CASE STUDY: ADAPTATION TO CLIMATE CHANGE IN TUNISIA

وزارة البيئة والتنمية المستديمة
Ministère de l'environnement et du développement durable

Geography

- Tunisia covers **163 610 km²**, which makes of it the smallest country of the Maghreb.
- It has a relief relatively contrasting according to the areas and a significant **maritime front (1 298 kilometres)** mainly directed towards the east.
- Its highest peak is **Djebel Chambi** (1 544 meters) and the average altitude is 700 m.
- the Sahara, in the south of the country, covers approximately 40 % of the territory.
- Only **one river** is feeding continuously: **Medjerda** which flows into the Gulf of Tunis.
- Its principal **natural resources** are **oil**, **phosphates**, **iron ore, lead, zinc**, salt and its arable soils.

Climate

- **The climate of Tunisia is influenced by the Mediterranean and Saharan climate: it is in fact divided into 7 bioclimatic areas favourable for a great diversity of husbandries, the great difference between the north and the rest of the country is due to the Tunisian dorsal which separates the areas influenced by the Mediterranean climate from those influenced by the arid climate engendered by the Sahara.**

- **Annual pluviometry varies according to areas:**

about 1 000 millimetres in the north
about 380 millimetres in the centre
about 300 millimetres in the south

The summer season is marked by a significant aridity which is characterised by heat and dryness partly due to the sirocco.

- **The average temperatures for the whole country are 12 °C in December and 30 °C in July. The country also profits from a rate of significant sunshine (exceeding 3 000 hours a year). Temperature may be a few degrees below 0 in winter in the mountains of Kroumirie, and sometimes it can be, in summer, around 50 °C in the shade in the desert areas.**

Tunisia: Main indicators

Year	2004
Population (milions)	9.91
Growth rate (%)	1,08%
life expectincy (years)	72,4
Water - mobilization rate (%)	87,93%
Water treatment (sanitation) - Collected volume (million m3) - treated volume (million de m3) - treatment rate	 200 194 97%
Forestry rate (%)	12,11%
Green spaces' rate (m2 per habitant)	14,5
Connectivity (global) - Electricity - potable Water	 96,4% 95,8%
Connectivity (rural) Electricity	94,3% 88,5%
Water treatment (urbain) - Connected Population (milions) - Connection rate	 5,0 84,5%

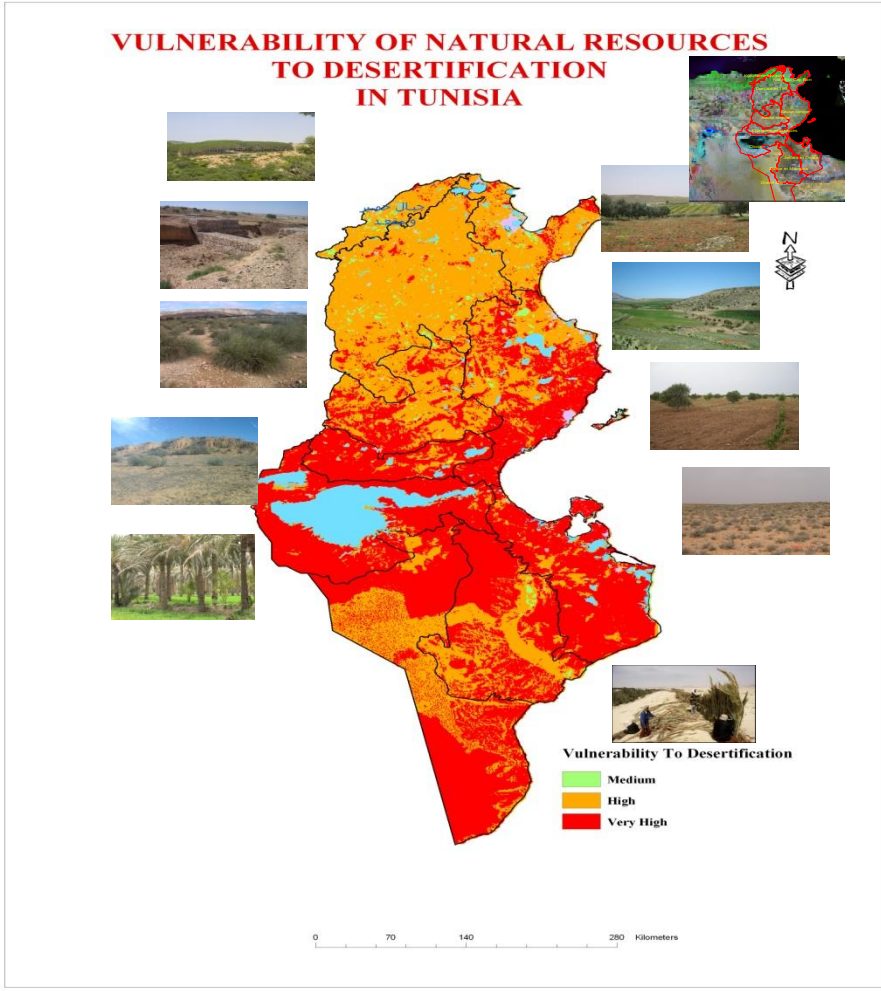
NATIONAL EFFORTS TO PRESERVE THE ENVIRONMENT

In the fields of Addressing Climate Change, Combating Desertification and Preservation of Biodiversity

Desertification

Desertification

Desertification is one of major problems for development in Tunisia, since about 75 % of national area is threatened by land degradation



Desertification

MAIN CAUSES OF DESERTIFICATION IN TUNISIA

overgrazing

Deforestation

DESERTIFICATION

Threatens about 75% of Tunisian area

Soil Salinization

Agriculture practises

Desertification

Main Executions

- ✓ Creation of the National Commission for Sustainable Development in 1993.
- ✓ Elaboration of The Agenda 21 in 1995, with great attention to Natural Resources Management and Coordination with all intervenants for Sustainable Development.
- ✓ Creation of The National council for Desertification and Regional consuls, in 2005
- ✓ Elaboration of the National Action programme to Combat Desertification in 1998.
- ✓ Elaboration of Regional Action Plans to Combat Desertification
- ✓ Elaboration of Local Plans with prioritary projects

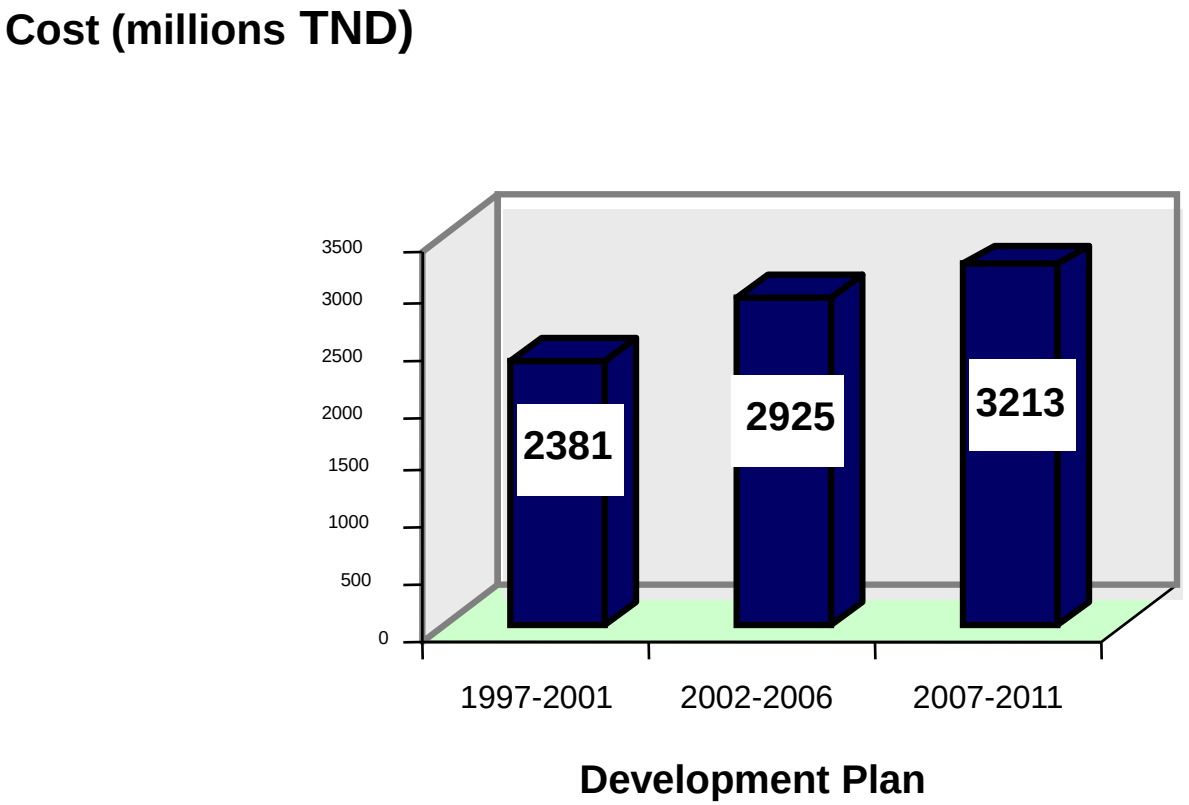
Desertification

Main Objectives of The National Programme for Combating Desertification

- **Reinforcing the Participative approch by more implication of civil society and elaboration of regional and local action plans for Combating Desertification**
- **Implementation of long-term Programs and projects at local, regional and national levels to improve soil production and life conditions.**
- **Strengthen coordination and multi sectorial projects to for natural resources management**

Desertification

Investments growth in the fields of Natural resources Management and to Combat Desertification



Desertification

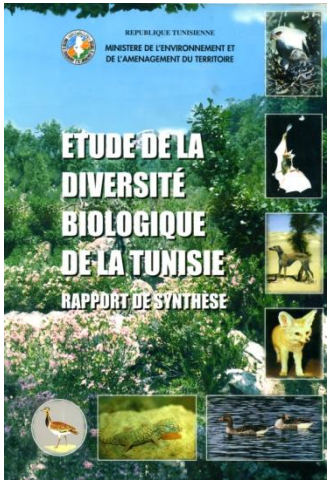
Information Exchange and Monitoring-Evaluation tools

biodiversity

RATIFICATION of UNCBD Convention : 1993

Elaboration of the National 21 AGENDA

NATIONAL INVENTORY



NATIONAL STRATEGY

NATIONAL ACTION PLAN

biodiversity

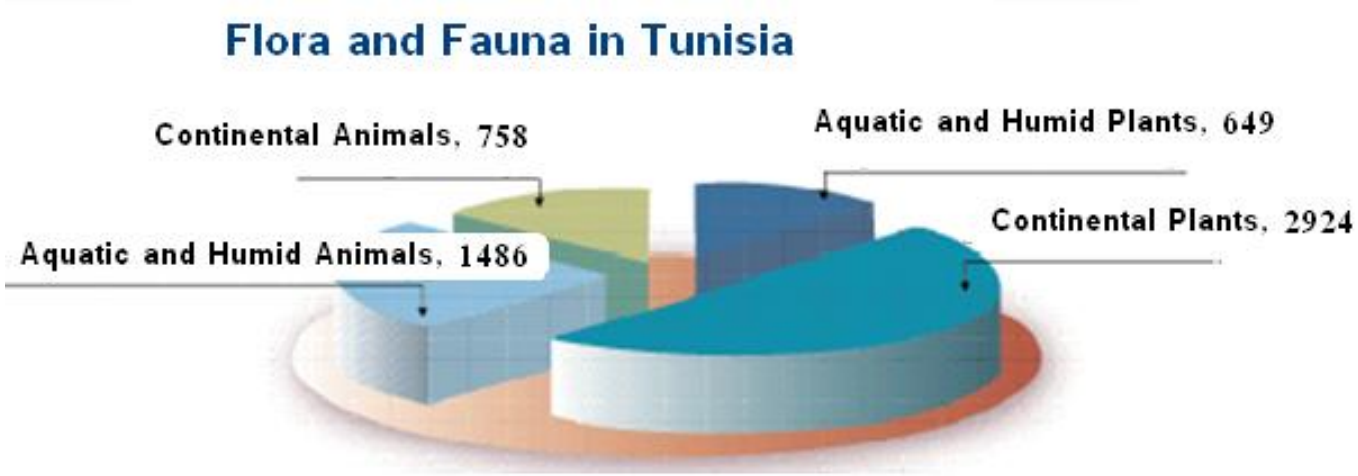
Inventory of about 5820 species :

-About 2340 animal species

- About 3500 plants species.

Elanus caeruleus,

rare specie

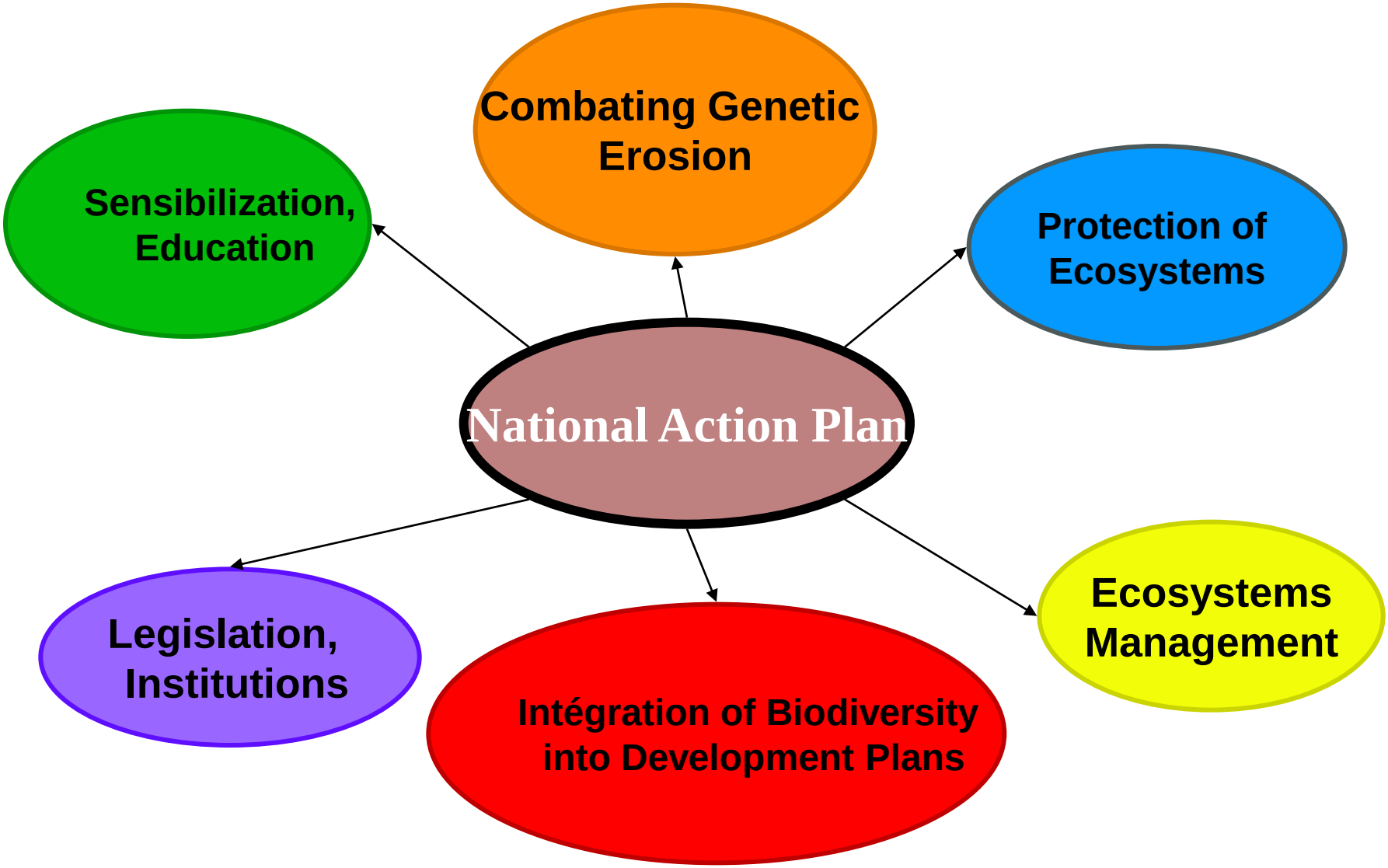


In Tunisia, there are about 320 rare species, 45 threatened vegetal species and 36 threatened animal species

We could distinguish also 42 endemic species

biodiversity

The NATIONAL ACTION PLAN



biodiversity

Main executions in the field of biodiversity protection

Creation of Protected Areas Network,

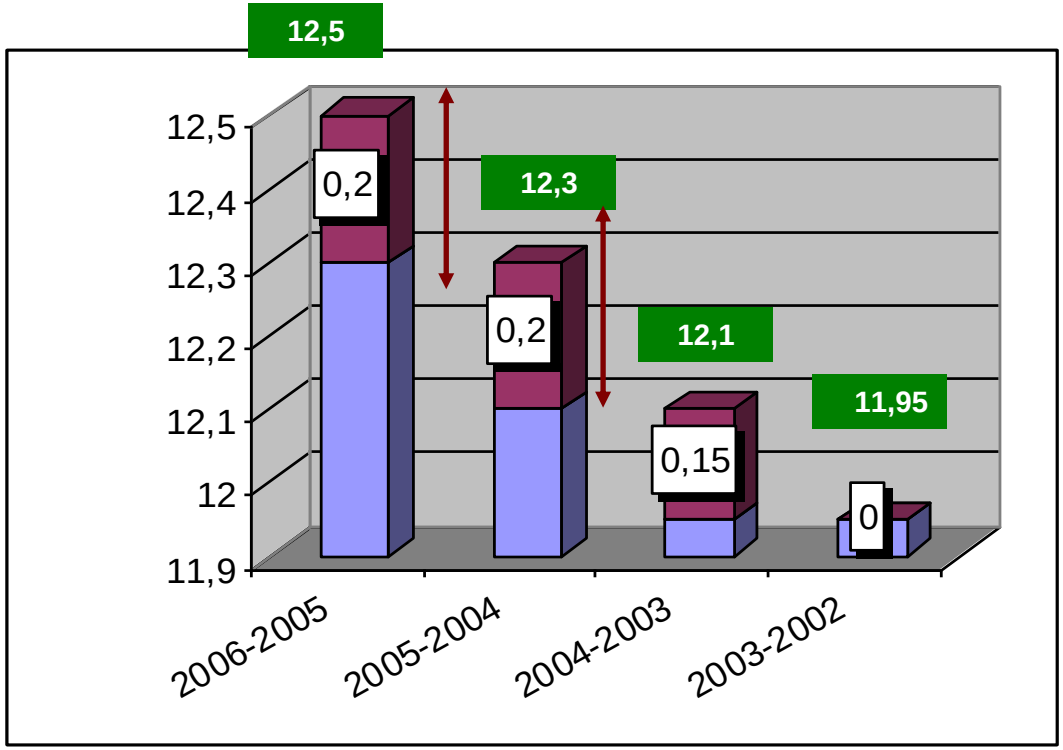
covering about 3% of the total national area.

biodiversity

Main executions in the field of biodiversity protection

Elaboration of the forestry strategy 2002-2012,

and achivement of the afforestation rate of 12.5 % of the national area, with an annual growth rate 0.2 %.



biodiversity

Main executions in the field of biodiversity protection

Promotion of the ex-situ conservation by the creation of the National Bank of genetic resources (2007).

biodiversity

Main executions in the field of biodiversity protection

Promotion of the in-situ conservation by
the implementation of 12 botanic gardens

Climate Change

Tunisia has ratified the UNFCCC in 1993.

Tunisia has adhered to the Kyoto Protocol in 2002

The Tunisian approach as to preventing against the expected impacts of climate change is based on the following principles:

- **Coordination with all international structures and organizations, and contribution in the global efforts to face the climate change issue in the framework of related UN convention and Kyoto Protocol;**
- **Support to institutional framework (e.g. setting up the DNA in 2004);**
- **Elaboration of national communications to the UNFCCC ;**
- **Carrying out studies on the vulnerability of ecosystems and economic sectors to climate change;**
- **Elaboration of action programs on ecosystems and economic sectors' adaptation to Climate Change.**

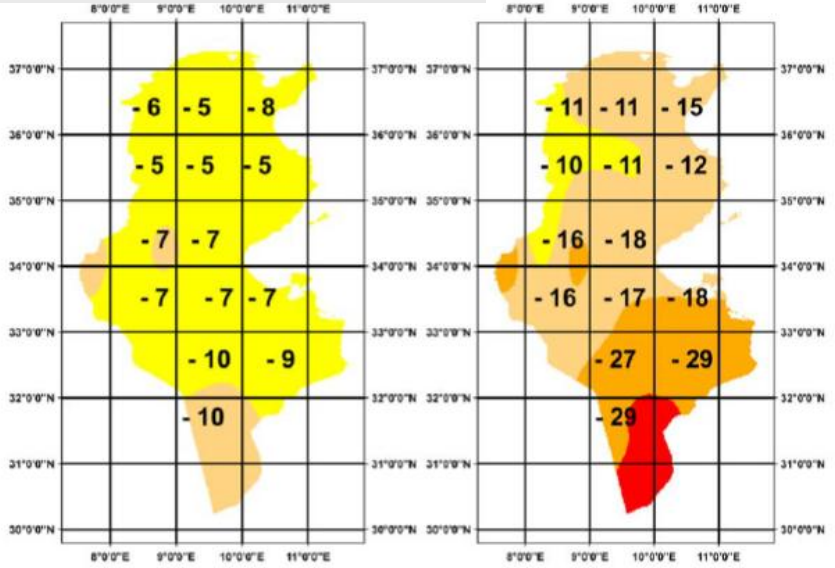
Climate Change

Vulnerability Evaluation

STUDY ON ADAPTATION OF AGRICULTURE AND ECOSYSTEMS TO CLIMATE CHANGE

Rainfall averages will decrease by 5% in the north, 8% in the Cap-Bon and the North-east, and by 10% in the far South by the year 2020.

By 2050, the same forecasts tell of a decrease in average rainfalls to a rate ranging between 10% in the north-west and 30% in the south of the country.



Rates of expected annual average rainfall decrease (in °C) by 2020 (left)
and by 2050 (right), compared to the 1961-1990 reference period

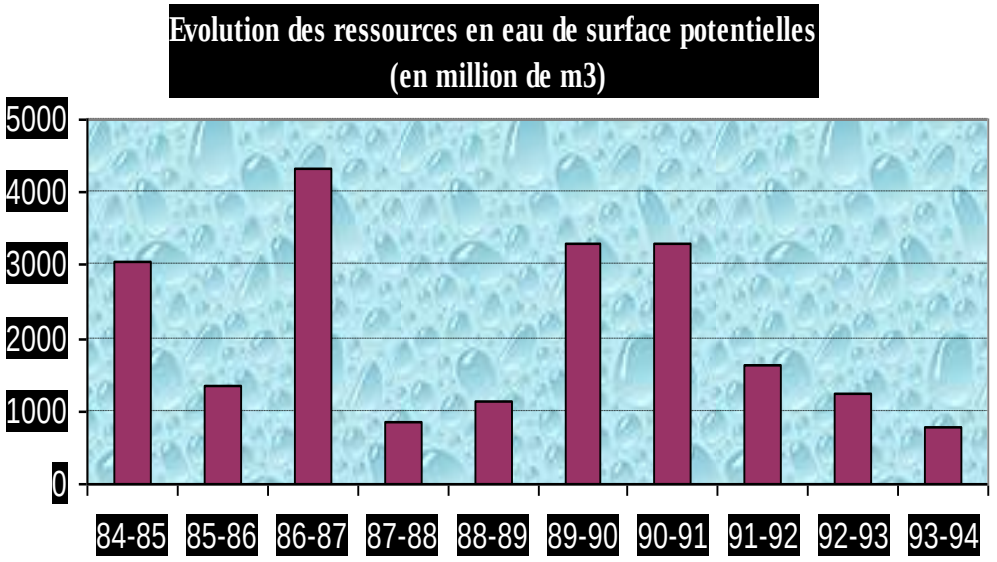
Climate Change

Vulnerability Evaluation

STUDY ON ADAPTATION OF AGRICULTURE AND ECOSYSTEMS TO CLIMATE CHANGE

Climate change in Tunisia may affect **water resources**, **ecosystems and agro systems** (olive oil production, fruit trees, cattle raising, dry cultures) and the economy in general.

The augmentation of the **variabilty of water resources** and frequency of extreme hydrological phenomenons (dry and drough periods)



Climate Change

Vulnerability Evaluation

Coastal Vulnerability

Study on the impact of sea-level rise on marine ecosystems and on the economy of threatened coastline areas

As for the impact of sea-level rise on Tunisia's coastline, the first results of the study demonstrate that a 50-cm sea-level rise by the year 2100 may cause an increase of marine erosion in a number of low coastal areas such as the salt-lakes of the Hammamet Gulf, the Cap Bon and parts of the Ichkeul and Ghar-el-Melh lakes, as well as Kerkennah, Jerba and Kneiss islands.

Climate Change

Vulnerability Evaluation

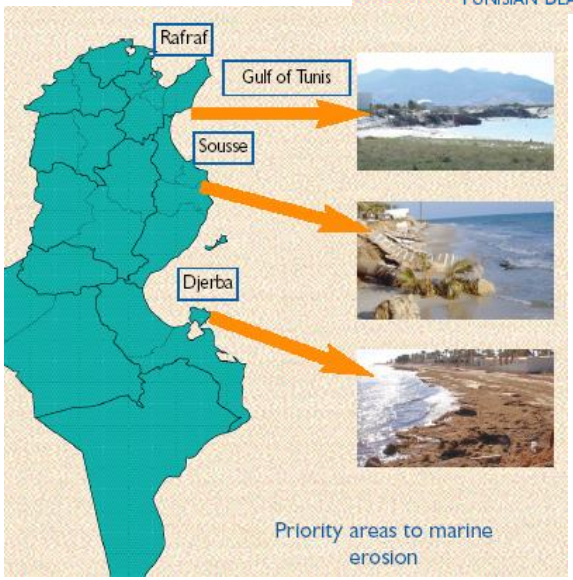
Coastal Vulnerability

These results has led to the **elaboration of the National Marine Erosion Prevention Program**

A study has been elaborated in this respect and has defined 100 km of coastline prone to marine erosion, 40 km of which are priority beaches.

The second part of the interventions will occur during the 11th National Development Plan by means of 'artificial beach feeding'.

SEDIMENTARY CHARACTERISTICS OF TUNISIAN BEACHES



Priority areas to marine erosion

Climate Change

Elaboration of CDM Projects Portfolio (2006-2016)

Potential of GHG Emissions Reductions (2007-2012 period) and estimated revenues (CDM Projects)

	1,000 CO2-TE	1,000 DT (10 US$/CO2-TE)
Energy	8 428	109 564
Waste	5 982	77 772
Industrial processes	2 100	27 303
Forests	430	5 588
Total	**16 940**	**220 227**

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THANK YOU