

Preserving and Developing Oasis Heritage through Sustainable Agrotourism



PROJECT TITLE :

PRESERVING AND DEVELOPING OASIS HERITAGE THROUGH SUSTAINABLE AGRITOURISM

COUNTRY :

Morocco

LOCATION :

Souss Massa – Tiout Oasis, Taroudant Province

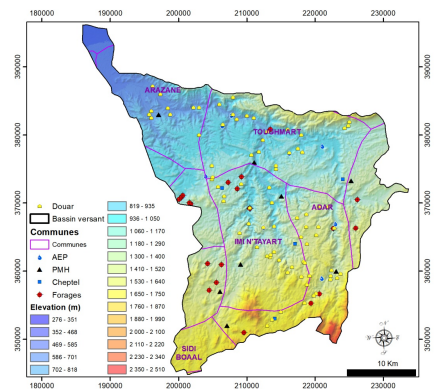
SCALE OF INTERVENTION :

Territorial

INCUBATION LED BY :



وكالة الحوض المائي
لسوس ماسة
AGENCE DU BASSIN HYDRAULIQUE
DE SOUSS MASSA



Région du Souss Massa - Oasis de Tiout © Agence du Bassin hydraulique du Souss Massa

LOCAL CONTEXT AND ISSUES: :

Tiout Oasis is located in the east of the province of Taroudant in the Souss Massa region. It is in the heart of Tiout municipality, which extends over an area covering 18,700 hectares from the Souss plain to the Anti-Atlas Mountains. The centre of Tiout is located on fertile farmland in the plain and covers 8,011 hectares, including the oasis, with a population of 3,000 (stable over the last decade), but with anticipated growth of over 1% due to the area's agritourism potential.

The oasis ecosystem provides a number of services connected to biodiversity, agricultural produce, leisure and culture. This ecosystem is endangered due to decreased water resources and non-sustainable management practices.

The tourist potential of the area includes historical features such as a kasbah (fortress) dating from the 16th century, irrigation canals in the palm grove that also feed into mills, two large pools used for irrigation and leisure activities, and the oasis, which was the location for the French film "Les Mille et Une Nuits". Thanks to its proximity to Agadir, along with agriculture, tourism has become an important source of income for the area, despite undeveloped tourist facilities.

Provincial and local development plans identify Tiout as the main town, equipped



Pumping station, Tiout © IOWater

with numerous public amenities and with potential development hubs to generate opportunities and income. However, the development projects initiated by the municipality and a dynamic network of associations (crafts, cooperatives, farmers) are limited by the decline of the oasis system, ill-adapted water management, the availability of water, inappropriate use of agricultural water, an absence of sanitation and an ageing water supply system. In addition, the town has no system for collecting and treating solid waste.

The local climate is semi-arid with an estimated average annual rainfall of 200mm. Water supply comes from a spring whose flow rate decreases regularly (currently 60 l/s) and that until twenty years ago fed irrigation reservoirs by gravity flow. Today, the spring is pumped for irrigation and the drinking water consumed by Tiout centre. A borehole is also used to feed the pools and irrigation canals in the oasis. These resources are vulnerable to frequent droughts and flooding (one spring had to be abandoned in 2003 when it was buried during flooding). Climate change is resulting in decreased water resources and the deterioration of the oasis, possibly due to a lowering of the water table and reduced water quality (pollution and hotter temperatures).

To tackle these challenges, an Integrated Water Management Plan (SAGIE) for the Oued Tiout river basin was launched in the second half of 2009, similar to the first SAGIE set up on the neighbouring Arghen Valley. The plan was initiated by the Souss Massa River Basin Agency (ABH SM), in coordination with local stakeholders (Taroudant Province, Souss-Massa Region, Tiout municipality, associations) and devolved representations of national bodies (Water Department, National Office of Electricity and Water (ONEE), Regional Office for Agricultural Development (ORMVA), National Agency for Oases and Argan Zones (ANDZOA)).

Agriculture in the centre of Tiout covers 440 hectares, mostly made up of small private parcels of less than 1 hectare (96% of the parcels represent 72% of the agricultural land surface). Crops are mainly cereals, alfafa, corn and fodder, olive trees, date palms, citrus, and market gardening, with a low average added value per hectare of 3,000 MAD and very low water efficiency (0.8 MAD/m³/ha). Thirty percent of farmland lies fallow due to a lack of interest from land owners. The irrigation network (concrete and earth channels) is managed by a farmers' association and fed 24/7. Supply is ensured by water towers invoiced on a time basis. Significant potential savings have been identified in terms of efficiency and added agricultural value (2008 study). Some promising experiments have been pursued in growing tropical fruit.

In coordination with local and regional authorities and associations, a comprehensive, federating, agritourism project based on water efficiency is taking shape around the palm grove.

The impacts of climate change on the oasis include:

- Gradual deterioration of the oasis ecosystem.
- Diminution and variability of water availability

The challenges to resolve are:

- Sharing water in a situation of reduced availability.
- Risks of pollution due to an absence of sanitation and solid waste management.
- Low efficiency of agricultural water.
- High consumption of fossil fuel for pumping to supply water for drinking and farmland.
- Insufficient crop diversification, absence of structure for produce (apart from argan).
- Very fragmented land ownership, with owners leaving their land to fallow, little investment.
- Inefficient water supply network for drinking and irrigation.
- Lack of investment in tourist activities (accommodation, catering) centred on the attraction of the palm grove.

PROJECT GOALS :

To set up an integrated agritourism development project in the centre of Tiout (7 douars) based on the preservation and restoration of the oasis and fitting in with the local development plan and the SAGIE currently being defined. Numerous oasis systems are confronted with similar risks of deterioration. The restoration and

maintenance of the Tiout Oasis ecosystem, involving an integrated territorial development plan based on virtuous, parsimonious, sustainable and concerted management of water, a circular economy and the creation of wealth by efficient farming with high added value linked to green tourism, constitute a solution that would be replicable elsewhere in Africa and the MENA region.

The main components of this project aim to:

- Reconvert agriculture as part of a development plan for the centre of Tiout in order to improve added value, increase the area farmed, manage water better, and generate farm produce that supports and promotes tourism.
- Improve the efficiency of agricultural water (irrigation channels, pump control, irrigation system) while ensuring water supply in the oasis for its preservation and restoration. The channel systems and mills in the tourist zone (upper part of the palm grove) should be conserved.
- Improve the water supply service to meet the needs of local inhabitants and the development of tourism, while raising public awareness of water-saving practices.
- Ensure water sanitation.
- Establish solid waste collection to limit risks and remain attractive to tourists.
- Develop a circular economy approach by i) reclaiming purified wastewater to produce food for livestock or to restore green areas; ii) producing compost to fertilize soil.



Irrigation channel, Tiout Oasis © IOWater

SDGs TARGETED BY THE PROJECT :



CHALLENGES FACING THE PROJECT:

Reinforce water resources management – Protect soil and ecosystems – Combat desertification - Improve access to water and sanitation - Reduce water-borne diseases – Deploy agricultural practices that save water and generate income to maintain equipment – Develop sustainable agritourism

SECTORS CONCERNED :

Agriculture - Energy - Tourism – Circular economy - Water security – Food security - Water supply and sanitation - Protection and management of water ecosystems - Resilience of users

EXPECTED OUTCOMES :

Nature-based solutions:

- Limit the energy impact of accessing water supply and sanitation: solar energy and sustainable sanitation techniques.

Agroecology

- Define and implement an integrated farming model based on new crop rotations, more efficient farming practices that use less water, and effective distribution circuits to increase the added value per hectare and water efficiency (e.g. targets of 8,000 MAD /ha and 2 MAD/m³/ha).
- Modernise the irrigation system to respond to agritourism needs (pools,



Multi-use reservoir used as storage for irrigation and leisure.

channels and mills in the upstream part of the oasis) and the needs of the oasis system.

- Collect and compost green waste (agriculture) and organic waste and use it for farming.

Water resource engineering

- Upgrade the drinking water supply system (dating from 1965) by developing knowledge on uses and withdrawals

Sanitation engineering

- Develop a sanitation and water treatment plant network to serve 7 douars, amounting to about 3,300 inhabitants, using nature-based solutions enabling water reclamation.

Energy systems engineering

- Install solar pumps for potable and agricultural water.

Modernisation and reinforcement of governance

- Build capacities and support local works and governance bodies to ensure the economic sustainability of the facilities put in place

Set-up of long-term finance mechanisms

- Improve water efficiency and set up progressive cost recovery mechanism

Capacity and knowledge building

- Raise awareness of inhabitants about saving water and avoiding waste.
- Build knowledge on ground and surface waters (quantity and quality, including organic pollution and pesticides) and on how the oasis operates (water requirements, biodiversity).

PROJECT STAKEHOLDERS:

Stakeholders involved:

Inhabitants of Tiout – Institutional stakeholders: Tiout municipality, Taroudant Province, Souss-Massa Region, Provincial Department of Water, National Office of Electricity and Water (ONEE), Regional Office for Agricultural Development (ORMVA), Regional Society for Agricultural Development

Project leader :

ABH SM

ESTIMATED COST OF PROJECTS IDENTIFIED FOR INCUBATION:

>1 million EUR

SHORT-TERM ACTION (3 YEARS)

- Coordination of irrigation
- Sustainable sanitation
- Water reclamation
- Composting



- Solar energy
- Measuring networks

LONG-TERM ACTION (10 YEARS)

- High added value agriculture
- Circular economy
- Water efficiency
- Financial management and cost recovery of equipment



Agricultural parcel, Tiout Oasis © IOWater

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