



Sustainable Water
Integrated Management (SWIM) -
Support Mechanism



Project funded by
the European Union

Water is too precious to waste

Title: REGIONAL ASSESSMENT FINDINGS

**SWIM-SM Water Users Associations' Regional Expert Group
Workshop, 23 & 24 April 2012, Athens, Greece**

Presented by: Nicola LAMADDALENA & Roula KHADRA, CIHEAM Bari Institute



Participatory Irrigation Management (PIM)

Involvement of irrigation users in all aspects and at all levels of irrigation management.

Irrigation Management Transfer (IMT)

Transfer of irrigation systems from public organizations (Gov'ts) to WUAs.



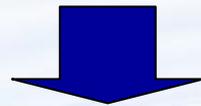
Background



Different priorities: Government vs. Water Users

Conflicting objectives of two main stakeholders:

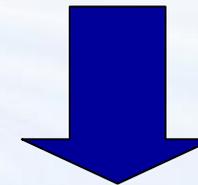
GOVERNMENT



Government

- Reduce the burden on national budget by shifting responsibility for O&M to the users
- Promote efficiency and economy in water use

WATER USERS



Farmers

- Reliable water supply
- Low water delivery costs
- Increase Income





The vicious cycle

GOVERNMENT HAS LIMITED RESOURCES
PRIORITY GIVEN TO
INFRASTRUCTURE DEVELOPMENT
RESULTS
LIMITED RESOURCES FOR MAINTENANCE

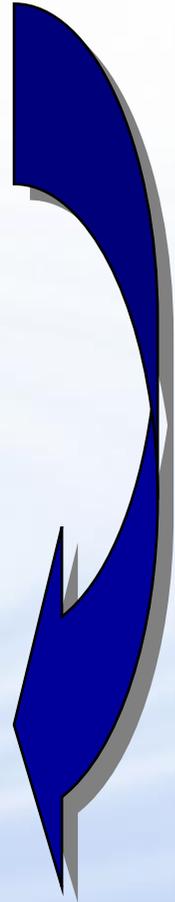
FARMERS ARE NOT
SATISFIED WITH
SERVICE

THEY ARE RELUCTANT
TO CONTRIBUTE TO
THE SYSTEM
MANTAINANCE

SYSTEM DETERIORATION

LOW PERFORMANCE

UNRELIABLE WATER
SUPPLY





- Starting in mid 1960s, reforms peaked in 1990s
- More than 57 countries have embarked on some kind of irrigation reform involving IMT/PIM
- Yet, comprehensive review of impact of IMT/PIM is scanty
Vermillion 1997 and FAO 2007
- Our review considers the 9 PCs and 4 case studies



MAIN FEATURES OF THE WATER/IRRIGATION REFORMS In PCs

- **ALGERIA:** structural (decentralization) and regulatory reform (water pricing and cost recovery) – Engineering approach still prevails
- **SYRIA:** Recent policies oriented toward demand management - The Water Law (October 2005) indicates the establishment of Water User Associations as a legal entity for O&M of irrigation systems – Slow implementation
- **Palestinian Territories:** The main driver of any reform would be the progress of the Israeli-Palestinian negotiations to recognize Palestinian rights; Pilot experiences on PIM mainly driven by farmers necessity to self-organization
- **Lebanon:** The water sector is organized but not really managed; reforms implementation proceeding slowly; Farmers filling the gaps of the legal framework adopting the cooperative model



MAIN FEATURES OF THE WATER/IRRIGATION REFORMS In PCs

- **EGYPT:** shifting of transfer to hydraulic levels higher than mesqa is still struggling; lack of: legal framework, re-orientation of agency mandate, capacity building and M&E of the implemented pilot projects
- **JORDAN:** policies oriented toward demand management and PPP; however lack of: legal framework, re-orientation of agency mandate, capacity building and M&E of the implemented pilot projects
- **MOROCCO and TUNISIA:** Mature water sector; decentralization and transfer are national strategies; WUAs are legally established and still in evolution; continuous E&M are a must; sustainability is a concern
- **ISRAEL:** Centralized system with clear objectives, strategies, water code and legislations; effective PPP; Limited delegation of Authorities to Regional WUAs;



Discussion points

- Clear definition of strategic objectives for the introduction of PIM approaches
- Clear definition of Expected Outputs
- Focus on social capital (human resources & institutional reform) or on physical capital (hardware & engineering works)?
- Implementation of IMT by public or private sector (use of government staff or consultancy teams)?
- What criterion should be used in assessing overall performance of PIM approaches?

Institutional sustainability over time

Economic efficiency

Water use efficiency

Equity of distribution

Accountability of officials/institutions

Environmental impact -----



SUCCESS IMT/PIM

IMT/PIM intervention is successful when there is a marked improvement after transfer or transferred systems fare better than non-transferred ones because users receive an adequate and reliable supply of water at reasonable and affordable rates over a sufficiently long period of time enabling them to increase their crop production, productivity and incomes?????



FACTORS MOTIVATING REFORMING

Factors	Countries where factor is	
	Most Important	Second Most Important
Part of general policies of government (Modernization)	Israel, Tunisia	Jordan, Egypt
Donors and International Agencies	Egypt, Jordan, Morocco	Lebanon, Syria
Poor O&M of irrigation systems	Algeria, Syria	Egypt, Jordan, Morocco
Farmers requested to take over management of schemes	Lebanon, Palestine	Egypt
Financial autonomy	Tunisia	Morocco



ENABLING ENVIRONMENT: INSTITUTIONAL FRAMEWORK AND LEGAL RIGHTS

	<i>A</i>	<i>E</i>	<i>I</i>	<i>J</i>	<i>L</i>	<i>M</i>	<i>P</i>	<i>S</i>	<i>T</i>
Political support provided for IMT	N	Y	---	Y	Y	Y	---	Y	Y
Specific legal framework for IMT/WUA	N	---		N	N	Y	N	N	Y
Purposes specified by law	N	Y		N	N	Y	N	N	Y
Policy to re-orient the mandate of the irrigation agency	N	N		N	N	---	N	N	Y
WUA has water use right	N	N		N	N	N	N	N	N
WUA has bank accounts and can make contracts	N	Y		---	Y	Y	N	N	Y
Voting rights	N	Y		Y	Y	Y	Y	Y	Y
Membership is voluntary	Y	Y		N	Y	Y	Y	Y	Y



AUTHORITY TRANSFERRED

Function devolved	countries where authority is devolved		
	Fully	Partially	Not at all
Level	Tunisia	Morocco, Egypt	----
Operations	Morocco Tunisia	Israel, Jordan	----
Maintenance	Morocco Tunisia	Israel, Jordan	----
Finance O&M	Morocco, Tunisia	Israel	----
Can apply sanctions & resolve disputes	Israel	Morocco, Tunisia	----
Recovery of Capital Costs of Irrigation projects Rehabilitation/modernization	----	Syria ¹	----

1) Capital costs of irrigation projects are fully recovered in Syria. Since 1997, the capital cost of construction of new irrigation projects and rehabilitation of existing projects has been recovered by the Government from the farmers over 30 years without interest (Decree No 7, related to water law, 1984).



PROBLEMS AND CONSTRAINTS

	Countries
Resistance to IMT by agency	Egypt, Jordan ²
Politicians resist IMT	Algeria, Egypt, Syria, Lebanon
Difficult for govt. to finance IMT	Egypt, Jordan, Tunisia, Lebanon
Weak legal framework for IMT	All except Morocco, Tunisia and Israel
Weak financial/organizational capacity to train WUA	Egypt, Jordan, Lebanon
Weak techn. & mngt capacity of WUA	ALL
Inadequate fee system and/or collection for O&M	All except Israel, to a lesser extent Tunisia and Morocco
Farmers resist IMT	Jordan, Lebanon
WUA can not apply sanctions	All except Israel and Morocco (partially)
Conflicts among users	Jordan, Egypt...

2)only at the starting of the process due to untrust; this drastically changed during implementation



THE FOUR CASE STUDIES



EGYPT:

The irrigation system in Egypt is very extensive and consists of four basic levels:

- Main canals off-take from the Nile;
- Secondary canals off-take from main canals (district);
- Tertiary (branch) canals off-take from secondary canals;
- On-farm systems (mesqa's) off-take from branch canals

RASH EL GHARB WATER BOARD – DISTRICT LEVEL

5000 acres irrigation scheme

580 users: 400 fresh graduates irrigation and rural engineers; 180 investors.

- Diversified cropping pattern
- Representative Assembly: 52 members
- Executive Committee: 11 members
- Characteristics: internal regulations; action plan;

Achievements:

- i) establishment of a very strong network of allies in the MWRI and other stakeholders in the area thus becoming a notable stakeholder
- ii) organization of the rotations at the canal and fruitful cooperation with the district engineer
- iii) tackling residential problems - insect infestation, sewerage disposal
- iv) self-financing and execution of maintenance works in coordination with the MWRI.



JORDAN: PUMP 55 AREA ASSOCIATION FOR AGRICULTURAL SERVICES AND IRRIGATION

1065 ha irrigated area (270 farm units)

110 associates out of 120 farmers: 40% landowners and 60% tenants

- The farmers invest in high-tech agricultural techniques and valuable crops for export (mostly vegetables)
- Elected 1 Management committee and its 2 sub-committees
- Characteristics: annual agreement stipulated with JVA defining roles and responsibilities over transferred 1050 ha

Achievements:

Following the good performance evaluation of the Association during the last year, water distribution tasks were expanded to include also the maintenance of the farms' turn outs and the control and stopping of the illegal use of water.

Despite the support services that need to be strengthened and the challenges that threaten its sustainability, the WUA annually evaluated by the JVA is high on its target indicators.



LEBANON: BTEDHI COOPERATIVE FOR THE USERS OF MODERN IRRIGATION TECHNIQUES

4 distribution sectors (60 ha) out of which 40 ha are irrigated and mainly equipped for localized irrigation

110 associates out of 120 farmers: 40% landowners and 60% tenants

- the general assembly made up of all the members of the cooperative owning at least one share, elects a Board of Directors made up of 5 members through secret ballot each two years.
- The membership is voluntary, the eligibility being constrained to the villagers, resident and non, land owners and tenants.
- Characteristics: the participation of farmers to the design and setting of the executive project for irrigation water distribution and its management rules, even before the existence of the association.

Achievements:

Btedhi WUA is highly performing. The efficiency of water fees collection is very high, showing the satisfaction of the farmers with regard to the system management and the quality of maintenance. The timeliness and equity of water delivery, as well as the irrigated area, the crop yields and the farm income increased. O&M costs being entirely covered by the fees paid by the farmers, decreased to zero the cost of irrigation to the Government.



TUNISIA: HENCHIR RMEL IRRIGATION SCHEME

110 ha, totally equipped for localized irrigation

120 farmers, 100% landowners

110 associates out of 120 farmers: 40% landowners and 60% tenants

Intensive prime and extra prime quality vegetables

- Elected Board counting 1 president, 1 chief accountant and 4 members
- Characteristics: With the aim of re-establishing the soils properties and the agricultural production quality, Henchir Rmel AIC entered into negotiations with the Ministry of Agriculture, regarding the source of water supply. Finally an agreement was reached and the AIC was accorded the right to supply the irrigation scheme with surface waters, instead of treated water, fulfilling two conditions:
 - To increase the fee per cubic meter of water consumed
 - To completely manage the new system to be installed

Achievements:

The GDA is highly performing. The efficiency of water fees collection is 100%, showing the satisfaction of the farmers with regard to the system management and the quality of maintenance. The irrigated area increased by 16 ha and the intensification rate reached 127% since 2011



CHALLENGES



Participation for performance

Experience with PIM & IMT shows possibilities and limitation

- Participation can improve design and construction (Btedhi experience; success of PIM at mesqa in Egypt)
- Post-project sustainability of WUAs is questionable (Tunisia and Morocco where effective IMT was performed; pilot experiences at BCWUA in Egypt and in South Bekaa in Lebanon)
- Constraints: authority, finance, agency incentives (Jordan, Morocco, Tunisia)



Customizing irrigation management

Beyond replication, models, one-size-fits-all: tailoring institutions to circumstances

- the coalition of interests that carried them through; the timing, variations, and adjustments in how they were implemented; and the limitations of their accomplishments (long experience of customized system in Fayoum; the coalition of interests in the successful Water Board of Rash El Gharb)

Diversity of customary irrigation institutions and Evolving context for irrigation systems

- The diversity and improvisational creativity of local institutions and culture to fit irrigation management to local natural and social conditions (association-sharing in Southern Algeria; community associations in Syria)
- Globally, pathways for IMT seem most favorable where farmers grow commercial crops, demanding good water service and ready to pay for it (Btedhi, Henchir Rmel and Pump 55 WUAs)



Achieving real water savings and benefits

Irrigation is often characterized as “inefficient”

- Identify “real water savings”
- Avoid wasting investment on changes that may yield little or no net savings
- Target: Water Productivity

Productivity characterizes the mature irrigation sector in Israel



SUPPORT SERVICES NEEDED BY WUAs

- Training in technical/financial/administration aspects (Egypt, Jordan, Morocco, Tunisia...)
- Technical consultations (Lebanon, Syria, Algeria, Palestine, Israel)
- M&E of management performance (Morocco, Tunisia, Egypt, Jordan...)
- Communications with agency (Egypt, Jordan, Algeria, Tunisia, Morocco)
- Govet. Ensures fair WUA elections (Egypt, Tunisia, Jordan..)
- Legal support/dispute resolution (All except Israel)

CAPACITY BUILDING AND AWARENESS CAMPAIGNS AT ALL LEVELS



KEY LESSONS LEARNT

- Need clarity on roles, responsibilities, authority of WUA & agency
- Need to reorient agency & handle staff disposition
- Need clear legal framework
- Address financial capacity of WUA along with IMT
- High level political commitment is essential
- Pilots, study tours, information sharing are important
- Address severe deterioration of infrastructure
- IMT should be adaptive and flexible



What then are the ways forward?

- Focus on social capital (human resources & institutional reform) and balance demand and supply management efforts in Algeria and Syria where the road for the reforms was undertaken but is still struggling with the engineering approach
- Learn from farmer's initiatives and incorporate them in design of new irrigation systems (customize). This is the case of Lebanon, and the successful experience of Btedhi Cooperative, involved in the design options, and responsible for cost recovery and O&M of the system
- Continuous M&E in the countries with a PIM experience and performance assessment i.e. Jordan, Egypt, Morocco and Tunisia
- Strengthen Regional WUAs roles in Israel and Participation at GH level in Morocco



What then are the ways forward?

- Address the bottlenecks in Egypt and Jordan impeding the transfer to higher levels through: clear legal framework; re-orientation of the agencies mandates; training of agencies and WUAs; building on success stories like **EL RASH EL GHARBIYA BCWUA** and **Pump 55 WUA in Jordan Valley** mainly related to a productive agriculture, a transparent management and a continuous support by the agency
- Transparency is a major element of the PIM toolbox: this is the main lesson learnt from the successful **Henchir WUA-Tunisia** even though this association has to endure for long time given the low quality water; however the **agri-business** oriented farmers and the potential of the area were the main ingredients of a success story
- Address equity in water supply/management/service cost and environmental impacts issues
- Develop options to increase water productivity
- Encourage irrigation entrepreneurship (PPP) model in reasonably dynamic economies: Jordan, Morocco, Israel.... Here again, re-orientation of irrigation bureaucracy is critical.



OPPORTUNITIES FOR IMPROVEMENT

Institutional strengthening of national irrigation agencies

The proposed institutional change in irrigation management and the adoption of PIM policy necessitate an institutional change in the irrigation agencies to accommodate the new management system. In addition, irrigation modernization requires the introduction of new functions and methods for irrigation management. An institutional strengthening strategy for the irrigation agencies requires a detailed analysis of the agency functions and mandates, the process and methods they use in the application of their functions and an assessment of their physical and human resources capacity (*Syria; Lebanon*).

Encourage and support international and national efforts to apply PIM in more extended pilot areas in *Palestine* in an attempt to increase water productivity and farmer income.



Enhance devolution of authority from national to regional and local level in **Algeria**, institutionalize PPP and create fora for stakeholder participation and communication links among agencies and stakeholders in **Morocco** (at GP) and in **Israel**.

Assisting in development of scope of work for the Water Users Federation (**Morocco, Tunisia, Egypt, Israel**) and strengthening the role of the WUA unit in JVA (**Jordan**).

Set equitable and transparent tarification rules aiming at enhancing the O&M recovery and system sustainability and productivity (**Applies to all**)

Legal Framework

A legal standing and a clear strategy regarding WUA long-term financing are essential ingredients to go forward in IMT and yield positive impacts on the modernization process (**Syria; Lebanon; Egypt; Jordan**).



Re-orientation of agencies roles (Morocco, Tunisia, Jordan and Egypt)

- A clear definition of the agency/association co-management role would enhance OM&M under scarce water and lack of personnel avoiding low yield and conflicts due to inadequate water supply.
- Definition of the role and functions of the MWRI with respect to the functioning of BCWUA and WB after their establishment and development of a monitoring and co-ordination system for nation-wide establishment of Water Boards.

Monitoring & Evaluation

Establishing M&E units for continuous assessment of success/failure/constraint, PIM being a learning process which necessitates to be readapted according to the achieved progresses. This applies to all countries especially to where IMT is a fact (***Morocco, Tunisia, Jordan and Egypt***).



Capacity building and training programmes

Flexible training and capacity building programmes should be an integral part of modernization.

- develop awareness campaigns to different stakeholders on irrigation modernization objectives, components and process ***(Algeria, Syria, Lebanon, Palestine)***;
- develop the capacity of the Public institutions (Ministries, general basin directorates or irrigation agencies) in O&M and irrigation management ***(Applies to all)***;



- develop extensive farmers training programmes on the O&M of new techniques and on-farm irrigation water management as well as on irrigated agriculture farming practices in areas where irrigation conservation techniques were implemented or are planned to be implemented (*Algeria, Syria, Lebanon, Jordan, Egypt, Morocco, Tunisia, Palestine*).
- develop managerial and technical skills of WUAs and irrigation agencies and conflict management skills (*Lebanon, Jordan, Egypt, Tunisia, Morocco*)

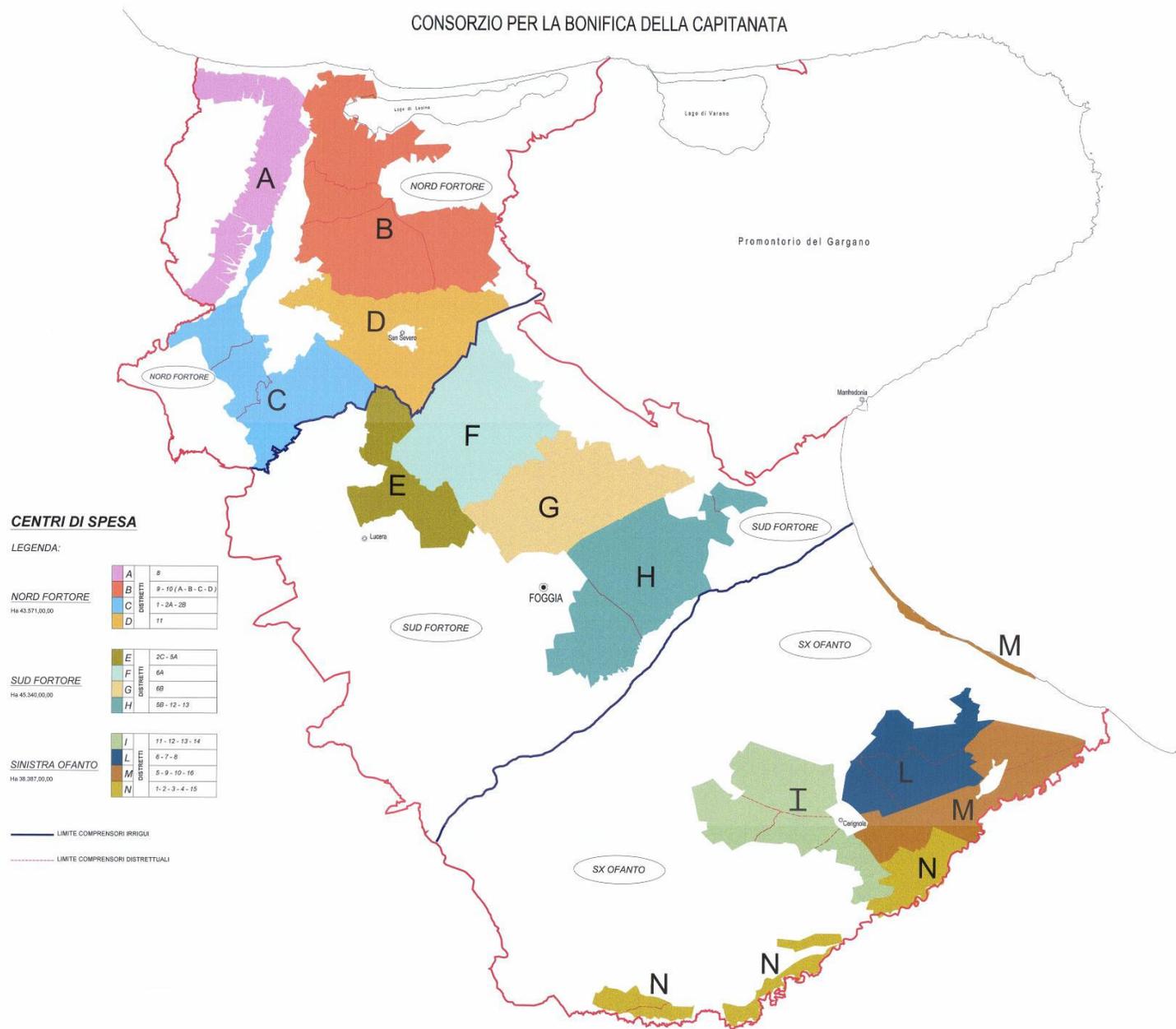


A SUCCESS STORY FROM SOUTHERN ITALY CONSORZIO DI BONIFICA OF CAPITANATA





CONSORZIO PER LA BONIFICA DELLA CAPITANATA





CONSORZIO DI BONIFICA OF CAPITANATA (Italy)

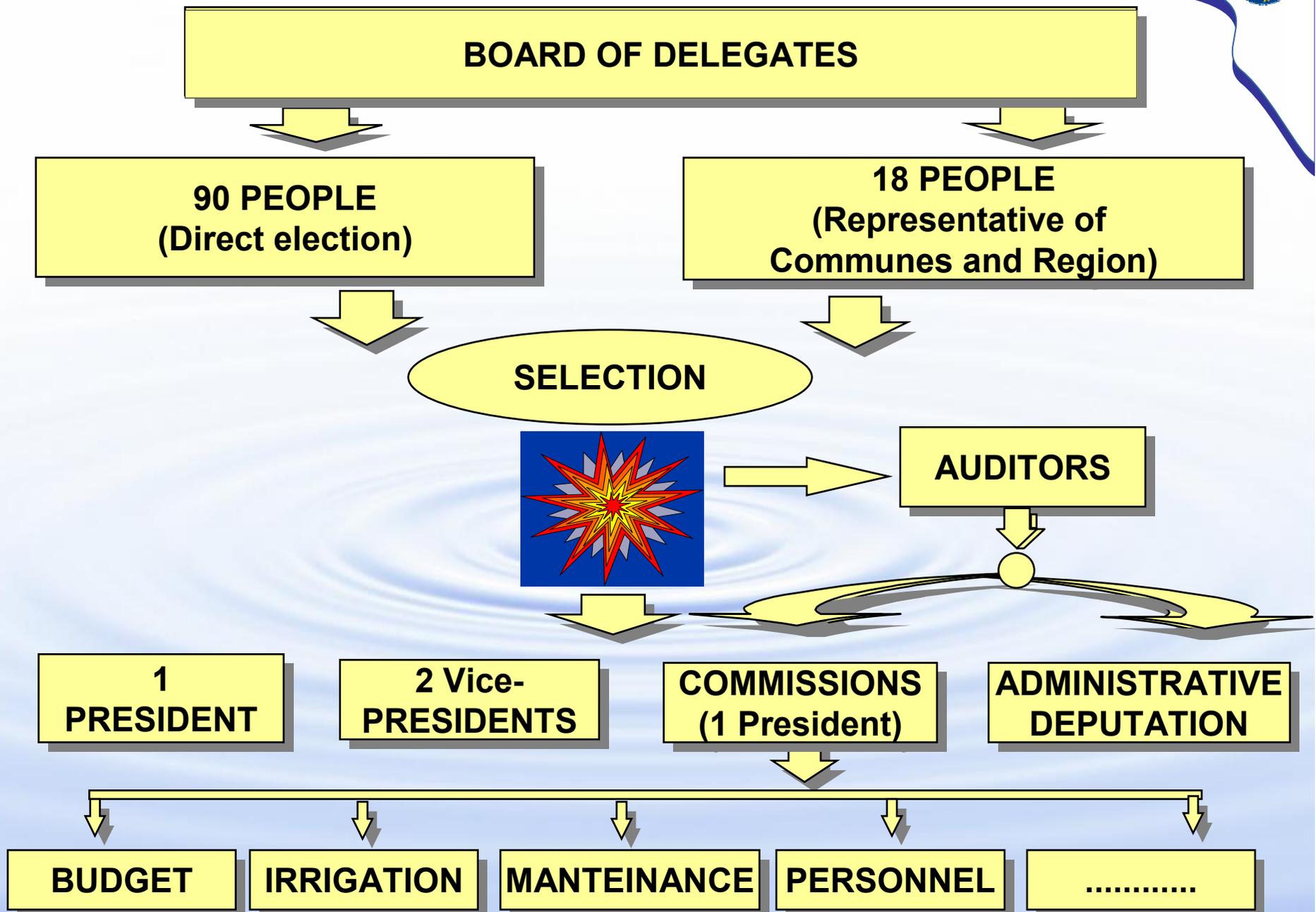
FARMERS ASSOCIATIONS

UNIONE AGRICOLTORI
(large farms)
(Farmers)

COLTIVATORI DIRETTI
(small farms)
(farmers who cultivate
their own land)

CONFEDER. AGRICOLTORI
(small farms)
(farmers who cultivate
their own land)

**ELECTION OF THE
GOVERNING BOARD**
(79 600 land owners)





GENERAL DIRECTOR

DIRECTOR OF AGRICULTURAL SERVICE

DIRECTOR OF ENGINEERING SERVICE

DIRECTOR OF ADMINISTRATION

WATERSHED MANAGEMENT

EXTENSION SERVICE

IRRIGATION

BIG WORKS
- Design
- Supervision
- Maintenance
.....

LEGAL SESSION

PERSONNEL

ESPROPRIATIONS

CONTRACTS
.....

PERIFERICAL OFFICE (1 each 10 000 - 15 000 ha)
1 Head + 1 Assigned at the office job +
3 Workers (in charge for repairing)
2-3 Groups of 2 Workers (in charge for controlling and maintenance)

- 1 pick-up for each group of workers
- 1 Truck
- 1 Excavator









TARIFF RULES

BUDGET

WATER AVAILABILITY

COST OF MAINTENANCE
(on the base of the
previous Year Budget)

OTHER COSTS
(on the base of the
previous Year Budget)

Available water volume
Irrigable Area
=
2000 m³ /ha

FIXED RATE
(€/ha)

VARIABLE RATE
(€/m³)

Cost of maintenance
Irrigable Area
=
15.5 €/ha

Other Costs
Available Water Volume
=
Contribution - P (€/m³)

⇒ **0.09 €/m³ 0 - 2000 m³/ha**

⇒ **0.18 €/m³ 2000 - 3000 "**

⇒ **0.24 €/m³ > 3000 "**



THANK YOU

lamaddalena@iamb.it

khadra@iamb.it