

Ait Melloul Industrial Zone

Souss-Massa Region, Morocco

Facing the impacts of climate change is a key challenge of this century - not only for governments and communities, but also for industries. Floodings of company premises, damages of infrastructures and transport routes, frequent gaps in the supply of water and energy - industrial zones and businesses are now facing increased climate risks. To ensure their competitiveness and the sustainability of their businesses, industrial zones need to adapt to climate change. They can play a key role in building more resilient industries.

This case study was developed under the GIZ global programme "Private Sector Adaptation to Climate Change (PSACC)" which aims at building the capacities of SMEs and private sector intermediaries in the field of Climate Change Adaptation. It presents the results of the vulnerability assessment conducted with the Ait Melloul Industrial Zone (IZ). An action plan for climate change adaptation in the Ait Melloul IZ was developed and presented to the Regional Council in order to integrate it in relevant regional programs under development or implementation, such as the requalification of the Ait Melloul IZ, the Territorial Program Against Global Warming (Programme Territoriale de Lutte contre le Réchauffement Climatique, PTRC) or the Regional Development Program (RDP).

About the Industrial Zone

Location	Commune of Ait Melloul, Prefecture of Inezgane-Ait Melloul, Region of Souss-Massa Near Agadir Airport, 20 km from port of Agadir
Date of creation	1988
Superficy	354 ha with 90% of occupied lots
Businesses	300 companies with a majority of SMEs
Sectors	Agro-industry (processing of fruits and vegetables, fish processing, agro-furniture) and divers (building, metal, chemical etc.)
Jobs	25 000 jobs (est.)
Management	Commune of Ait Melloul in close cooperation with the business association ADIZIA (Association des Investisseurs de la ZI d'Ait Melloul)
Key partners	Alomran (planning & development) ABH and RAMSA (water supply) ONEE (electricity supply) Public authorities: Ministry of Industry, Wali, Regional Council, Regional Investment Center Private sector: Regional Chamber of Commerce and Industry, Business Associations, CGEM



The Ait Melloul IZ was created in 1988 in the commune of Ait Melloul a nearby locality of Agadir in the Souss-Massa region, one of the most climate vulnerable regions of Morocco with a semi-arid climate. Situated 20 km away from the Atlantic coast and near many fruits and vegetable exploitations, the zone is located between the harbor and airport, and on the south main route, which facilitate supplies and deliveries. 70% of the companies are agri-business firms processing regional vegetables and fruits, and fish supplied from the South harbors of Morocco. Ait Melloul has a strategic position and became an important export hub for the region. The vegetable and fruits production of the Souss Massa processed and packed by the firms of Ait Melloul represents 90% of the Moroccan export.

Ait Melloul IZ was one of the first semi-equipped and semi-structured zones of the region and basic services like lighting, electricity and water supply are provided by public utilities. The zone was developed by an independent planning agency, and it is managed by the Commune in close cooperation with the association of the enterprises (ADIZIA). Today the zone faces a number of challenges which are increasing its vulnerability to climate change, as for example old equipment and infrastructures, no sectoral zoning, weak infrastructure maintenance, lack of waste management structures, weak management structures and resources.

Key climate phenomenon

The effects of climate change are more and more present in Morocco, which has been identified as very vulnerable country to climate change by the 4th IPCC Assessment Report. Morocco and particularly the Souss-Massa as semi-arid coastal region are affected by increase of average temperatures, changing rainfall patterns and the sea level rise. Extreme climate events e.g. droughts, flooding and heat waves have become more and more frequent and intense. These changes have an important impact on the country's water resources, ecosystems, agricultural production and fishery. The Industrial Zone and the Souss-Massa's economy based on fishing and agriculture are particularly sensible to those changes.

The priority climate risks identified for the industrial zone are:

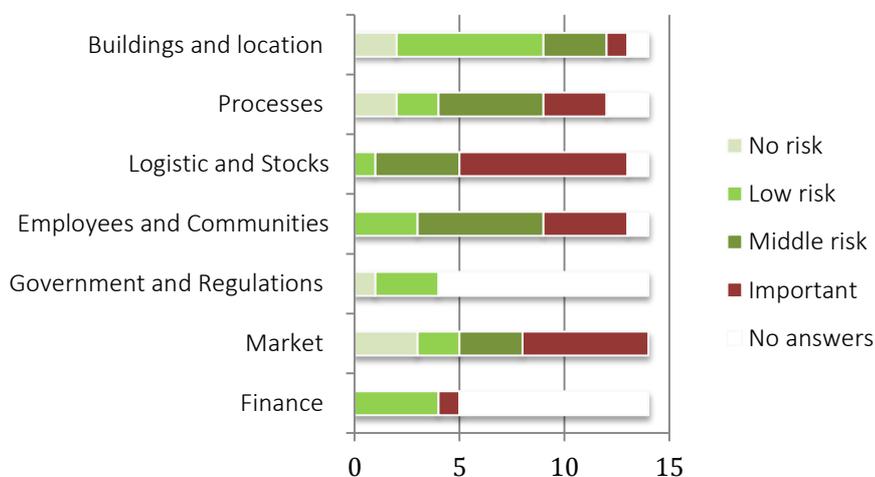
- **More frequent and heavy rains leading to flooding**
- **More frequent and heavy heat waves**
- **Water stress in the region**

How is the Industrial Zone affected by climate change?

Given the geographic location, infrastructure problems and the vulnerability of the key sectors represented in the zone, the exposure of the IZ to climate change is high. Rising temperatures, erratic and heavy rainfalls, as well as more frequent heat waves and severe droughts belong to the most pressing climate phenomena which have negative effects on the site, infrastructures and industrial activity of the zone. Ait Melloul IZ is experiencing frequent floods which have caused problems of logistics, material and infrastructure damages, and blockages of production for some companies. During heat waves, with the electricity overconsumption, there are frequent power cuts disrupting industrial activity and causing lighting cuts and damage to electronic equipment of the company. Given that agro and fish processing industries are very water intensive, the increasing scarcity of water resources in the Souss Massa Region is also putting the industrial activity of the zone at risk, all the more since an increase of water prices is expected. Besides, the competitiveness and sustainability of most of the companies located in the zone are threatened since the supply chains of the agro and fish processing industries are very vulnerable to climate change.

Climate Risks as seen by the enterprises of Ait Melloul (per Impact Areas)

Survey conducted with 14 enterprises



Examples of Climate Risks faced by the enterprises of Ait M. IZ

- Damages of buildings and loss of finished products due to flooding
- Disruption in the supply of agricultural products because of damaged roads
- Decrease of quality and availability of agricultural and fish products (raw material)
- Disruptions in the supply of water and increase of water prices
- Disruptions in the supply of electricity because of power cuts
- Decrease of productivity of workers and absenteeism during heat waves and floods
- Stricter climate-related and env. regulations leading to costly investments

Climate risks

Impact Areas	Identified Climate Risks
Site and layout	<ul style="list-style-type: none"> • Flooding of site leading to damages of infrastructures, buildings, and blockages of industrial activity
Infrastructures and services	<ul style="list-style-type: none"> • Gaps in water supply because of water stress and surexploitation of underwater • Blockages of sanitation networks leading to floodings of roads, enterprise premises, logistical perturbations in the zone • Frequent power cuts during heat waves and floodings leading to blockages of industrial activity and lighting cuts • Difficult access to the zone and blockages of logistic networks following damaged routes in and outside the zone • Risk of water and product contamination because of weak waste management
Enterprises	<ul style="list-style-type: none"> • Disruptions in the supply chain of the majority of companies of the zone • Disruptions in the delivery of products leading to penalties for export industries • Blockages of industrial activity • Material damages (equipment, machines etc.) for companies of the zone • Loss of stocks of raw materials and finished products during floodings
Employees & communities	<ul style="list-style-type: none"> • Absenteeism of employees not able to access the zone • Blockages of collective employee transportation • Decrease of productivity during high temperatures • Risk of insecurity of employees
Market, Finance & regulations	<ul style="list-style-type: none"> • Stricter regulations in the field of water, waste and energy management • Competition of other industrial zones

Adaptation measures

Climate risks	Identified Adaptation Measures for priority risks
Risk of floodings in the IZ	<ul style="list-style-type: none"> • Development of a topographic map of the IZ to identify vulnerability hot spots • Creation of a new water deviation system upstream • Preservation and reforestation of the watershed upstream • Strengthening water infiltration in the IZ (e.g. green zones, pervious pavers) • Improving cleaning and maintenance system of the water drainage system • Installation of a rainwater collection system • Awareness campaign among companies on flood risks, the use of resilient buildings, manual on good practices and available technologies • Include Renewable Energy solutions to reduce the dependency to the grid (e.g. lighting with solar panels)
Increased water stress and risk of disruption in water supply	<ul style="list-style-type: none"> • Baseline study on water consumption within the IZ • Strengthening public-private dialogues on sustainable water management • Installation of a rainwater collection and recycling system • Awareness raising and assistance of companies on the integration of sustainable water management practices
Stricter climate-related regulations	<ul style="list-style-type: none"> • Establishment of a Monitoring and information system on environmental and climate-related regulations and public supports • Providing training and awareness raising on climate change related national/regional legislation for companies • Promotion of renewable energy integration in the companies and IZ

Together with its partners ADIZIA has defined its adaptation strategy. In the context of the PSACC project, an “Adaptation” task force has been created to prioritize the adaptation measures. ADIZIA decided to establish an Environment Committee which, amongst other things, will be responsible for the coordination of adaptation-related activities. The implementation of some measures has already been discussed in the context of the requalification of the IZ.

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