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Assessing Performance in multiple-use in large irrigation systems

Daniel Renault

FAO Irrigation Modernization Program

- Auditing performance of irrigation systems
- Introducing the concept of Service Oriented Management [SOM]
- Planning for modernization

MASSCOTE Approach

PLAN FOR MODERNIZATION
MONITORING & EVALUATION

(1) RAP

(2) CAPACITY & SENSITIVITY

(3) PERTURBATIONS

(4) WATER ACCOUNTING

(5) COST of OPERATION

(6) SERVICE TO USERS

(7) MANAGEMENT UNITS

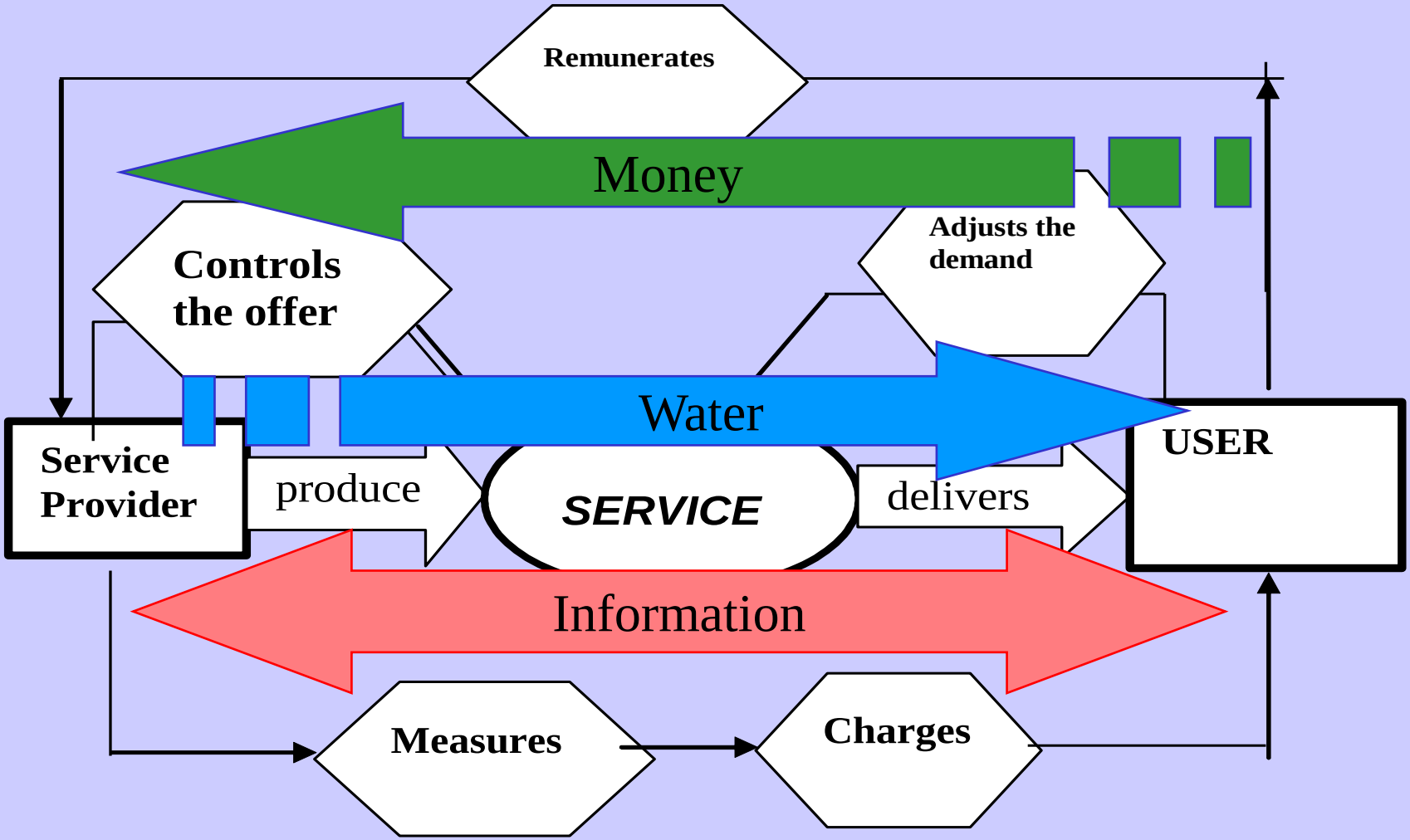
(8) DEMAND for OPERATION

(9) OPERATION IMPROVEMENTS/UNITS

(10) INTEGRATING SOM OPTIONS

VISION for the agriculture and water systems

Service Oriented Management [SOM] = 3 basic flows WATER - INFORMATION – MONEY



GAP

- **is for service management!**
- **not for MUS !**
- **SERVICES are seldom specified and contracted**

Attributes of services

- Target
- Tolerance
- Measurability
- Measures for defaulting (compensation, etc..)
- Information (scheduling, …)
- Charging procedure !
- Flexibility in adjusting the service !

Service to farmers/crops
What service?

Services to fishermen ?

Fisheries in small reservoirs (tanks)

Serving homestead/ households

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Service to domestic uses ? Yes/No

Service to productive uses

Power generation at main dam Badra KNNL India

Power generation unit along a Canal Naryanpur Karnataka India

Service for Cattle

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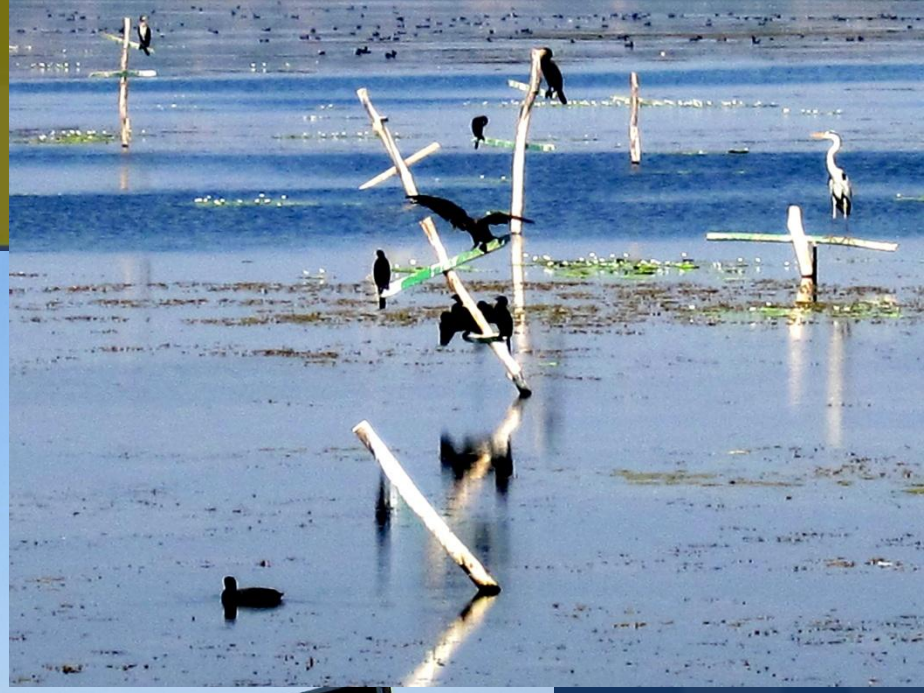
Service to Environment



FAO appraisal on SOM and MUSF

30 large irrigation systems audited

Command Area over 4 Million ha

About 15 Million people

FAO survey on 30 Large irrigation systems

- 17 Multi Purpose Reservoir
- 5 Multi Purpose Network
- 19 MU Irrigation +
- 7 MU Seq
- 3 Multiple Function
- ONLY 2 systems true SINGLE USE

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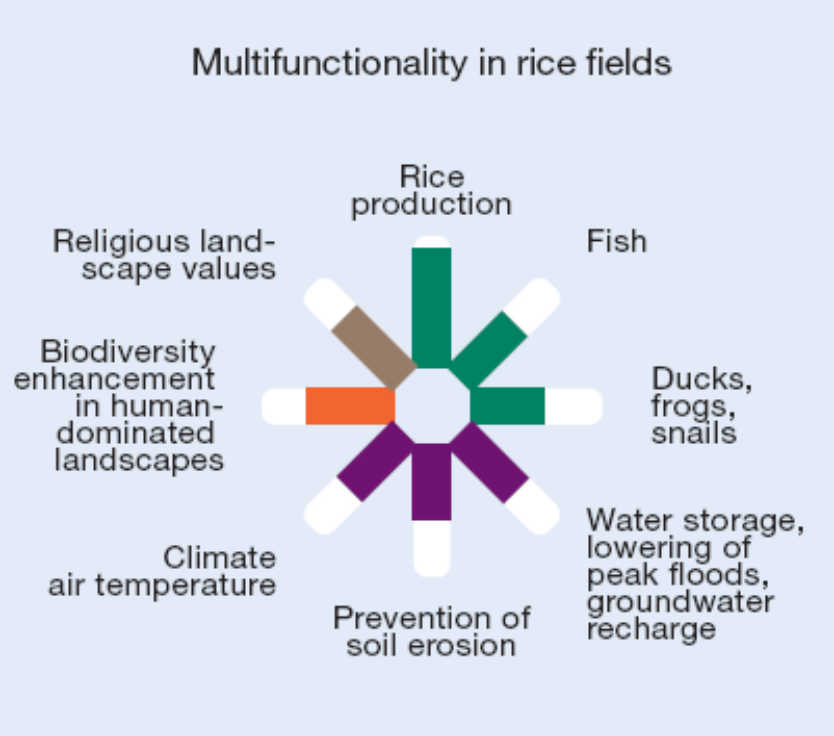
PERFORMANCE INDICATORS for MUSF ?

Purposes are improving:

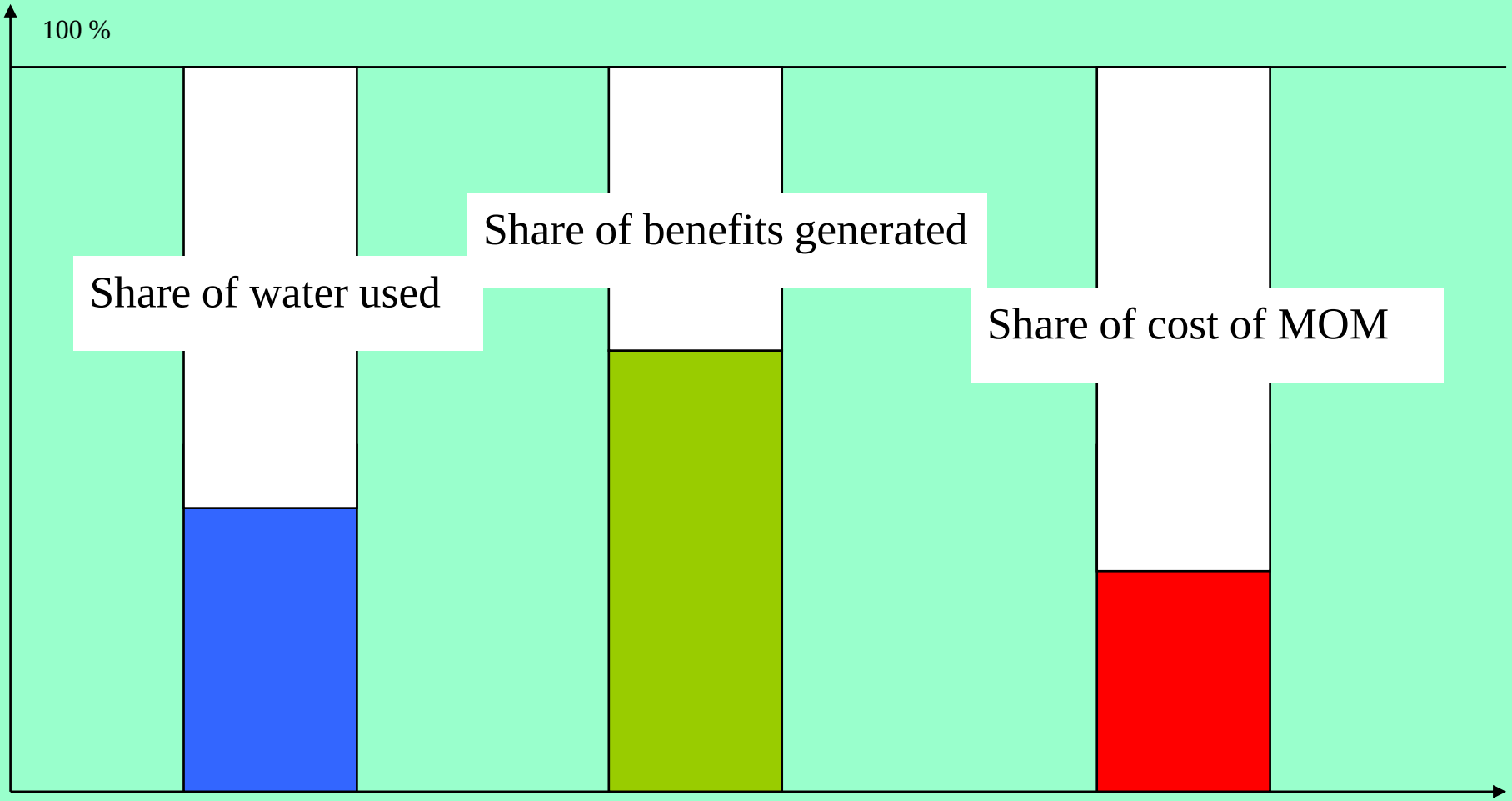
* governance
* equity
* environment
* services to rural poor
* management cost-efficiency

PI1 - Performance Indicator 1 for MUS

The degree of MUS
[STEP 0: MAPPING the water services]
Listing and Numbering Uses/Functions assessed/reported !



Next are the shares per service



PI 2 Water shares

- Quantum of use, especially consumptive use
- Quality dimension
- Energy dimension
- Partitioning of non process–use: ex. evaporation from same water body *vs* tourism, environment, fisheries, flood protection.
- Function/service with no consumption (e.g drainage, flood protection)

Characteristic of the Use	Definition	Example of such use
Consumptive	Water leave the system (hydrological cycle) and return to atmosphere	Irrigated crops Homestead garden Perennial natural vegetation
Non-consumptive	Water is not consumed. Water maybe diverted and used but is returned after use.	Hydro-power Domestic water (recycled) Animals
Depletive	Water is depleted from the natural resources	Diversion schemes Groundwater Pumping
Non depletive	Water is used on its site without any diversion	Recreational use in aquasystems Landscape tourism
Process	Water is needed by the associated producing process.	Crop growth hydro-power
Non process	Water consumed is not part of the process, but rather a side effect	Fisheries and evaporation from water bodies Tourism, recreational value
Beneficial	Positive externalities	Groundwater recharge
Non beneficial	No added value. Negative externalities	Pollution from agriculture areas.

PI 3 Share of benefits

- Definition of benefits of water service ?
- Usually benefits = Monetary (gross production) for agriculture ! or any productive activity as electricity, fishery, etc...
- Domestic ?? Households served for domestic,
- Environment ???
- Jobs for small business,

Use/function	Estimator of Benefit
Delivery to farms	Crop yields Gross production $/ha irrigated Gross production $/m3
Domestic water	Cost paid by service users Estimated cost of an alternative solution Number of capita served
Drinking water for cattle	Value of annual animal products Number of households
Homestead garden	Value generated by the garden
Support/recharge to natural surface streams (surface and groundwater) & environment	
Industry and Hydropower	Economical value generated, employment
Tourism, fishing, recreation, wild animals & natural parks	Economical value generated, employment
Control of vector-born diseases in waterbodies	
Flood control	Population and assets protected
Control of drainage return flow	
Transport	Quantum transported Economical value, employment

PI 4 Share of COST of MOM

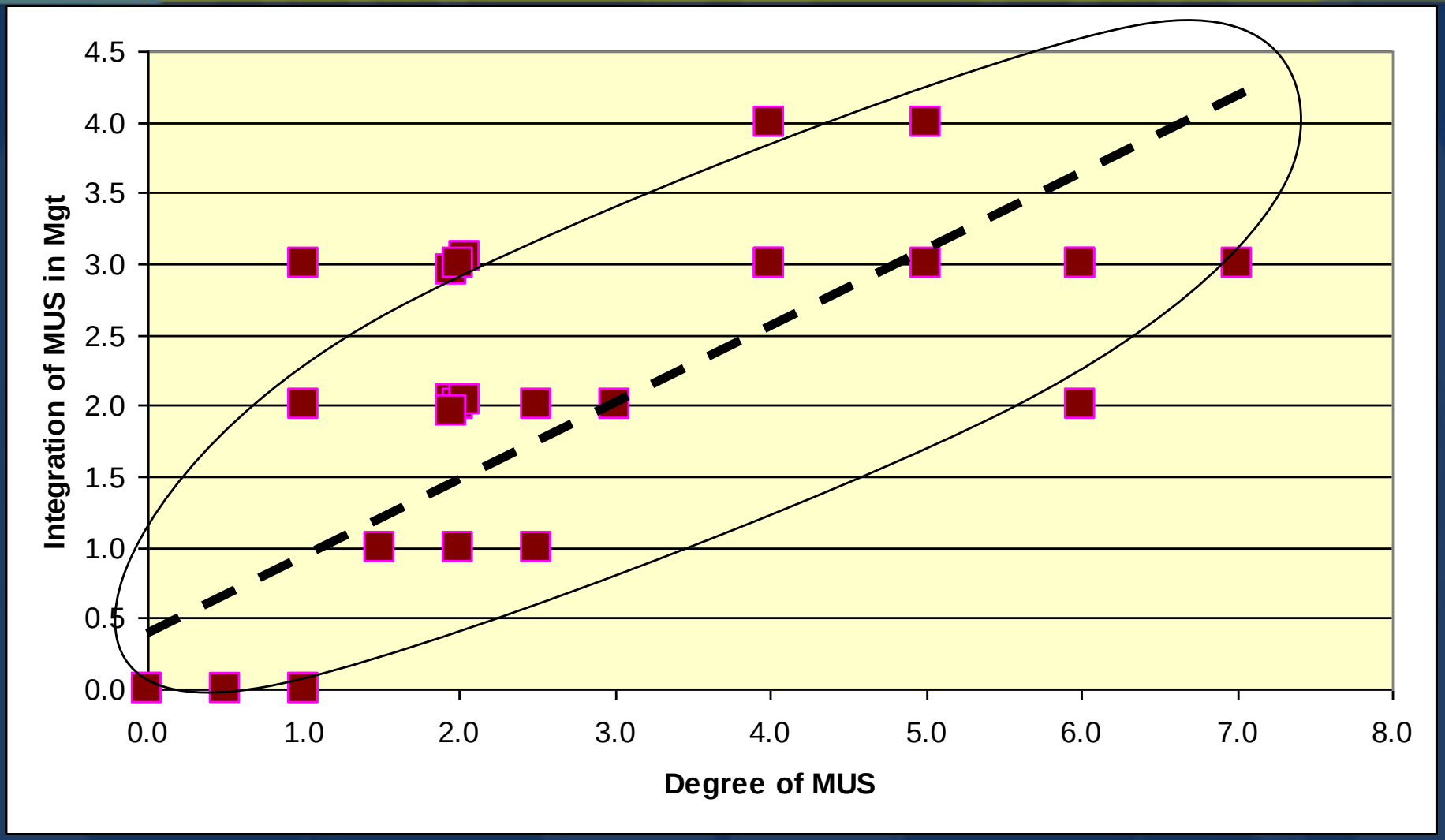
- Specific cost to produce the service.
- Deliveries, water level, access to water, ensuring a specific function, etc...

PI 5 Internal indicator for MUS

Integration of MUS in management

Indicator value	Management attitude
0	Ignoring or denying MUS and/or its magnitude
1	Blind eye on MUS practice by users
2	Positive marginal practices to support MUS
3	Integration of other services concerns into the operation
4	Integration of Multiple Uses Services into the management and governance.

Degree & Integration of MUS



30 systems studied

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Institutional and legal performance

- **institutional performance: Mechanisms to remunerate the service providers by users and beneficiaries whoever they are; Mechanisms to take decision at system level.**

- **legal performance: legal arrangements for MUS**

Performance/Governance

Shareholder process

Value per Uses/functions

LIS and MUS

- **Objective: Methodology for preliminary auditing of MUS FAO MASSMUS**
- **Set of methods for assessing further and monitoring the MUS process (Valuing mechanisms,...)**
- **Target is 2010.**

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Thank you