



**Sustainable Water
Integrated Management (SWIM) -
Support Mechanism**



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Water is too precious to waste

**REVIEW OF SELECTED M&E SYSTEMS USED BY INTERNATIONAL
AGENCIES FOR ASSESSING PIM/IMT PROGRAMS**

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M&E System For PIM/IMT, Athens 2-4 September 2013**

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Summary of presentation

Focus on 3 M&E methodologies that international agencies use to assess the PIM/IMT programs in their different phases, namely:

1. the Toolkit for **Monitoring and Evaluation of Agricultural Water Management Projects by the WB** of 2008,
2. the FAO- IWMI publication on **“Irrigation management transfer. Worldwide efforts and results”** of 2007 and
3. the USAID report No. 59 **“Irrigation management transfer: framework for monitoring and evaluation”** of 2002.

Part 1. Summary of the Toolkit for Monitoring and Evaluation of Agricultural Water Management Projects by the WB

- Includes 2 guidelines :
 1. The WB M&E system for WUAs formation (Guidelines No. 16) and
 2. The Operation and maintenance of Irrigation systems (Guidelines No. 15)

M&E for WUAs formation and support (Guidelines No. 16)

The main objectives of participatory irrigation management are three-fold:

1. to involve and empower stakeholders in the management of their water resources;
2. to increase efficiency and cost effectiveness in service delivery; and
3. to put in place a sustainable management framework.

Guidance note (GN) No. 16 focuses on the first objective, whilst GN 15 provides more detailed information on the last two objectives.

Typical implementation and results framework for interventions to establish and support Water Users Associations (1)

Assessment level	Examples
Project development objective	Effective and sustainable water users' institutions and organizations established
Project outcomes	<ol style="list-style-type: none">1. Responsibility for management, operation and maintenance and financing of I&D systems effectively transferred from government to water users2. Government effectively regulating WUAs and Federations of WUAs3. Irrigation water delivery is reliable, adequate, timely and equitable4. Systems are adequately and sustainably maintained5. Water users are satisfied with water service provision6. Agricultural production is not constrained by (lack of) irrigation and drainage service provision7. Adequate fees are recovered from water users to cover MOM costs

Typical implementation and results framework for interventions to establish and support Water Users Associations (2)

Assessment level	Examples
Project outputs	<ol style="list-style-type: none">1. Legal framework for WUAs formulated or revised and in use2. Effective and functioning WUA Support Units3. WUAs legally formed and functioning effectively – democratic, representative, efficient and effective in work functions4. WUA Federations legally formed and functioning effectively5. National WUA Association formed and functioning effectively6. WUA Regulatory Unit formed, staffed and functioning effectively7. WUA offices established, equipped and functioning effectively8. WUA personnel trained and effective in their job functions9. Water users contacted and made aware of roles and responsibilities10. Relevant government agency staff identified and made aware of roles and responsibilities for WUAs and themselves

Typical implementation and results framework for interventions to establish and support Water Users Associations (3)

Assessment level	Examples
Project activities	<ol style="list-style-type: none"> 1. Enact new or upgrade existing legal framework for establishing WUAs and Federations 2. Formation of WUA Support Units 3. Formation and establishment of WUAs 4. Publicity, communication and awareness campaigns 5. Training and capacity building programs 6. Development of management capability, including record keeping and performance monitoring 7. Development of financial management capability 8. Development of technical management capability (system operation and maintenance) 9. Support for the purchase of maintenance machinery and equipment 10. Development of processes and procedures for WUA Regulatory Authority 11. Formation and establishment of Federations of WUAs 12. Formation and establishment of National Association of WUAs
Project inputs	<ol style="list-style-type: none"> 1. Specialist inputs – legal specialists, WUA specialists, institutional development specialists, training specialists 2. Beneficiary participation 3. Offices, machinery, equipment, vehicles and materials

How to identify outputs and outcomes ,

No.	Activity	Possible outputs	Possible outcomes
1	Enact new , or upgrade existing , legislation for establishing WUAs and federations	<ul style="list-style-type: none"> ● Existing water law revised ● New WUA law enacted ● Model WUA statutes drafted ● Model WUA by-laws drafted 	WUAs legally registered under new WUA law
2	Formation of WUA Support Units	<ul style="list-style-type: none"> ● WUA Support Units (SUs) formed and functioning with offices, vehicles and equipment ● Trained Support Unit personnel 	Formed and functioning WUAs, ably supported by the WUA Support Unit

Relating activities, outputs and outcomes with indicators

N o.	Activity	Indicators
1	Enact new, or upgrade existing, legislation for establishing WUAs and Federations	<ul style="list-style-type: none"> • Status of legislation (drafted, enacted, in use)
2	Formation of WUA Support Units	<ul style="list-style-type: none"> • Number of Support Units formed (each quarter, year) • Number and types of staff • Training events carried out (for Support Unit staff)
3	Formation and establishment of WUAs	<ul style="list-style-type: none"> • Number of WUAs formed (each quarter, year) • Milestone achieved (formed, staff hired, O&M plan prepared, etc.) • Area covered by WUAs (area and as a percentage of the total irrigable area in the country) • Number of WUAs formed in each Region • Assets transferred from government to WUA account

Implementation monitoring and outcomes or results monitoring

- **Implementation monitoring (also called performance monitoring)** is closely link to the implementation of projects or programs and is the responsibility of Project Managers and therefore a **part of project management**.
- **outcomes or results monitoring** . A results-based system provides feedback on the actual outcomes and goals of government actions.

Results-based systems help answer the following questions:

- What are the goals of the organization?
- Are they being achieved?
- How can achievement be proven?
- **Defining a good results M&E system is a difficult task but doable!!**

Impact monitoring

- Impact monitoring tries to assess the performance of the irrigation systems **before and after WUA formation**. For this reason is indispensable to carry out surveys before and after.
- Often the data from **before are not available** and M&E tries to assess trends following an number of consecutives years.
- Some of the indicators used for this purposed are listed below:
 - Cropping intensity (%)
 - Water supply per unit irrigated area (m³/ha)
 - Total gross value of production per unit command area (\$/ha)
 - Total ISF collected per unit command area (\$/ha)
 - Total ISF collected per unit water supply (\$/m³)
 - Percentage payment to Service Provider (%)
 - Irrigation Service Fee (ISF) collection rate (%)
 - O&M expenditure per unit command area (\$/ha)
 - O&M expenditure as percentage of total ISF collected (%)

M&E of operation and maintenance of Irrigation systems (Guidelines No. 15)

- Improving the MOM **may not be necessarily linked to the establishment of WUAs** although often does .
- Therefore this example can be also used when the government officers are responsible for the management of the irrigation systems
- The guidelines No 15 follow the same methodology than for the establishment of WUAs but obviously the PDOs. Outcomes, outputs and activities are different . In the background paper Part B the corresponding table is presented.

M&E of operation and maintenance of Irrigation systems (Guidelines No. 15)

- In order to monitor the corresponding activities, outputs and outcomes a system of 26 indicators is developed distributed as follows:

Main areas of monitoring	Number of indicators
Agricultural production	8
Irrigation water delivery	5
Financial	7
Drainage and water removal	1
Environmental protection	5

- The details of these indicators are given in the Annex 1 of the Part B of the background document

Water delivery assessment criteria

- As water delivery is one of the essential functions of the management of an irrigation system it is relevant to analyze it in greater detail.
- Water delivery can be assessed according to different criteria:
 1. Reliability
 2. Adequacy (of supply)
 3. Timeliness
 4. Equity
 5. Efficiency
 6. Productivity
 7. Cost (and cost effectiveness)

And the corresponding indicators are given in the next table

Water delivery indicators (1)

Criteria	Performance Indicators	Definition
Reliability	Relative Water Supply	$(\text{Volume of irrigation water supply}) / (\text{Volume of irrigation water demand})$
	Delivery Performance ratio	$(\text{Volume of irrigation water supplied}) / (\text{Target volume of irrigation water supply})$
Adequacy (of supply)	Relative Water Supply (RWS)	$(\text{Volume of irrigation water supply}) / (\text{Volume of irrigation water demand})$
	Delivery Performance Ratio (DPR)	$(\text{Volume of irrigation water supplied}) / (\text{Target volume of irrigation water supply})$
Timeliness	Dependability of Irrigation Interval	$(\text{Actual irrigation interval}) / (\text{Planned/Required irrigation interval})$
	Timeliness of Irrigation Water Delivery	$(\text{Actual date/time of irrigation water delivery}) / (\text{Planned/Required date/time of irrigation water delivery})$
Equity	Relative Water Supply	$(\text{Volume of irrigation water supply}) / (\text{Volume of irrigation water demand})$
	Delivery Performance Ratio	$(\text{Volume of irrigation water supplied}) / (\text{Target volume of irrigation water supply})$

Water delivery indicators (2)

Criteria	Performance Indicators	Definition
Efficiency	Relative Water Supply	$(\text{Volume of irrigation water supply}) / (\text{Volume of irrigation water demand})$
	Overall scheme efficiency	$(\text{Volume of water needed by crop}) / (\text{Volume of water diverted/pumped from source})$
	Main system water delivery efficiency	$((\text{Volume of water delivered (to tertiary unit)}) / (\text{Volume of water diverted/pumped from source}))$
	Crop production per unit water supply	$(\text{Total crop production}) / (\text{Volume of water diverted/pumped from source})$
Productivity	Crop production per unit water supply	$(\text{Total crop production}) / (\text{Volume of water delivered (to tertiary unit or field)})$
	Value of crop production per unit water delivered	$(\text{Total value of crop production}) / (\text{Volume of water delivered (to tertiary unit or field)})$
Cost effectiveness	ISF collected to GVP ratio	$(\text{Total irrigation service fee (ISF) collected}) / (\text{Total gross value of production (GVP)})$
	ISF to total crop input costs ratio	$(\text{Irrigation service fee (ISF) due for the crop}) / (\text{Total input costs for the crop})$

Part 2. FAO- IWMI M&E system of Water Report No. 32

- This document was jointly prepared by FAO and IWMI with the purpose of understanding better the implications of the irrigation sector embarking in large institutional reforms. It concentrates on the results derived from the surveys undertaken in 33 countries.

Structure of the report

- Chapter 1 is a general introduction
- Chapter 2 presents the policy and legal framework for IMT
- Chapter 3 focuses on the elements present in the implementation of IMT programs. It addresses IMT strategies (e.g. the scale of transfer, the scope of activities included and the speed of implementation).
- Chapter 4 brings together the outcomes and impacts derived or expected from IMT reform.
- Chapter 5 summarizes key conclusions and recommendations.

Main indicators used (1)

Number	Indicator	Number of possibilities or cases considered for each indicator
Chapter 2 POLICY AND LEGAL FRAMEWORK		
1	Factors motivating the adoption of IMT	9
2	Authority transferred (functions devolved)	6
3	Type of organization taking over management after transfer	7
4	Entity providing water delivery and canal maintenance	7
5	Element included in the institutional framework	11
6	Legal rights and responsibilities granted to water users associations	6
7	Purposes of water users associations as specified by law	7
8	Legal rights of WUASs	8
9	Rights and responsibilities of WUA members	9
10	Roles of government irrigation sector agencies relative to WUAs and water users	10
11	Policy and institutional issues in IMT	17

Main indicators used (2)

Number of the indicator	Chapter 3 IMPLEMENTING IRRIGATION MANAGEMENT TRANSFER	Number of possibilities or cases considered for each indicator
12	Steps included in IMT	13
13	Problems and issues in implementing IMT	19
14	Support services needed by WUAs after IMT	15
15	Reorientation of the irrigation agency	11
16	Additional institutional changes needed after IMT was adopted	17
17	Key lessons learned about irrigation management transfer	25

Main indicators used (3)

Number of the indicator	Chapter 4 IRRIGATION MANAGEMENT TRANSFER RESULTS	Number of possibilities or cases considered for each indicator
18	Share of basic O&M functions performed by WUAs after management transfer	5
19	Sources of financing for WUA after IMT	5
20	Changes in O&M costs after IMT	6
21	Quality of maintenance	3
22	Rate of fee collection	3
23	Timeliness and equity of water delivery	6

Main indicators used (4)

Number of the indicator	IMPACTS	Number of possibilities or cases considered for each indicator
24	Irrigated area	3
25	Crop yield	3
26	Farm income	3
27	Soil salinity and waterlogging	3
	Total number of possibilities or cases	230

With only 27 indicators the publications makes a good analysis of the PIM/IMT programs in 33 countries and therefore is a good example for similar evaluations

Part 3

The USAID report No. 59

The report No. 59 “Irrigation management transfer: framework for monitoring and evaluation”, (2002) was prepared by the IMT M&E Working Group for USAID in Egypt. The report presents the results of the work carried out in completion of a study to develop a Monitoring & Evaluation (M&E) framework for the Irrigation Management Transfer (IMT) program at MWRI, and to be used as the basis for M&E components of other future water privatization efforts.

The USAID report No. 59 (1)

Number	Category of indicators	Number of Indicators Per subcategory			
		For process	For outcomes	For impact	Total
1	System performance indicators	21	26	10	57
2	Indicators on changes in cost of Irrigation/drainage System maintenance	7	6	4	17
3	Indicators for Costs of Irrigation/Drainage System Operations	4	6	4	14
4	Water Utilization/Water Saving Indicators	2	3	5	10
5	Rural Economic Indicators	6			6
6	Industrial Economic Indicators	1			1

The USAID report No. 59 (2)

Number	Category of indicators	Number of Indicators Per subcategory			
		For process	For outcomes	For impact	Total
7	Environmental Indicators	4	6	3	13
8	Organizational / Institutional Management Indicators	10	5	5	20
9	Operations and Management Responsibility Performance indicators	4	6	4	14
10	Capacity-Building Indicators	5	1	2	8
11	Social Change Impact Indicators	12			12
	Total				172

Main conclusions

1. The WB guidelines present the methodologies of monitoring implementation and results monitoring and applied the to two different examples: the WUAs formation (Guidelines No. 16) and the Operation and maintenance of Irrigation systems. **The methodology is useful but requires a careful definition of the activities, outputs and outcomes which may not always be possible in long processes as those of PIM/IMT programs.**
2. The FAO-IWMI publication is a good example of a system that tries to assess the performance of 33 countries in the implementation of the PIM/IMT programs. **It is less rigorous from the methodological point of view but quite practical.**
3. The USAID report No. 59 it is another illustration of **a useful M&E system that has not been developed according to the results monitoring but it is applied in practice.** However the system has a large number of indicators and this may present a difficulty for processing and interpretation of results.

Thanks for your attention

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