foothill areas and dryland countries.

The priority setting diagram developed by Kadok inhabitants in a round of consultations (left); some members of the elected village core team of the Foothill User Group.

Source: "pictures from project managers"

Points to Consider

- A village or community coordination structure is needed for the group effectively
- The group should understand the negative effects and threats of changing climate patterns on the group's natural resource.
- The external facilitator's role is 'hands-off' – asking questions and proposing a synthesis of the opinions given.
- The use of drawings (as in picture above) is crucial to having a clear process and securing buy-in of all parties involved.

The inhabitants of the Kadok village in Uzbekistan have experienced progressive deterioration of their foothills and farming system due to changes in climate patterns – and from overuse of the land by un-checked logging and livestock grazing

When the project started it was common opinion that the village might be abandoned after some decades due to increasing deterioration of natural resources and in consequence income options. Villagers invested already huge amounts in education of children to allow move to urban areas.

Purpose

This brief is intended to inform local-level extension and rural development agencies and development partners (including non-governmental organizations), or research teams, of a process that communities can use to better understand the threat of climate change and design their strategy to adapt to the situation – by applying crop and income diversification and natural resource mangement approaches.

Suitability

This technique can help communities in any foothill landscape or mixed crop-rangeland areas in the MENA region, especially areas that are losing production and income due to land degradation or over-use.This is a low-cost method to enable the self-help potential of remote villages to adapt to climate change and to contribute to 3 Rio conventions

The project in numbers

- 6000 people benefiting
- 6000 hectares of land affected
- 100,000 Euro
- 15,2% of Uzbekistan is covered by foothills.

Partners

- Ministry of Agriculture and Water Resources of the Republic of Uzbekistan (policy support)
- Khokimiat Nurata (district administration)
- Navoi Branch of Uzbek Scientific
- Production Center for Agriculture
- Mahalla Kadok (local administration; including all aksakals/elected village leaders)
- ICARDA
- Samarkand State University,
- Uzbek Research Institute of Karakul Sheep Breeding and Desert Ecology

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Process to create a 'climate smart' village strategy

To face this crisis, the Kadok community set out to develop a 'climate-smart' strategy and action plan to rehabilitate and better manage the surrounding farming system and natural environment for the years to come. Working with a research/facilitator specialized in natural resource management; the inhabitants did an assessment of their current situation and made a plan for rehabilitating degraded land and diversifying its production system.

The process started with a climate change self-assessment done by the village inhabitants that represented the entire population. The group developed their plan by asking two questions:

- If our current practices continue, how will our village look in 40 years (2050)?
- What changes and activities do we need to do to stop and reverse the situation?

The group's response to the first question was that if the situation continued as today, the village might not have income options anymore and outmigration might put the existence of the village at high risk.

Scenario for the future

With the scenario in place, the next step was priority setting. The community's preference was for reforestation of foothills using an environmental governance scheme, shrub cultivation for firewood, water harvesting, producing medicinal plants that were once grown there, and developing new income options that don't require more water use.

Long-term land management was also identified as a crucial issue. The community felt that the continued future health of their natural environment depended on having clear agreements on land use and protection, to ensure that current rehabilitation efforts were not lost over the coming years.

Several options for a governance scheme were debated. These included three options for sharing benefits: each household may use as much as they want; each household may use according to the number of livestock; each household will get the same share (based on prohibited grazing and collective manual harvest days).The consensus was for the equal sharing of benefits between all families.

The final climate change adaptation plan includes: rehabilitation of the foothills; of forest (medicinal trees/shubs) and rain-fed forage shrubs with strong root system and development of income sources not increasing water demand (one day recreational tourism, climate change information days for foreign tourists and Uzbek schools, handicraft).

Governance – agreements for community management of forest and forage resources

The community manages its shared resources through a core team that sets guidelines and organizes collective harvest days and organizes collective work to rehabilitate the foothill-forest.

The core team also builds consensus and gathers opinions by facilitating discussions on specific topics and summarizing different options and needs voiced by wider community group. The management focus is clear. The key criteria for group decisions on land use and development of the resources centers around the question:

Will reforestation efforts lead to increased benefits within 5, 10, 15 years?

The long-term sustainability of the rehabilitated site is ensured by two types of agreements. The first is developed and signed between all households of the village, stating guidelines for resource use, collective activities and responsibilities. The second is signed by the elected village leader and the leaders of all neighboring villages to frame the agreement on resource use and allocation, especially the issue of livestock grazing locations and rights.

Climate change increases the risk of hail, inducing mudflows that destroy the grape cultivations - the village's primary income-source.

Source: "pictures from project managers"

Source: "pictures from project managers"

At a glance: the Mahalla Kadok climate change adaptation strategy

Strategy

- Reforestation of foothills, planting a combination of indigenous medicinal trees and shrubs, forage shrubs with strong roots that prevent mudflows.
- New income streams provided by the sale of products such as roseship, medicinal plants and almonds.
- The rejuvenated landscape will also sustain livestock production.
- Facilities and natural areas for tourist visits from nearby cities.
- Production and sale of handicrafts.
- Climate change information days for tourists from abroad and schools

Governance

- Consensus of all villagers on the problems faced and need for an adaptation strategy.
- Agreement developed and signed between all inhabitants..
- Agreement signed between village elected official and counterparts in all neighboring villages.

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SMALL-SCALE WATER DESALINATION INCREASES FARM-LEVEL FOOD SECURITY AND INCOME IN THE DRIEST AREAS (TUNISIA)

A small-scale technology can help farmers create new water sources' to improve olive crop yields and grow high-income crops

A demonstration project using small-scale desalination, to clean brakish groundwater, provides the promise to rehabilitate degraded farm lands for communities in areas with less than 150 mm of rainfall per year. of fruit from their trees.

Farm-scale desalination unit in Medenine Governerate, Tunisia

Source: "pictures from project managers"

Points to Consider

- The results presented here are based on a small-scale pilot scheme. The approach has promise but need further scrutiny and evaluation.
- The cost of the desalination unit – while reasonable considering the new income opportunities it brings farmers – will still require a nation or regional subsidy or credits scheme to ensure large-scale supply of the technology, and local suppliers to ensure service and repair as needed.
- The overuse of groundwater is not of immediate concern in these agro-ecosystem as the resource is degraded and cannot be used for cultivation. Nonetheless if the practice dies become widespread, a water use and sharing policy will be needed to ensure sustainable use of the aquifer.
- A water resource assessment of each site is require to assess the number of farmers the new source can sustainably serve.

Purpose

This summary informs decision makers and planners at national and regional level about a potential approach to transition degraded drylands with available but saline groundwater, to irrigated legume production. It is also useful for extension planners and rural development groups (NGOs).

Suitability

Drylands agroecosystems with available but degraded groundwater sources, receiving 150 mm rain/year or less.

The project in numbers

- $12,000 - One-time investment for desalination unit.
- $1000 – yearly maintenance cost.
- $100 monthly ellectric cost.
- 20-60 kg/year - Increase yield in olive production per tree using monthly irrigation ('fertigation')
- $3,500/ ha new income generated per desalintation for legume and olive production.

Partners

- OSS
- GEF
- FFEM

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Site before start of project

Source: "pictures from project managers"

Project site. Year 1 cropping season

Source: "pictures from project managers"

In severely dry areas of the southeast Tunisian steppe, water shortages faced by farming communities are becoming more acute due to increasing salinity of the groundwater. The livelihoods of communities in the Medenine Governerate and similar areas are under threat. Over the past decade, the lack of water and decreasing water quality, have caused farmers to cease pastoral activities and the transition of most farming to rainfed olive cultivation. The continued degradation of water sources causes several thousand olive trees to die every drought event.

Creating new water sources

Faced with lower rainfall, and increased salinity in the major aquifer, the only solution to continued farming for these communities is to 'create more water'. Small-scale desalination was tested over the past two years and seems to provide a cost effective way for farmers in very dry areas to develop their land and generate income.

The technology used is a reverse-osmosis unit that produces some 20 cubic meters of desalinated water per day – enough to irrigate two large greenhouses growing legumes that can be sold in local markets and to provide a steady source irrigation throughout the year for olive trees. The irrigated olive plantations increase yield from 20-60kg per tree in many cases. Farmers in the pilot project target exporting their tomato and zucchini production to nearby Libya for increased profits.

Cost-benefit

When desalination is mentioned, the general perception of planners is that the practice is costly. But compared to what? Desalination cost needs to be put into perspective: the cost of creating new water for irrigated agriculture in disused rainfed farming areas can create more stability of existing olive trees and generate significant new household income.

This pilot scheme has shown that using local groundwater desalination to create a new water source to produce legume crops will generate sufficient income to cover the cost of the investment and leave a substantial profit for the farmer.

Results and opportunities for scaling-up

This test was done on a very small scale (1.2Ha), but the evidence produced is promising and merits further scrutiny to evaluate the possibilities for wider use in this dryland production system of 200,000 Ha. In this pilot, a total new revenue of $13,000 was generated in the first year from the new irrigation water produced by the desalination unit. After all running costs were covered, the farmer had a net yearly profit of $3,500 – equivalent to a yearly teacher's salary.

The initial investment in such as desalination unit is $12,000, with a yearly maintenance cost of $1000.

The project team plans to expand the pilot to demonstrate the potential of the approach to more farmers. In the medium term, they also see significant potential in converting the current electric energy desalination units to solar power, a situation that they see as possible in the coming 3-4 years.

If such and approach is adopted by larger numbers of farmers, a regional policy and strategy will needed to manage drainage water in a way that does not harm the environment. Here, the use of large evaporation ponds, shared and managed by each community, seems to be the best option.

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WATER HARVESTING INCREASES PRODUCTIVITY OF DEGRADED RANGE IN MOROCCO

Preliminary results with water harvesting show promise for restoring the biodiversity and productivity of large areas of communal rangeland in eastern Morocco

Some 70% of the land in eastern Morocco is used collectively by local communities, largely for extensive grazing. But large areas have been stripped of their vegetation, and wind and water erosion are widespread. Key rangeland species are being lost, including Artemisia herba-alba, a shrub that is one of the most palatable range species and a major part of the diet of sheep and goats in the re-

The Vallerani plow in action. The furrows capture rainfall and runoff water, encouraging range regeneration.

Source: "pictures from project managers"

Points to Consider

- A recognized and functioning governance mechanism, such as a cooperative or traditional institution, is essential to ensure the restored range is sustainably managed.
- A strong business case—financial or political—is needed to acquire the funds needed to set up the operation.
- Drivers and mechanics must be trained to use and maintain the Vallerani plow, and sources of spare parts identified or developed.
- Local communities will need to be trained in seed collection and production to support range regeneration.

Purpose

This brief describes preliminary results from a range-rehabilitation effort in Morocco. It is intended to inform policy-makers, donors, and other potential partners and supporters.

Suitability

This approach is suited to degraded rangeland areas on a wide range of soil types with slopes of up to 12%. It does, however, depend on effective governance mechanisms being in place to manage the utilization of the rehabilitated rangelands.

The project in numbers

- 1200 hectares
- 2 pastoral cooperatives, 600 members
- US$85,000 – total project cost
- Threefold increase in yield (15–20 kg/tree to 45–65 kg/tree
- Threefold increase in price received (0.6–0.8 Dinar/kg to 1.5–2.5/kg)

Partners

- High Commission on Water and
- Forests and Efforts to Combat Desertification
- Ministry of Agriculture and Marine Fisheries
- Global Environment Facility
- United Nations Industrial
- Development Organization

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A project co-funded by the Global Environment Facility (GEF), entitled "Participatory Control of Desertification and Poverty Reduction in the Arid and Semi-Arid High Plateau Ecosystems of Eastern Morocco" is working with local communities to identify ways to stop and reverse the degradation of the rangelands and to boost local livelihoods. Partners include the United Nations Industrial Development Organization (UNIDO), the High Commission on Water and Forests and Efforts to Combat Desertification, the Ministry of Agriculture, Rural Development and Marine Fish -ery, and the Department of the Environment.

Starting in 2011, the project has been working with pastoralist cooperatives in the Eastern Plateau of Morocco to test the Vall -erani system—a special plow that produces a furrow consisting of crescent-shaped pits—as a means of harvesting rainfall and making it available to rangeland plants.

Over a period of two and a half months in late 2012, the Vallerani plow was used to prepare some 1200 hectares of degraded land previously used by two pastoralist cooperatives.

Preliminary results show that the furrows cut by the Vallerani plow have successfully captured and concentrated rainfall, providing a microenvironment that encourages the establishment and growth of range species, including Artemisia and saltbush (Atriplex nummularia), and have encouraged the recolonization of the area by range species from seed blown in from neighboring rangeland areas. The establishment of shrubby species has helped protect the soil from wind erosion, while the furrows have reduced run-off and water erosion. The areas prepared using the Vallerani plow are now lushly green, while neighboring areas that received no treatment are largely bare.

Members of the cooperatives have been actively engaged in the revegetation process, collecting seed of desirable indigenous range species and planting them in the Vallerani pits.

Previous results with the Vallerani system in Morocco indicate that the restored areas will have to remain closed to grazing for up to two seasons for the vegetation to establish sufficiently to be able to withstand grazing. But given that the areas being rehabilitated have been abandoned by the local communities as unproductive, this is a small price to pay. The cooperatives have recently asked the project to bring in experts to monitor the development and growth of the re-established vegetation and to advise them on stocking rates and grazing management to ensure that the restored range continues to flourish.

The Vallerani system has proved well suited to restoring degraded rangeland. One of its principal advantages is the speed at which it operates—a skilled operator can prepare two hectares per hour, or more if the furrows are widely spaced. As a result the cost is moderate—US$75 per hectare for the 1200 hectares prepared to date. The cooperatives will charge members a fee for use of the regenerated range, using the funds to cover the cost of future range rehabilitation work.

Constraints include the high up-front investment—the equipment costs in the region of US$170,000—, the need for skilled operators and mechanics, the limited availability and high cost of spare parts for the machinery, and limited availability of seed of indigenous range species. In

Range vegetation growing in furrows prepared using the Vallerani plow.

Source: "pictures from project managers"

the case of the eastern rangelands, the Government of Morocco has identified the area as of strategic importance for regeneration and, together with GEF, has invested in the machinery on behalf of the local people. The project has provided training for operators and mechanics and is working with local companies to develop the capacity to make spare parts for the machinery to ensure the sustainability of the system. The project is working with the cooperatives to develop seed nurseries, either through planned planting of desirable species or protecting areas specifically for seed collection.

It is too soon to give a definitive verdict on the success or validity of the use of the Vallerani system in the eastern rangelands of Morocco, but early indications are promising. Further monitoring is needed, as is development of improved grazing and land management practices to ensure the long-term benefits of the restoration work.

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ZERO-TILLAGE BOOSTS RETURNS TO CEREALS IN MOROCCO

Initial results from the use of conservation agriculture practices in one region of Morocco show immediate reductions in cultivation costs, boosting farmer income, and spontaneous uptake of the practices by neighboring farmers

Conservation agriculture is aimed at reducing the effort and cost of farming in a way that protects and improves agricultural soils.

Planting seed into untilled soil dramatically reduces time and costs involved compared with conventional practices, and has many environmental benefits.

Source: "pictures from project managers"

Points to Consider

- The system depends on availability of specialist machinery, which may have to be imported initially
- Long-term sustainability and affordability depends on development of local manufacturing and support
- Demonstration and extension support are required to encourage farmers to test the system

Purpose

This brief describes preliminary trials with conservation agriculture with smallholder farmers in two regions in Morocco. It is aimed at policy-makers, donors, and other potential partners and supporters.

Suitability

Conservation agriculture is widely used around the world under a wide range of conditions. Its primary benefit to farmers is the reduction in costs resulting from reduction in tillage operations, and protection of the soil and soil structure. It also contributes to increasing soil fertility and maintaining soil moisture, especially in drier areas.

The project in numbers

- 500 hectares – area supported by the project
- 700 hectares – sown by neighboring farmers without assistance from the project

Partners

- Ministries of Agriculture and Marine Fisheries
- Institut National de Recherche Agronomique (INRA)
- Smallholder farmers (less than 5 hectares) in Rabat Salé Zemmour Zair (Roumani)

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A traditionally prepared field (left) and a zero-tilled field (right). Reducing cultivation improves soil structure, increases organic-matter content and water-holding capacity, and protects the soil from erosion.

Source: "pictures from project managers"

Minimizing the disturbance of the soil—no plowing or harrowing, no burning of stubble—reduces costs and time needed to prepare the land. Seed is planted directly into undisturbed soil, along with the fertilizer it needs. Leaving stubble and other crop residues from the past harvest on the soil surface and leaving the soil undisturbed protects farmland from wind and water erosion and from extremes of heat. It also increases infiltration of rainfall, reduces runoff, and reduces evaporation of water from the soil surface. The stubble and crop residues accumulate in the soil, increasing soil organic matter, improving the soil's structure. This boosts the soil's ability to hold water that is more available to plants.

The activity, under the Projet d'Intégration du Changement Climatique dans la mise oeuvre du Plan Maroc Vert, helped some 70 farmers in an area of Morocco identified as being particularly vulnerable to the effects of climate change (Rabat Salé Zemmour Zair) to change from their traditional, cultivation-intensive practices to zero-tillage conservation agriculture.

The project borrowed a specialized seed drill from INRAT and used it to plant some 500 hectares of cereals in the 2011/12 and 2012/13 cropping seasons.

Initial results indicate that yields achieved with direct drilling are similar to those achieved with the farmers' traditional practices but that costs are greatly reduced.

Local interest promises sustainability

Neighboring farmers who were not participants in the program have shown great interest in the zero-tillage approach being tested, and have adopted the practice independently. In their initial efforts, they made use of the seed drills that they already owned, but have since developed modified drills based on locally available equipment and materials. They also adapted the system to crops other than cereals, including chickpea.

This bodes well for the spread and sustainability of conservation agriculture—the machines brought in from Brazil are much too expensive for smallholder farmers, even if they are organized into cooperatives, but locally manufactured alternatives would be cheaper and more sustainable. Trials with locally manufactured zero-till seed drills in Syria and Iraq have shown them to be as effective as costly imported equipment at a fraction of the price.

Until this local manufacturing base is established, the government will need to subsidize the cost of the machinery to encourage widespread uptake of the approach. Extension efforts will need to be directed to raising awareness of the benefits of conservation agriculture and encouraging more farmers to try the approach for themselves. Research will also be needed to investigate the possibility of integrating livestock into the conservation agriculture system, in particular to determine their impact on soil structure and fertility and moisture conservation.

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MENARID Gateway
Strengthening and scaling up Integrated Natural Resource Management across MENA

March, 2013
KNOWLEDGE 19
FACT SHEET

This MENARID project is a knowledge sharing and learning partnership for improved natural resource management, with Morocco, Algeria, Tunisia, Yemen, Jordan, and Iran. This briefing was produced during a special consultation of the group in March, 2013.

A NEW APPROACH FOR MAPPING AND ASSESSING DEGRADED LANDS (TUNISIA)

Land Degradation and Assessment in Dry Areas (LADA)

Despite the many measures to combat land degradation, this issue has continued to grow, claiming more land every year. It is all the more alarming since it is difficult to make a full and accurate assessment of the current degradation of land in Tunisia. The Land Degradation Assessment in Drylands (LADA) project developed a methodological approach to assess the degradation and sustainable management of land at the local level, and to promote good practices in combating land degradation.

Geographic Area Assessment Kasserine

Source: "pictures from project managers"

Points to Consider

- The LADA project provided the opportunity to train a number of agents in the LADA approach in order to monitor and assess the degradation and to identify good practices.
- To preserve this wealth of expertise and to build on it by extending it across the country's regions, the management structure must have competent staff who are open to this training.
- As land management is primarily the responsibility of farmers and herdsmen, it is important that there are working relationships with these stakeholders, and to ensure that this structure has firm links with local communities in the country's various regions, with relations with NGOs and GDAs.
- Monitoring land degradation and its impact on natural resources, along with actions to combat this degradation, particularly as concerns climate change, requires international coordination, hence the need for contact with the focal points of conventions such as the Rio Convention.

Purpose

This summary describes the work of the LADA (Land Degradation and Assessment in Dry Areas) project that identifies and describes geographical areas suffering from land degradation in the governorates of Tunisia. Through a comparative study of these areas, it identifies the failures and successes in national efforts to combat land degradation and, therefore, build local community capacity to resist climate change. It is intended for policymakers, donors and other partners and supporters.

Suitability

The Land Degradation Assessment in Drylands (LADA) project started in 2006 with the goal of creating the basis for informed policy advice on land degradation at the local, national and global levels. This was done by assessing land degradation at various geographical scales and time scales and by creating a platform for monitoring it. This document looks at the application of this method in Tunisia.

The project in numbers

4 years

Partners

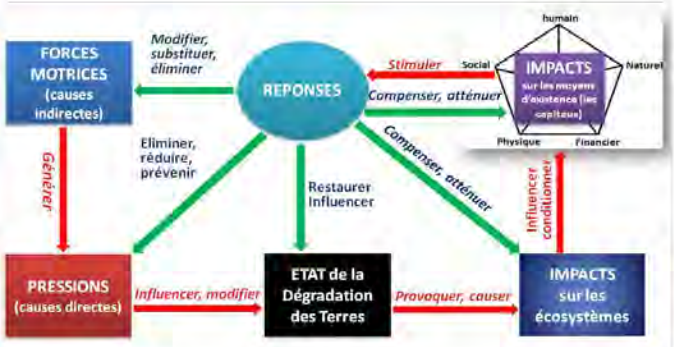
Tunisian Ministry of Agriculture, GEF, UNEP, and FAO

Contact

Mr Hedi Hamrouni
National LADA Coordinator
Tunisian Ministry of Agriculture - Directorate General for the Development and Conservation of Agricultural Land

The Land Degradation Assessment in Drylands (LADA) project was designed to develop and implement a general method for assessing and mapping degraded lands. The assessment was carried out at the local, national and global levels, and took into account the circumstances, causes and impacts of land degradation.

At national level, a 1:50000-scale map of the land-use systems was produced, identifying and describing the various existing systems. A map of the degraded lands and sustainably managed lands was also developed, which demonstrated the type of degradation threatening the lands, their size and their degree of degradation. The maps also revealed the type of conservation practices used, their scale and their effectiveness.



Analysis sequence of the FPEIR/DPSIR assessment framework

Source: "pictures from project managers"

At the local level, three governorates (Siliana, Kasserine and Medenine) were selected for a more in-depth study on land degradation and sustainable land management. In these regions, some areas underwent more detailed land-degradation or best-practice assessment. This made it possible to carry out a comparative study of the level of soil degradation in the predominant land-use systems, and so reveal the successes and failures in controlling land degradation.

The local assessment used a data-collection and analysis process based on a quantitative and qualitative assessment of the regions under study and the natural resources, and on the calculation of socio-economic indicators through participative surveys and an analysis of the strategies to manage livelihoods developed by households. The assessment also relied on the collection of secondary information from organisations and institutions responsible for land-use management, planning and decision-making.

Interaction between the socio-economic and biophysical factors, and political and institutional involvement were analysed using the Driving forces, Pressures, States, Impacts, Responses (DPSIR) model. The results of this assessment made it possible to:

- Analyse biophysical and socio-economic data on the current status of lands, along with water and land conservation practices.
- Study information on the local population's perception of the status of the lands, of the causes of the current situation and of the changes in the quality and quantity of resources.
- Increase local participation in the decision-making process concerning land use and controlling land degradation.
- Build the capacity of local participants in carrying out local assessments and in developing a system to monitor land degradation.
- Help local decision-makers and facilitate appropriate decision-making for the sustainable management of resources.

FORCES MOTRICES (causes indirectes) – DRIVING FORCES (indirect causes)

Générer – Generate

PRESSIONS (causes directes) – PRESSURES (direct causes)

Influencer, modifier – Influence, change

ETAT de la Dégradation des Terres – STATE of Land Degradation

Provoquer, causer – Lead to, cause

IMPACTS on ecosystems – IMPACTS on ecosystems

Influencer, conditionner – Influence, determine

IMPACTS sur les moyens d'existence (les capitaux) – IMPACTS on livelihoods (resources)

Humain – Human

Social – Social

Naturel – Natural

Physique – Physical

Financier – Financial

Stimuler – Stimulate

REPONSES – RESPONSES

Modifier, substituer, éliminer – Change, substitute, eliminate

Eliminer, réduire, prévenir – Eliminate, reduce, prevent

Restaurer, influencer – Restore, influence

Compenser, atténuer – Counteract, mitigate

www.menarid.icarda.org

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ICARDA
Science for Better Livelihoods in Dry Areas

GEF

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Annex 2: List of Participants

	First Name	Last Name	Position	Institution	Country	Email
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			technique pour l'OSS		Lybia, Algeria	

	First Name	Last Name	Position	Institution	Country	Email
14.	Lamia	JEMELI	Director of the Central Coordinating Unit of the Proposed NRM Ph II	Direction Générale du Financement, des Investissements et des Organismes Professionnels-Ministère de l'Agriculture-Tunisie.	Tunisia	jemalilam@gmail.com
15.	Bilquis	A. Sattar	Project Manager	Project Manager ACAP	Yemen	bilquissattar@yahoo.com
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Annex 3: Template for self-analysis of each project by the national project leaders based on a SWOT approach

I. OBJECTIVE

1. Of this document

The objective of this template is to simplify the collection of stories (in form of innovations, good practices, technologies) from the MENARID Project participants. Its goal is to help identify key factors when implementing innovations in terms of Natural Resources Management. This will facilitate the sharing of experience between project managers. We will meet in March 2013 in Tunis to exchange ideas and to write about real-life experiences and lessons learned.

2. Of a writeshop

A writeshop is very different from a workshop. While our last workshop was a great opportunity for you to present the projects you are managing, this writeshop will focus on bringing out the stories – lessons learned and best practices. We expect an intense session where project managers will present, discuss, and review success stories, or innovations that reached the expected target, or exceeded their expectations. Its goal is to emphasize techniques that may be duplicated in other places in the MENA region and that may be useful for development professionals and decision makers. A team of facilitators and editors will guide participants through the process of review, synthesis, and packaging of your learning into a concise document that can be widely shared. To do this, we want you to document your stories, but more importantly, we want you to put things into perspective and to analyze your innovations so that others can learn from your experience.

Here is more information about writeshops, see this website: http://www.writeshops.org/ and watch this video: http://www.youtube.com/watch?v=ZJhp_5rhEzI

3. Expected outcomes

By sharing stories from different projects about Natural Resources Management (NRM) in the MENA region, the writeshop will give an overview of lessons experienced in the field. Many different outcomes can be case studies, empirical papers or booklets. They need to be detailed enough to be used as cornerstones for NRM projects in the region. At the end of the writeshop, a synthesis of your work will be ready for you to share your stories with partners, donors, or to other decision makers – to encourage the broader use of your experiences. The process will also be a unique learning experience that you can apply into your future work and learn from the experience of others in MENA. You will to improve your synthesis skills, and become active member of the MENARID network. Your expenses will be covered, as well as printing costs for the outcome material.

II. STORIES

By stories, we mean innovative experiences related to Natural Resource Management in the MENA region. Each of you can select one or more stories that you want to analyze, to present and to discuss about. The quantity and the quality of the outcomes materials will depend on the preparation of each story.

III. PLANNING/TIMETABLE

1. Before the writeshop

Participants will send their topic(s) to the project coordinator as soon as possible in order to facilitate the writeshop organization. Then, **you will have to send this(these) filled template(s) by the 10th of February**. Each participant will then receive a short feedback by the facilitator team. After that, you will bring the revised template(s) to the writeshop. Then, you will present to other participants, and we will discuss about the analysis you made.

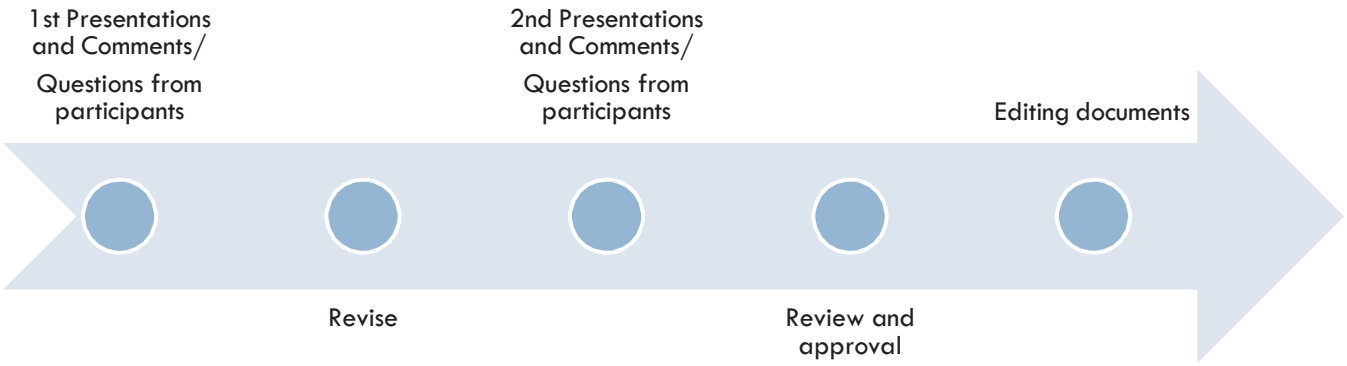
You will also have to provide information about your story (reports, literature, M&E information, other data used, outstanding quality pictures) to make the editing process more efficient. Of course, you will need to bring your laptop with you during the writeshop.

As asked during the workshop, you will also have to provide a one-page information about the GEF program you are managing, in order to upload these information online.

2. During the writeshop

During the writeshop, you will be asked to present your innovations, to answer questions and comments from other participants. After that first draft, you will revise your story accordingly. You will present your modified draft, and will answer new questions and comments. After you review your story, you will approve the document, and the editor team will edit the outcome document.

FIGURE 1: PROCESS OF A WRITESHOP



IV. TEMPLATE CONTENT

The following pages will help you build your stories. Please note that this should not be a project description, but rather an reflection that puts your story in perspective for someone else who can benefit from what you have learned. Take a step back and analyze the key factors for success. The SWOT (Strengths, Weaknesses, Opportunities, and Threats) approach is an excellent way to help you gain a new perspective of your story. The template includes seven parts.

1. General presentation

This part is designed to give a quick overview of the story you would like to present during the writeshop. It is expected that you give a half-page abstract introducing basic information (selected innovation, location, partners involved), the story (what problem(s) justify the innovation, how do you address the issues, what are the main results of this technique), and the lessons learned from this story that you want to share and discuss.

2. Evidences

In this part, please explain the principles of the innovation, and the profitability (benefit – cost) that the innovation brought to farmers. Also, it is important that you enlighten the evidences that show the

Please provide in this area the author name, project affiliation, and contact information

efficiency of the method. It will be useful to prove to what extent your innovation reached its goal. You can support this with evidence such as: M&E–related data, farmers' testimonies, examples in other regions, or literature.

3. Internal STRENGHTS of the story

In this part, we want you to describe the internal factors upon which you made this innovation a success. More than a single description of the strong points of your organization, we want you to answer the following "Why did the characteristics of your structure give a comparative advantage over similar organization in implementing the innovation?".

For example, your story might have been successful because you have in some way outstanding project members and farmers, because your financial structure allowed investing/borrowing easily to start the technique, because you had a strong reputation in the region that made the implementation easier or also because you built strong relationships with partners that allowed launching the innovation. Examples may also include topics related to machinery, labor characteristics, communication strategy, cost-related parameters, technical issues, type of management, innovation behavior etc.

4. Internal WEAKNESSES, vulnerability of the story

Here, we want you to describe vulnerability/instability internal factors that you would appreciate to improve in order to reach a 100% efficient innovation. In other words, we would like you to tell us about factors that you did not have when you implement the innovation, and that you would have appreciated to have.

The same examples than the previous part apply. They can relate to your structure organization and partners, to relationship to farmers, to cost issues etc.

5. OPPORTUNITIES for the innovation

This part aims to identify external factors that initiated the implementation of the innovation. That can that the technology has been develop recently, or that a change in legislation that allows you to use this technology. That may also include social, political, economic, legal, ecological or technological factors.

6. THREATS that face the innovation

Now, we focus on external risks that faced the project implementation. It may relate to social, political, economic, legal; ecological or technological issues. That may be a lack of funding for scaling up the innovation, or the lack of donor awareness to the innovation for examples.

7. Checklist

The previous parts facilitated shaping your story. As a reminder, this goal of this analysis is to discuss your stories during the writeshop, and to polish documents about the innovation that you could use with partners or donors. In order to reach its full objectives, the stories to be presented during the writeshop will need essential items to be answered. You may want to be sure you answered in the previous parts to the following items.

Identify the key factors to scale-up/to replicate the innovation
Clarify why this innovation is not developed in other places, and why?
Who to recommend the innovation?
Which people should be involved?
Do you have quantitative information supporting your story (number of people involved using the technology, proportion of technology adoption by farmers, data used to evaluate the impact of the innovation)?
Under which conditions this innovation would be used in other countries?
What are the main constraints for adoption?
What are the evidences supporting this innovation?
State of the art pictures to help the editing/lay-out work
Do you have references/literature?

V. CONTACT

For further information concerning the writeshop, please contact Hugo REMAURY, the MENARID project coordinator, at: h.remaury@cgiar.org (tel: +962 7 962 600 19).

Annex 4: Launch of the MENARID Knowledge Management Platform

To improve knowledge connections through MENARID projects, a Knowledge Management (KM) platform was officially launched in December 2012 (https://menarid.icarda.org). Relevant good practices and innovations can be published along with other information, such as projects briefs (objective, partners, achievements, life cycle, background studies, logical frameworks, and results (case studies, synthesis, and reports)).

During the MENARID Knowledge Exchange workshop, project managers were shown how to upload content on the platform and use the main features. The platform gives each project a dedicated site with features such as, among others, libraries, announcements, tasks, calendars, discussions, online surveys. Each Project Managers can take ownership of his/her site and shape it according to his/her needs. Additionally, data can be collected by project managers about site usage. Documents from past MENAIRD meetings are also available on the platform and a wiki has been enabled in order to promote information sharing.

Considering the importance of the demand-driven aspect, an open-floor was organized with MENARID members to gather feedback about the platform use during the first few months. Members were questioned about the website structure, the type of content they can upload, the general design of the site, and the global efficiency of the platform.

MENARID members provided comments, summarized below, to improve the website:

1. The way content is displayed has to be improved, the welcome page should directly refer to projects, a list of MENARID partners and participants might be displayed on the welcome page. Each site has to have a dedicated area with contact information. That would improve communication between projects. Thus, the platform needs to be redesigned.
2. The libraries need to be simplified - there are too many list categories.
3. The whole site has to be perfectly translated into French.
4. The website is too slow to display. There are issues when connecting the platform (including when connecting from home).
5. We need to group innovation by topics so that it is easier to communicate.
6. A possibility on commenting on articles should be added.
7. A summary for each project would be a good asset.
8. A template has to be available to allow the creation of further document about innovation.
9. All project documents have to be uploaded online.
10. Links to existing projects websites have to be added.

About ICARDA and the CGIAR

Established in 1977, ICARDA is one of the 15 centers supported by the CGIAR. ICARDA's mission is to improve the livelihoods of the resource-poor in dry areas through research and partnerships dedicated to achieving sustainable increases in agricultural productivity and income, while ensuring efficient and more equitable use and conservation of natural resources.

ICARDA has a global mandate for the improvement of barley, lentil and faba bean, and serves the non-tropical dry areas for the improvement of on-farm water use efficiency, rangeland and small ruminant production. In Central Asia, West Asia, South Asia, and North Africa regions, ICARDA contributes to the improvement of bread and durum wheats, kabuli chickpea, pasture and forage legumes, and associated farming systems. It also works on improved land management, diversification of production systems, and value-added crop and livestock products. Social, economic and policy research is an integral component of ICARDA's research to better target poverty and to enhance the uptake and maximize impact of research outputs.

CGIAR is a global agriculture research partnership dedicated to reducing rural poverty, increasing food security, improving human health and nutrition, and ensuring more sustainable management of natural resources. It is carried out by the 15 centers who are members of the CGIAR Consortium in close collaboration with hundreds of partner organizations and the private sector. www.cgiar.org