

**Developing Strategies  
for Regulating and Managing Water Resources and Demand  
in Water Deficient Regions**

**(WaterStrategyMan)**

**Kick – Off Meeting**

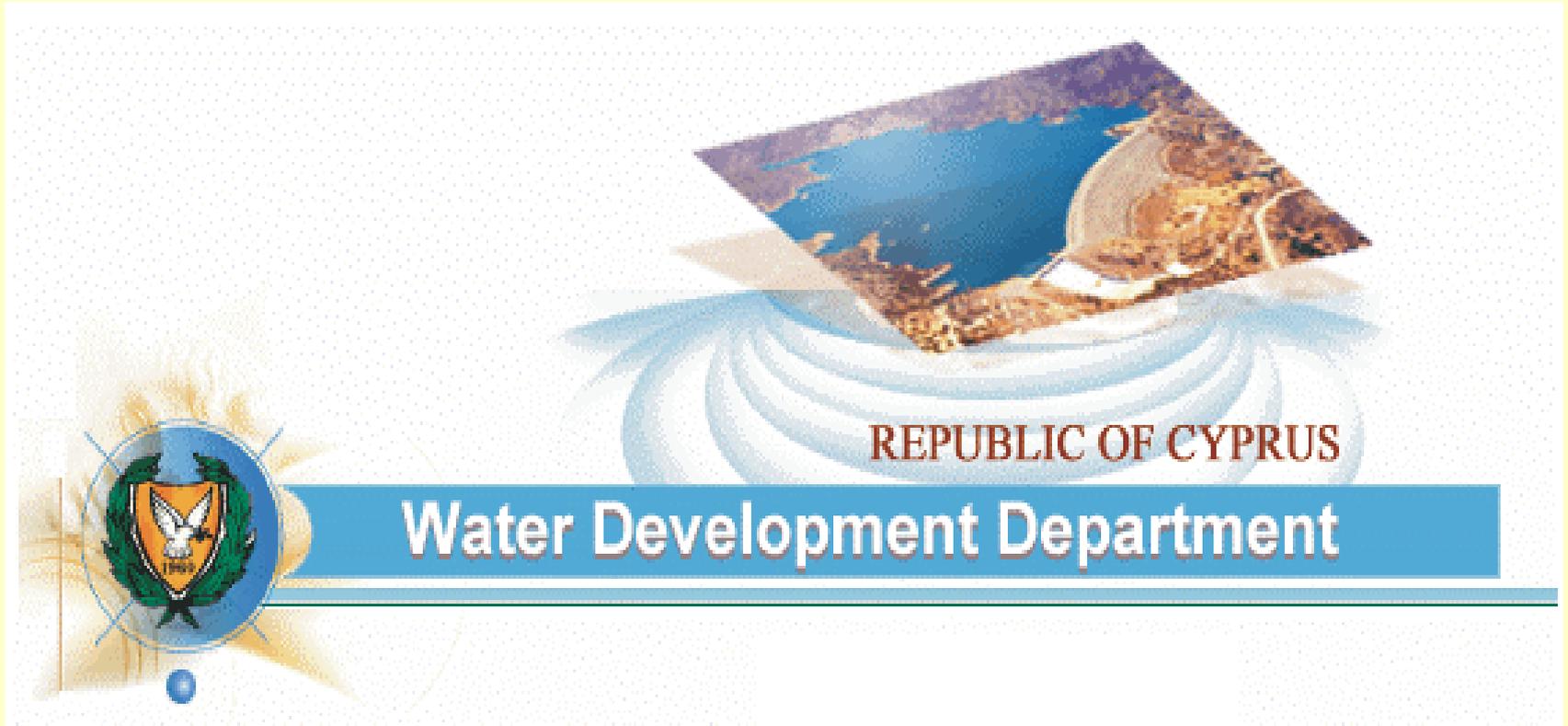
**Athens, 6-9 February 2002**

**Presentation**

**By**

**THE WATER DEVELOPMENT DEPARTMENT (Partner 6)**

# THE INSTITUTE



**MINISTRY OF AGRICULTURE, NATURAL RESOURCES  
AND ENVIRONMENT**

# Establishment of WDD

- ❖ **1896: Section of Public Works Department (Domestic and Irrigation supplies)**
- ❖ **1939: Water Supply and Irrigation Department (Independent Government department)**
- ❖ **1954: Renamed to Water Development Department**
- ❖ **1960: Under Ministry of Agriculture, Natural Resources and Environment (restructured with responsibility for implementation of Government's water policy of the new Republic)**

# Responsibilities of WDD

- ❖ **Implementation of Water Policy of MANR&E**
  - ❖ **Rational development and management of water resources**
  - ❖ **Collection, processing and classification of hydrological, hydrogeological, geotechnical and other data**
  - ❖ **Study, maintenance and safety of water development works**
  - ❖ **Study, design, construction, operation and maintenance of works (dams, ponds, irrigation, domestic water supply, sewerage schemes, water treatment plants, sewerage treatment, desalination plants)**
- 
- A large dam structure with water flowing through its spillways. The dam is a concrete gravity dam with multiple spillways. The water is a deep blue color, and the dam structure is a light brown or tan color. The background shows a hilly landscape with some vegetation.

# Organizational structure of WDD

## Divisions of:

- > Water Resources
  - > Hydrology
  - > Planning
  - > Design
  - > Management – Operation & Maintenance of Gov. Water Supply systems
  - > Rural Projects Planning and Design
  - > Sewage and Re-use
  - > Construction
  - > Management – Operation & Maintenance of Irrigation Systems
  - > Telemetry
  - > Electro-Mechanical Services
  - > Four Regional Offices
- 
- A large, multi-bladed windmill structure, likely a water pump, set against a blue sky and a field. The windmill has a tall central pole and many blades radiating from the top. The background shows a clear blue sky and a brownish field or plain.

# Personnel of WDD

- ✓ **Director**
- ✓ **Three Chief Water Engineers**
- ✓ **Eleven Heads of Divisions**
- ✓ **Three District Engineers**
- ✓ **50 Qualified Officers (Civil, Topographers, Hydrologists, Geologists, Chemists, Sanitary, Mechanical, Electrical etc.)**
- ✓ **More than 300 Technicians**
- ✓ **766 temporary laborers of all trades**
- ✓ **Some 30 clerical and accounts staff**
- ✓ **Occasional U.N. experts and Foreign Consulting Firms**

# **Current Basic Water Policy (WDD)**

**(under conditions of drought)**

**Desalination of sea water**

**Re-use of tertiary treated effluent (irrigation, artificial recharge)**

**Efficient use of available water resources**

**Improved water conservation programs (use of water pricing)**

**Water Demand Management**

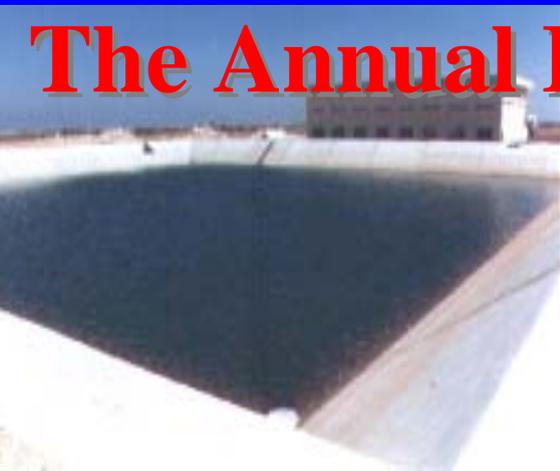
**Establishment of a Water Entity (for effective management)**

**Development of remaining water resources (dams – by 2015)**

# Annual Budget of WDD



The Annual Budget is 135 to 170 million Euros



✓ More than half goes to new Projects

✓ Remaining for Operation, Management & Maintenance



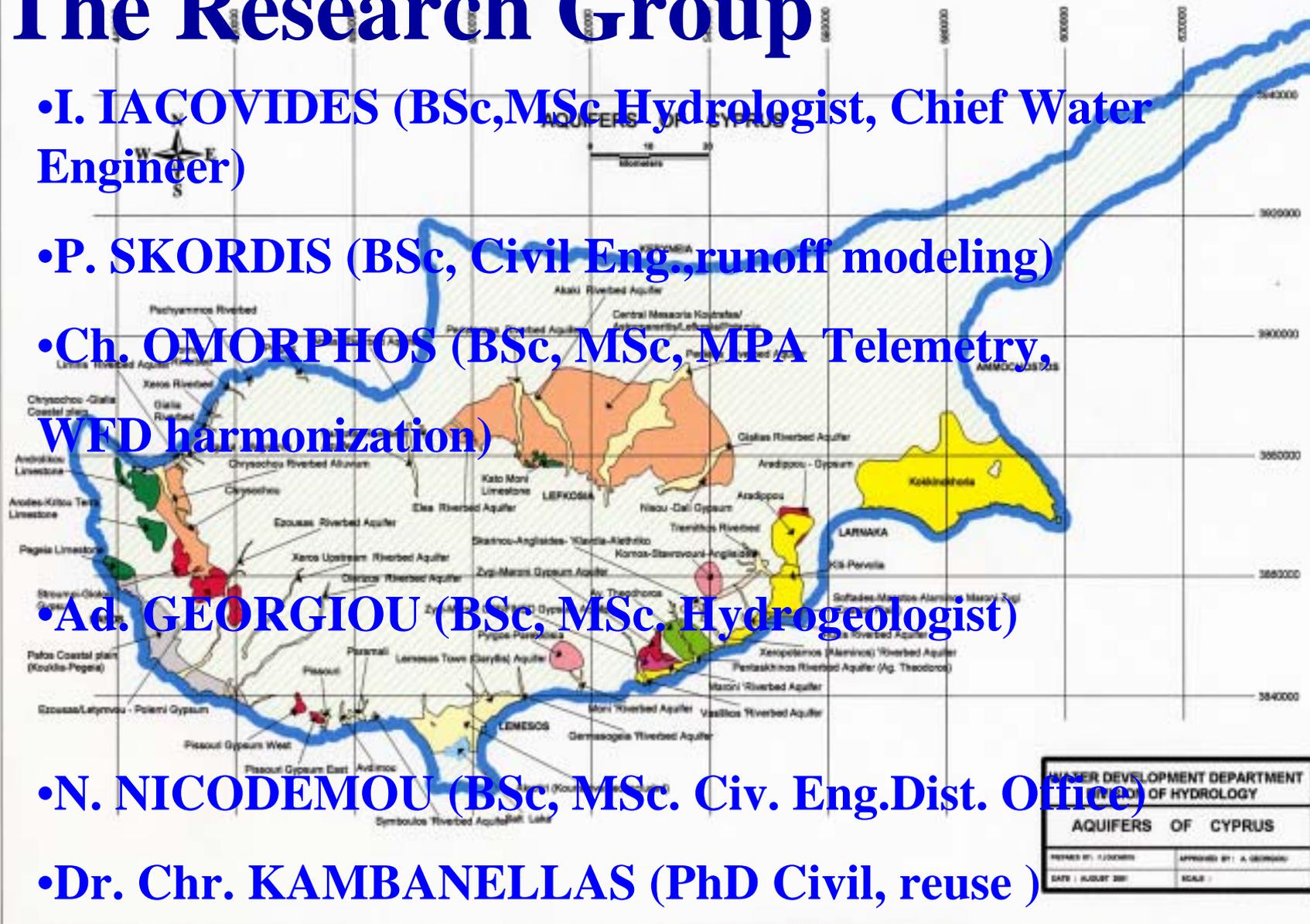
# Expertise of WDD

- Managing water **resources under semi arid** conditions
- Rational distribution of water resources under water scarcity
- Information on water availability and use
- Water development works (dams, ponds, **artificial recharge**)
- **Aquifer management and performance**
- **Use of non-conventional resources**
- Conjunctive use schemes
- Inter-basin water transfers
- **Water conservation programs**



# The Research Group

- **I. IACOVIDES** (BSc, MSc Hydrologist, Chief Water Engineer)
- **P. SKORDIS** (BSc, Civil Eng., runoff modeling)
- **Ch. OMORPHOS** (BSc, MSc, MPA Telemetry, WFD harmonization)
- **Ad. GEORGIIOU** (BSc, MSc. Hydrogeologist)
- **N. NICODEMOU** (BSc, MSc. Civ. Eng. Dist. Office)
- **Dr. Chr. KAMBANELLAS** (PhD Civil, reuse )



# Work related to Project (1)

flowstation Legend

Point

Coast\_Ody\_PLLine Legend

Line

Grid10sec Legend

Region

Region

Coverage: Flowstation (with SIC)

Some station positions were slightly changed to represent the correct positions (Coordinates)

- Experience of last 42 years on study, implementation and monitoring water resources

- Feasibility, design, construction operation of water works and aquifers

- Demand evaluations

- Extensive records on rainfall and runoff

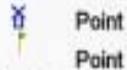
- Modeling

- Water demand management



# Work related to Project (2)

## rainstation Legend



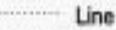
Point  
Point

## Coast\_Ody\_PLLine Legend



Line

## Grid10sec Legend



Line

## Border Legend



Region

Coverage: Rainstation (with Station Numbers)

The stations displayed with red flags were added by G. Doerflinger and are not present in the rainstation-coverage from Frini

- **Current re-assessment of water resources and demand**
- **In stream of non-conventional water resources**
- **Water management under water deficient conditions**
- **On going effort to harmonize with EU (WFD)**
- **Annual scenarios for rational allocation of water**
- **Water conservation and efficiency in use programs**



# **Role in the Project (1)**

## **Goal of the Project:**

**To develop/ evaluate strategies for regulating/ managing water resources and demand in S.E. European water deficient regions**

## **Through the development of:**

- **methodology and tools**
- **guidelines and protocols of implementation for decision makers**

## **And to:**

- **Assess wide range of Integrated water management options**
- **Select and implement schemes for full water cost recovery**

# Role in the Project (2)

## Scientific Objectives and Approach of the Project:

- Typology of water deficient regions
- Integrated Water Management within WFD
- Methodology and tools
- DSS as integral part of methodology
- Case studies as paradigms for approach
- Management Options for each paradigm (economic and Environmental costs)
- Feedback for improved strategies
- Guidelines / protocols for WFD implementation

## **WP 0: Horizontal Activities (1 m/m)**

**WDD contributes to coordination**

- participates in meetings / workshops**
- supports clustering with other projects**

## **WP 1: Existing conditions (0.5 m/m)**

**WDD prepares report on existing conditions (water resources, supply, use, management policies for CYPRUS)**

- Present water availability and use patterns – identify water deficiency and management inadequacies**
- Identify representative water deficient watershed**

# **WP 2 Workshop: Existing Conditions (0.25 m/m)**

**WDD Participates and presents results of WP 1**

# **WP 3 Typology for water deficient Paradigms (0.5 or 0.75 m/m)**

**WDD selects case study watershed to serve as paradigm**

**- Prepares information for typology of water problems**

# **WP 4 Water allocation scenarios / management options in Paradigms (0.5 m/m)**

**WDD, under Task 4.4 “Determining Best Approach”**

**will support WP leader in analyzing /comparing  
scenarios for Cyprus Paradigm**

# **WP 5 Water management tools – D.S.tool**

**WDD not involved. WDD provides working experience  
rainfall/runoff modeling**

**Dynamic programming for conjunctive use**

## **WP 6 GIS database for Paradigms (0.5 m/m)**

**WDD collects /provides information on water resources and demand  
for identified paradigm for GIS database for DSS**

## **WP 7 Workshop /Training on methodology & tools (0.25 m/m)**

**WDD will participate in workshop and  
will contribute to the Analysis Phase**

# **WP 8 Developing/Testing Alternative Water Allocation Paradigm scenarios (1.75 m/m)**

**WDD under Task 8.1 reviews proposed/existing water management plans in Cyprus paradigm**

- develops base-case scenarios for comparison (1m/m)**
- under Task 8.3 evaluates alternative scenarios for Cyprus paradigm (0.75 m/m)**

# **WP 9 Formulation/Evaluation Alt. Water Mgmt (cost recovery strategies) (0.5 m/m)**

**WDD proposes alternative water management strategies for identified paradigm – case study**

# **WP 10 Guidelines/Protocols for improved strategies as per Paradigms (0.5 m/m)**

**WDD provides critical judgment and evaluation of developed strategies as they apply to Cyprus paradigm and water conditions**

# **WP 11 Integrated Water Mgmt Protocols for water deficient regions (0.75 m/m)**

**WDD will assist in compilation of strategies/protocols especially for water deficient regions such as CYPRUS**

## **WP 12 Elaboration of results for Publication**

**VDD will have minor contribution if requested**

## **WP 13 Seminar- Project methodology / results- Discuss Management strategies with decision-makers (5 m/m)**

**VDD organizes the event (identifies/contacts speakers –**

**participants specifies seminar activities, draws final program**

## **WP 14 Decision-Makers Information/ train (1 m/m)**

**VDD disseminates information on Project results**

**-provides in-situ training in Cyprus**

# **In SUMMARY:**

**WDD (Partner 6) will**

- assist AEOLIKI (Partner 8) in the realization of the paradigm study in CYPRUS;**
- organize the Seminar for results dissemination, and**
- be involved to various levels in the remainder of activities**

**THANK YOU FOR YOUR ATTENTION**

**AND WISHES FOR**

**EVERY SUCCESS WITH THE PROJECT**