



ADAPTATION FUND

Adaptation Story

MOROCCO

An innovative Adaptation Fund project in the oasis zone of southern Morocco is helping vulnerable populations become resilient to drought by turning to a traditional system of underground water canals first developed by the indigenous Berber people of the region some 2,000 years ago.

This extraordinary ancient “khattara” rain and groundwater collection system originally dug in the first century is still partly functioning, but is being rebuilt, enhanced and expanded for agricultural irrigation and community use as a key aspect of the project. It helps solve a problem in a simple, effective way for the vulnerable oasis zone that is home to more than 1.7 million people who are largely dependent on agriculture and livestock but have been challenged by extreme dry weather, recurrent droughts, water scarcity, unsustainable use of water resources and forced seasonal migrations.

“We will all benefit from the improved water flow provided by the canal,” said M. Imii, member of a farmers group of khettara users in Ait Mhamed, Ferkla Oulia in Errachidia, Morocco. “We can produce more with more water. We can also provide more jobs. Locals will stay in this region instead of migrating away from here in order to make a living for themselves. We will have extra money from the produce we’re selling, which will allow us to build more homes and support the families and kids.”

Khattara tunnels leverage a rich supply of upstream groundwater accessed by digging into the rocky earth, creating underground ducts flowing on

downward slants through a gallery of channels to reach the oasis via surface trenches lined by stone walls. Monitored through maintenance wells, the channels provide water for both community use and to supply hand-sown date palms that have been threatened by persistent lack of water.

While the largest component of the project is to build the water sector’s adaptive capacities, other aspects diversifying income sources to improve the population’s living conditions, enhancing ecosystem climate resilience, building stakeholder awareness through knowledge exchange, and local capacity to design and implement adaptation measures are also pivotal. Local farmers will benefit from increased awareness of climate change issues, water management capacity and water availability.

By working together with the natural ecosystem, the project is helping to save the oasis in a sustainable way. The project is focused on two areas particularly vulnerable to climate change and representative of water issues affecting the region – Intermediary Gheris Basin and Maider Basin. To reverse trends of drying palm groves, overexploitation of groundwater resources and degraded water sources, the project aims to preserve palm trees and ensure drinking water supplies.



Photo by Hugo Remaury



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PROJECT details

Project Name:

Climate change adaptation project in oasis zones (PACC-ZO)

Direct Access Project

Sector: Agriculture

Project Duration: 4 ½ years

Adaptation Fund Grant Funding: US\$ 9.97 million

National Implementing Entity:

Agency for Agricultural Development of Morocco

Executing Entity:

National Agency of Development of Oases and Argan Tree Zones



Photo by Mark Sugg

PRIMARY objectives

- Improve adaptive capacities in water sector
- Diversify income sources and improve living conditions of vulnerable populations to climate change in project areas
- Enhance resilience of ecosystems in response to climate change and variability
- Improve awareness of all actors in management and knowledge sharing
- Strengthen capacities of participants in design and implementation of adaptation measures
- Generate social, economic and environmental benefits



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Photo by Mark Sugg

“Prior to global warming, women were able to work in the fields, but because of the drought, women are now working in the cooperative, and making some money. Everybody wants to learn weaving, all the young kids in this area want to learn. We also make organic couscous and other types of local pastas. With your support we are going to keep moving forward and have a better life.”

— Zahra Ouabda, Secretary of the Tawmatine Association for Women in Azekkour, Alnif in Tinghir

There are also plans to build a micro dam to support water and food production by slowing river flow and replenishing groundwater. “There is a big project to build dams, which will bring more water to the region, and eventually increase the production,” said Mohamed Drissi, President of the Economic Interest Group in Tinjdad, Errachidia. “This entire region depends on dates production. We are in a dry region with very limited water, and all we can produce is dates. You have entire family members working on the dates fields, so the better we are at producing these dates, the better is the life of all of the people that live in this region. We depend on wells and irrigation. We no longer use the old methods to water our fields, we are now more efficient with the water consumption, and we are no longer wasting water.”

The project further has a strong focus on gender by promoting alternative livelihoods through farming cooperatives and women’s associations that teach weaving and cooking, while producing clothing, cooking oils, spices, olives, cereals, honey, alfalfa and other products.

“This project offered lots of opportunities for women in this region,” said Soumya Laouane, a member of the Nissae El Ghad Women of Tomorrow Cooperative in Tighfert, Ferkla Soufla, Errachidia. “Prior to this co-op, women were not used to leaving their homes. Now you have lots of women working for the co-op, and earning a monthly income. It’s a big transformation, and you can see that these women have a different lifestyle now.”

Other activities include restoring historical buildings and establishing eco-tourism markets. The project will also indirectly impact the rest of the Moroccan oasis by offering potential models that can be replicated. “This area is rich in culture and attracts tourists, but it needs lots of support, development, conservation and awareness,” said Najat Bouziz, of Tinjdad, who works for the Ferkla environmental and cultural organization and regularly meets with women’s groups to discuss water management issues.

BY THE NUMBERS

AT LEAST 4,000 OF MOST VULNERABLE OASIS ZONE INHABITANTS IN PROJECT AREAS BENEFITTING FROM ACTIVITIES TO IMPROVE CLIMATE CHANGE ADAPTABILITY

AT LEAST 10% OF HOUSEHOLDS SECURE ACCESS TO WATER FOR DRINKING AND IRRIGATION

4 REPLENISHMENT STRUCTURES FOR RECHARGING GROUNDWATER BUILT

4 OASES WITH REDUCED ECOSYSTEM THREATS

VULNERABLE INFRASTRUCTURE RESTORED TO IMPROVE WATER DISTRIBUTION FOR AGRICULTURAL IRRIGATION TO 70% EFFICIENCY

400 HA IN PROJECT AREAS IRRIGATED BY RESTORING KHETTARAS AND IRRIGATION CANALS

AT LEAST 20% OF FAMILIES WITH DIVERSIFIED INCOME SOURCES AND SUSTAINED CLIMATE-RESILIENT ALTERNATIVE LIVELIHOODS

20 NON-AGRICULTURAL ECONOMIC UNITS DEVELOPED TO HELP INCREASE CLIMATE RESILIENCE OF OASIS POPULATIONS

800 FARMERS (AT LEAST 50% WOMEN) TRAINED IN CONSERVATION TECHNIQUES

AT LEAST 5 SUSTAINABLE, RESPONSIBLE TOURISM UNITS DEVELOPED AS ALTERNATIVE INCOME SOURCES TO ADAPT TO CLIMATE CHANGE BY REDUCING PRESSURE ON WATER

60% OF HOUSEHOLDS IN PROJECT ZONES WITH IMPROVED STAKEHOLDER AWARENESS THROUGH KNOWLEDGE EXCHANGE ON CLIMATE CHANGE ISSUES

400 TRAINED INDIVIDUALS (AT LEAST 50% WOMEN) IN ENVIRONMENTAL CLEANUP TECHNIQUES WITH INSTALLATION OF TREATMENT DEVICES

20 INNOVATIVE ADAPTATION ECONOMIC PROJECTS PARTICULARLY FOR YOUTH AND WOMEN (AT LEAST 50% MANAGED BY WOMEN)

240 OFFICIALS AND 400 OASIS BENEFICIARIES (AT LEAST 50% WOMEN) TRAINED WITH STRENGTHENED CAPACITY IN DESIGN AND IMPLEMENTATION OF ADAPTATION MEASURES AND PROJECT MANAGEMENT