



**ICID WEBINAR ON
AGRICULTURAL WATER MANAGEMENT STRATEGIES IN
CHANGING SITUATION
71ST FOUNDATION DAY - 24TH JUNE 2020.**

**MANAGEMENT TRENDS FOR PROTECTING
AGRICULTURAL WATER AND COPING WITH
WATER SCARCITY IN MOROCCO**

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ANAFIDE/ MOROCCAN NATIONAL ICID COMMITTEE



**NATIONAL ASSOCIATION OF LAND IMPROVEMENT, IRRIGATION, DRAINAGE
AND ENVIRONMENT
FOUNDED IN 1970**

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IN DECEMBER 2020 IN MARRAKECH MOROCCO**
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PERSONS TO BE ACKNOWLEDGED

- MR AZIZ FERTAH, PRESIDENT OF ANAFIDE**
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- DR ALI HAMMANI DIRECTOR OF HASSAN II INSTITUTE OF
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CONTENT

- GEOGRAPHICAL SITUATION, POPULATION AND CLIMATE
- WATER RESOURCES AND DEMAND INCREASE
- OVEREXPLOITATION OF UNDERGROUND WATER RESOURCES
- GREEN MOROCCO PLAN -GREEN GENERATION STRATEGY
- WATER GOVERNANCE
- IRRIGATION PROGRAMS TO SAFEGUARD WATER RESOURCES – PPP
- CONCLUDING NOTES

Geography, Population: & Climate

- Morocco, located at the extreme northwest of the African continent, has a total area of 710,850 sqkm.
- The total population was almost 35.96 million. Most of the population is concentrated in the northwestern areas.
- The Mediterranean type climate of Morocco is characterized by considerable spatial and temporal irregularity of rainfall. 80% of the country receives less than 400 mm per year.

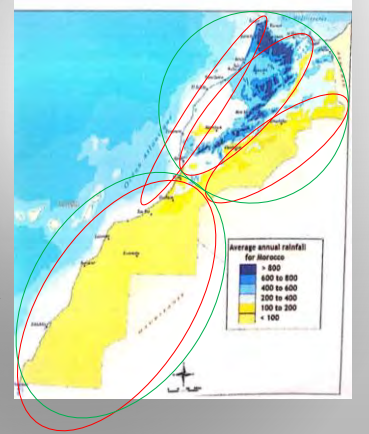
Morocco's territory covers an Area of 700,000 km²

Three geographic regions:

- Mountainous interior
- Atlantic coastal lowlands
- Semi-arid and arid area

Two climatic zones:

- Subtropical in Western and Northern Morocco
- Semi-arid and arid climate in the South



WATER RESOURCES:

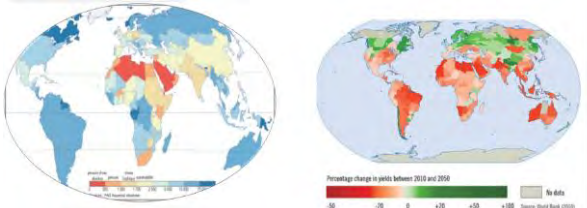
- Surface water resources throughout the country, evaluated on average year to 18 bm^3 , varies considerably according to the year from 5 bm^3 to 50 bm^3 .
- More than half of these resources are concentrated in the north over an area covering 7% of the national territory.
- Groundwater represents about 20% of water resources potential in the country. Morocco now has more than 140 large dams with a capacity exceeding 18 billion m^3 and several thousand boreholes and wells to capture groundwater.
- This has helped secure the drinking water supply and develop a large-scale modern irrigation system (covering close to 1.6 million hectares).

DEMAND INCREASE IN WATER

- Due to population and industrial growth, irrigated agriculture, urbanization, tourism, climate change, Morocco's water resources are becoming exposed to increasing pressure.
- All these resources are submitted to extremely cyclic variations. sharp cycles of drought have important consequences on the national economy particularly in agriculture.
- Water resources are also affected by continuous increase of water needs due to the fast evolution of the population, improvement standards of living, urban and industrial development.

CONTEXTE

- INTENSIFYING WATER SHORTAGE CHANGE
- ACCENTUATED CLIMATE CHANGE



FOOD AND AGRICULTURE

- Agriculture in Morocco is an important economic sector.
- **It's** the largest employer in the country with about 40% of the **nation's** workforce.
- Arable agriculture land is estimated at about 8.7 mha. about 59% of this land is devoted to cereals, 16% to **plantation** crops (olives, almonds, citrus, grapes, dates), 3% to pulses, 5% to forage, 3% to vegetables, 2% to industrial crops (sugar beets, sugar cane) and oilseeds, and 12% was fallow. a large category of farmers carries out traditional subsistence farming on plots of less than five hectares.
- Despite the constraints of irregular rainfall and limited water resources, Moroccan agriculture ensures strategic levels of production allowing coverage rates of the country's basic food needs reaching 100% of fruits, vegetables, meats, milk, and 70% of cereals and 50% of sugar.
- Moroccan agriculture exports various fruits and vegetables for which it has a comparative advantage.

IRRIGATION

- Due to the limited water resources that can be used for irrigation development, the areas under irrigation cover almost 1.6 million ha today.
- The hydro-agricultural developments carried out by the state concerns both the large scale irrigation projects as well as the small and medium irrigation projects distributed throughout the national territory and which play a decisive role in the conservation of natural resources, the development of water resources that are difficult to regulate and in the fight against desertification.
- To these developments carried out by the state are added individual irrigation projects that are developed mainly using groundwater resources.

THE "GREEN MOROCCO PLAN 2008-2020"

- The "Green Morocco plan 2008-2020" agricultural strategy has given a decisive impetus to the control and rationalization of the use of water in irrigation, through the massive development of water-saving irrigation techniques and the promotion of the public private partnership in irrigation. thereby, since 2008, drip irrigation has experienced a very significant growth, from 9% to 38 %currently of the total irrigated area.
- In terms of PPP (Public Private Partnership) in irrigation, 4 projects were contracted over a total area of 33,000 ha during the period 2008-2020.

GREEN GENERATION STRATEGY

- Overall, irrigated areas contribute substantially to the resilience to climate change by stabilizing and diversifying agricultural production. although it covers only 18% of the total arable land of the country, irrigated areas contribute to about 50% of the agricultural added value and about 75% of the exports of agricultural products.
- A new agriculture strategy named **"Green Generation 2020-2030" has just been launched**, which places the human element in its priorities, as well as the promotion of agricultural productivity mainly through improvement of water and energy efficiency, development of the marketing system and introduction of the new technologies and the digitalization of agricultural services.

WATER GOVERNANCE

- A general law on the integrated management of water resources **"law 36-15"** is applied for water governance in Morocco since 2016.
- It provides the relevant policies, institutions, regulations, mechanisms and procedures for integrated water resources management and created the necessary tools for its implementation. the law emphasizes the need for integrated, decentralized, participative management of water, and recognizes the importance of developing planning mechanisms to address water scarcity. ten river basin agencies were created to implement this integrated water management approach at river basin level and to involve civil society and the private sector in water management.

WATER GOVERNANCE

- Agricultural water is governed by a law "code of agricultural investments" which governs the relations between the state and the farmers and which institutes the principle of recovery of the costs of the irrigation water service, the rational management of water and the agricultural development.
- In the basins with high agricultural potential, nine regional agricultural development offices (created since 1966) ensure hydro-agricultural development, management of irrigation networks and agricultural development.
- Recently, a National Board for Agricultural Technical Counselling (Extension) named ONCA has been created to support extension services to farmers and their organizations.

A Holistic water sector reform : Legal and Institutional Frameworks

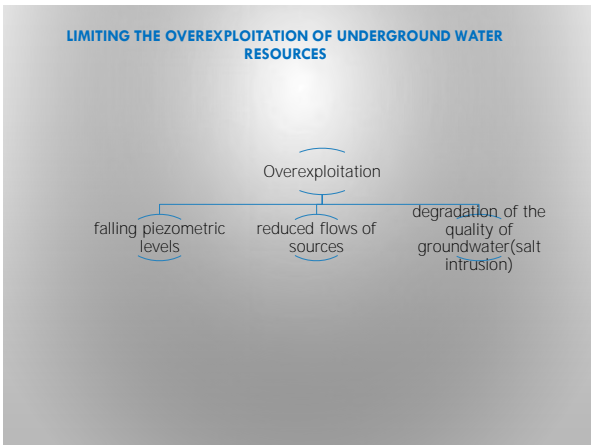
- The water law (10-95) was enacted in 1995 and updated in 2016. Water law 36-15, to consolidate integrated, participatory, and decentralized water resources management. Its major features are :
 - Stipulates that water resources are public property
 - Provides for the establishment of river basin agencies in individual and grouped river catchments
 - Provides for the elaboration of the National Water Plan (NWP) and river basin master plans
 - Establishes a mechanism for the recovery of costs through charges for water abstraction and the introduction of a water pollution tax based on the principles of **"user pays"** and **"polluter pays"**
 - Reinforces water quality protection by defining environmental mandates, sanctions and penalties

Water law 36-15	High Council of Water and Climate
National Water Plan	Interministerial Council of water
Master Plan of Integrated Water Management	River Basin Council
Local plan for Water management	Provincial Commission of Water
Contract of participatory management of water	Water Users

MULTIPLE ACTIONS UNDERTAKEN RELATED TO REDUCE IMPACT WATER SHORTAGE

Various actions are being implemented and developed in the fields of protecting, saving and supplying water for agriculture in rainfed or in irrigated areas, reducing water shortage, promote rational use of water, increased water productivity, valorisation of water. They are carried out by relevant departments and Institutions and include:

Water saving irrigation systems	Recharge of acquifers
Adequate maintenance of irrigation structures and networks	Use of non conventional water for irrigation
New equipped areas for irrigation	Conservation agriculture
Water transfer between regions	Drought resistant crops
Preserving water quality	Adequate cropping systems
Prevent overexploitation of underground water resources	Farmers organisation
Additional water storage structures particularly of small and medium sizes wherever possible in the country	Extension
Rain Water harvesting systems	Technology Transfer
Capacity Building	Research Development



PROJECT UNDER WAYS TO SAFEGUARD IRRIGATION AND DRINKING WATER



Seawater Desalination Project for irrigation in Chtouka- Souss-Massa Region in Southern Morocco

Concluding notes

- Morocco is continuing its efforts towards the completion of integrated water resources reforms. It is adopting a holistic approach through:
 - Developing an enabling environment including adequate policies and institutions (regulations and organisations)
 - Mobilizing the necessary financial resources
 - Fostering greater cooperation between various water subsectors
- **Morocco's** water reform experience offers a range of useful features, covering mainly the new institutional arrangements governing the water sector, with the reinforced role of the High Water and Climate Council as an apex body for national water policy and programmes, and the creation of river basin agencies.
- Moroccan experience developed through accomplishments of GREEN MOROCCO PLAN, PPP can be valued through south south cooperation with other african countries

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