REGIONAL ACTION PROGRAMME (RAP) ON WATER RESOURCES MANAGEMENT: INCLUSIVE ACTIONS TOWARDS WATER SAVING IN IRRIGATED AGRICULTURE

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Water Resources in Arid and Semi-Arid Regions of the Mediterranean

Major problems and constraints

- Water scarcity
- Degradation of water quality
- Growing water demand
- Inefficient water use
- Limited information
- Policy overlaps
- Fragmented management of water between sectors and institutions

Effectively Used by Crop

- Agriculture: 79%
- Public: 13%
- Industry: 8%

ENVIRONMENTAL SECURITY
IRRIGATED AGRICULTURE
WATER SECURITY
FOOD SECURITY

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Water Use Efficiency in Agriculture and Potentials for Water Saving in the Middle East Region

4th World Water Forum
20 March 2006

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Water Resources Dilemma in the Mediterranean Region

Water Demand: Steadily Increasing
Water Supply: No Existing Balance
Fixed and Limited

How to Balance the Water Equation?

Water Savings:
• Improvement of efficiencies and water conservation,
• Reallocation of water supply,
• Economic incentives,
• Water control and preventing losses;
Re-use of new water resources:
• Treated municipal water,
• Saline water,
• Recycling of waste water,
• Conjunctive use of surface and ground water sources.

Increasing the Supply is marginal:
• Most accessible water resources have been developed,
• Investment are currently shrinking,
• Cost of less accessible water will be high and the process is time consuming,
• The environment and human costs of project are enormous,
• Very little can be done.

The solution

Water saving in all the sectorial water uses and, in particular, in irrigated agriculture, the largest consumer of water (80%) and with major losses (55%)
Regional Action Programme on “Water Resources Management”

**Actions**

- **social**
  - Participatory Irrigation Management (PIM) and Water User Associations (WUAs), Gender Mainstreaming

- **technical**
  - Use and reuse of non-conventional water resources
  - Increase of irrigation water use efficiency
  - Optimisation and management of collective irrigation systems

- **economic**
  - Allocation efficiency and Water valuation

**Capacity Building**

- Institutional improvement
- Human Resources Development (HRD)
- Regional cooperation
Regional Action Programme on “Water Resources Management”

The programme covers 10 Southern Mediterranean countries:

- Morocco
- Tunisia
- Algeria
- Egypt
- Jordan
- Syria
- Lebanon
- Turkey
- Malta
- Cyprus
Regional Action Programme on “Water Resources Management”

- the first phase (1998-2000), coordinated exclusively by Bari Institute
- the second phase (2000-2002), decentralization of the activities towards Southern Mediterranean Institutions (National Water Research Center, Cairo, Egypt)
Regional Action Programme on “Water Resources Management”
Outputs and Results

1. Training – Advanced Short Courses
2. Master of Science Mobility Programme
3. Cooperative Research Networks
4. Logistic Support/ICT Activities
5. Aid to Decision Making
Regional Action Programme on “Water Resources Management”
Outputs and Results

1. Training – Advanced Short Courses

Twelve advanced short-term courses were carried out:

- agricultural water demand management,
- use of non-conventional water resources in irrigation,
- water use efficiency and water productivity,
- Geographical Information Systems,
- crop growth modelling,
- water distribution modelling.

The emphasis was given not only to the technical aspects, but equally so, to social, economical and environmental aspects, the major components of integrated water resources management approach.

The participants in the courses (347) belong to 15 Mediterranean countries and 3 other countries (Iraq, Sudan and Yemen).

Professional profile of the participants
Regional Action Programme on “Water Resources Management”
Outputs and Results

2. Master of Science Mobility Programme

In cooperation with 12 eminent Mediterranean Institutions:
From Egypt:
1. National Water Research Center, Cairo
2. Central Laboratory for Environmental Quality Monitoring, Kanater
3. Drainage Research Institute, Cairo

From Italy:
4. University of Catania
5. University of Trieste
6. National Research Center - CNR, Bari
7. Polytechnics of Bari

From Lebanon
8. Saint-Esprit de Kaslik University, Beirut
9. ESIAM, Tamail

From Morocco
10. IAV Hassan II, Agadir

From Tunisia
11. INAT, Tunis

From Turkey
12. Cukurova University, Adana

The MSc mobility programme resulted in
South-South Cooperation
South-North Cooperation
Regional Action Programme on “Water Resources Management” Outputs and Results

3. Cooperative Research Networks

3 Sub-Networks:
- Non-conventional Water Resources Management (NWR);
- Water Use Efficiency (WUE); and
- Collective Irrigation Systems (CIS);

which aims to promote:
- sustainable use of non-conventional water resources, including brackish and treated wastewater and re-cycled drainage water;
- increased crop water use efficiency and productivity in irrigation - more crop per drop;
- improved water distribution management and performances of irrigation systems.

The 3 Sub-Networks were integrated within one umbrella of the WASIA project: WAter Saving in Irrigated Agriculture
Regional Action Programme on “Water Resources Management” Outputs and Results

4. Logistic Support / ICT Activities

Aims at the implementation of an Internet-based “Information System” to promote exchange and dissemination of scientific and technical information in the Mediterranean region through:

1. Installation of a web server at the National Water Research Center (Cairo, Egypt);
2. Supply of 2 internet workstations to the IAV Hassan II – Centre Horticole (Agadir, Morocco);
3. Supply of an info-network to Lebanese Agricultural Research Institute (LARI) (Bekaa valley, Lebanon).
General objective:

- to develop a conceptual framework for water saving in agriculture through the integration of
  - Water Use Efficiency in cropping practices (WUE),
  - Irrigation Systems Performances (ISP), and
  - Use of Non-conventional Water Resources (NWR)
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WATER SAVING IN IRRIGATED AGRICULTURE

WASIA project

7 Research Themes, 8 Different Locations in the Mediterranean Region

- Ghezala Irrigation District, Tunisia
- Tarsus Res. Institute, Turkey
- South-east Anatolian Region, Turkey
- Agadir, Morocco
- INAT, Tunis, Tunisia
- ICARDA, Aleppo, Syria
- Nile Delta, Egypt
- ICARDA, Tunis, Tunisia

South-east Anatolian Region, Turkey

INAT, Tunis, Tunisia

Nile Delta, Egypt

Agadir, Morocco

Ghezala Irrigation District, Tunisia

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ICARDA, Aleppo, Syria

INAT, Tunis, Tunisia

7 Research Themes, 8 Different Locations in the Mediterranean Region

WATER SAVING IN IRRIGATED AGRICULTURE

WASIA project
Regional Action Programme on “Water Resources Management”

Conclusion

Signatories:

Tunisia
- Min. of Agric.
- INRAT, Ariana
- IRESA, Tunis
- INAT, Tunis

Algeria
- Min. of Agriculture
- IAV Hassan II, Rabat
- IAV Hassan II, Agadir
- INRA, Settat
- MAAE, Rabat
- INSID, Alger

Morocco
- Ministry of Agriculture
- IAV Hassan II, Rabat
- IAV Hassan II, Agadir
- INRA, Settat
- MAAE, Rabat

Italy
- Bari Univ.
- Polytechnics of Bari
- Catania Univ.
- Foggia Irr. Consortia
- Univ. Of Trieste
- CNR - Bari

Egypt
- Min. of Water Res. and Irrigation
- Min. of Agriculture
- ARC
- NRC
- CLEQM

NWRC - Cairo

Turkey
- Cukurova Univ.
- Karahmanmaras Univ

Cyprus
- Min. of Agric.
- ARI, Nicosia

Malta
- Min. of Agric.
- Inst. Water Tech.

Lebanon
- Min. of Agric.
- NRC, Beirut
- LARI, Beirut
- ISIAM, Tamail
- Sant-Esprit de Kaslik Univ.

Jordan
- Amman Univ.

Syria
- Min. of Agric.
Regional Action Programme on “Water Resources Management”

Concluding Remarks

The activities carried out within the frame of the Water Resources Management Network have contributed in the generation of new programmes and activities, an indicator of the successful outputs generated by RAP-WRM.
In order to move from WATER SCARCITY to WATER SECURITY, the following Local Actions should be generalised to the whole region:

1. Collect, treat and reuse every single drop of wastewater and drainage water;
2. Increase the Water Use Efficiency (more “crop per drop”) through:
   - the use of modern irrigation systems (sprinkler irrigation, drip irrigation),
   - Deficit irrigation,
   - Supplemental irrigation,
   - Water harvesting.
3. A more efficient, equitable water allocation through the use of new technologies for water distribution at farm-level (AcquaCard).
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Thank You