Building Blocks and Strategies for Agriculture Water Management Policy
Lessons from Modernization Programmes in Asia

About the FAO Policy Learning Programme
This programme aims at equipping high level officials from developing countries with cutting-edge knowledge and strengthening their capacity to base their decisions on sound consideration and analysis of policies and strategies both at home and in the context of strategic international developments.

Related resources
- See all material prepared for the FAO Policy Learning Programme
- See the FAO Policy Learning Website: http://www.fao.org/tc/policy-learning/en/
Building Blocks and Strategies for Agriculture Water Management Policy
Lessons from Modernization Programmes in Asia

By

Daniel Renault, Senior Irrigation Management Officer
Water Development and Management Unit, Land and Water Development Division (NRL), FAO, Rome, Italy

About EASYPol

The EASYPol home page is available at: www.fao.org/easypol

This presentation belongs to a set of modules which are part of the EASYPol Resource package: FAO Policy Learning Programme : Specific policy issues: Natural resource management, Water

EASYPol is a multilingual repository of freely downloadable resources for policy making in agriculture, rural development and food security. The resources are the results of research and field work by policy experts at FAO. The site is maintained by FAO’s Policy Assistance Support Service, Policy and Programme Development Support Division, FAO.
Introduction

- The management of irrigation systems is notoriously performing at lower level than what was expected.

- Irrigation Management is increasingly complex: more diversified service to users - competition for water - cost effectiveness.

- Modern and highly performing management requires not only to apply adapted techniques but also a conducive institutional and political environment for which capacity building programmes are required.

- Balancing flexibility to adjust for project specificities and high consistency at national level.
Objectives

This presentation:

- illustrates the practical implementation of an agricultural water management policy.
- presents two contrasting examples from South Asia.
Any National strategy to implement advanced agricultural water management will require:

- A perspective on natural resource management
- A vision of the natural resource management
- A vision of the macro-economical context in agriculture and water sectors
- A set of objectives assigned to irrigated agriculture and irrigation management
- Clear identification of requirements for (needs) and means (local and national) that have to be mobilized to raise the know how and the capacity

- Monitoring and Evaluation of the performance
Major goals or objectives for a national strategy

- Build the internal expertise
- Capitalise the knowledge
- Raise the technological and managerial capacity for modern management
- Mobilize the national training capacity
- Mobilize and raise the research capacity to investigate and M&E technical options
- Mobilize the Policy and financial resources
- Coordinate the M&E of the programme
- Ensure unrestrained circulation of knowledge and information
- Favour exposure and good communication with the outside world
# Building process and issues in agriculture water management

<table>
<thead>
<tr>
<th><strong>THE BUILDING BLOCKS</strong></th>
<th><strong>THE BUILDING PROCESS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPOLOGY</td>
<td><strong>TOP DOWN</strong> Policy is discussed and set at national level: the KEY DETAIL is How to make it working? e.g. NEPAL</td>
</tr>
<tr>
<td>RAP</td>
<td><strong>BOTTOM UP</strong> local management issues and opportunities induce POLICY issues and changes ex Karnataka INDIA</td>
</tr>
<tr>
<td>MASSCOTE</td>
<td></td>
</tr>
<tr>
<td>CAPACITY BUILDING</td>
<td></td>
</tr>
</tbody>
</table>

## The main issues in agriculture water management

**LOW PERFORMANCE in Irrigation management**

- Lack of focus on the details
- Lack of engineering in the reforms
- Lack of managerial capacity [local level]
- Lack of transparency in the process
- Lack of consistent policy approach.

## REASONS

- Increasing diversity
- Increasing complexity

© FAO January 2008
Two possible approaches

TOP-DOWN approach:
NEPAL
converting policies into practice!

BOTTOM-UP approach:
INDIA KARNATAKA
From practice into policies!
BLOCK 1

Typology of Irrigation Systems
Typology of irrigation systems

- TYPE A
- TYPE B
- TYPE C
- TYPE D
- TYPE E

Local projects

Local projects
Two types of typology: the primary one distinguishes the macro-economic context in which the system works, with 3 main classes and the secondary one was more a hydrology oriented typology.

Context:
- Agriculture Focus: Early developing, rice dominant system
- Transition: Commercial agriculture, export & rice diversification
- Post Agriculture: Rice intensification and multi-purpose system

Hydrology:
- Type 1: Reservoir-backed, gravity fed irrigation systems
- Type 2: Off-river diversion irrigation systems
- Type 3: Off-river pump irrigation systems
- Type 4: Conjunctive groundwater-surface water system
- Type 5: Integrated water management systems in the deltas

Additional criteria: Urban-rural irrigation systems

Source: FAO 2005
BLOCK 2
The Rapid Appraisal Procedure to diagnose irrigation management
The Rapid Appraisal Procedure (RAP)

Provide a basis for making specific recommendations for modernization and improvement of water delivery service, identifying weaknesses and changes

Provide a baseline for comparison of future performance after modernization

Benchmarking for comparison against other irrigation projects
RAP outputs

- **External indicators**
  - Examine inputs and outputs of the whole project (and constraints)

- **Internal indicators**
  - Identify key factors related to water control throughout a project.
  - Define level of water delivery service provided to users at all levels of the system
  - Managers, operators, WUCS, farmers
  - Examine specific hardware and management techniques and processes used in the control and distribution of water.
Example BHADRA = US$ 1700/ha
## Social order

| Social “order" in the canal system operated by paid employees | 0.5 |
| Degree to which deliveries are **NOT** taken when not allowed, or at flow rates greater than allowed | 1.0 |
| Noticeable **non**-existence of unauthorized turnouts from canals. | 0 |
| Lack of vandalism of structures | 0.3 |
### Service to farmers (canal)

<table>
<thead>
<tr>
<th>Actual water delivery service to individual ownership units (e.g., field or farm)</th>
<th>1.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement of volumes</td>
<td>0</td>
</tr>
<tr>
<td>Flexibility</td>
<td>1</td>
</tr>
<tr>
<td>Reliability</td>
<td>1</td>
</tr>
<tr>
<td>Apparent equity</td>
<td>1</td>
</tr>
</tbody>
</table>
Actual and stated water delivery service to individual ownership units
<table>
<thead>
<tr>
<th><strong>Budgets</strong></th>
<th>1.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>What percentage of the total project (including WUA) Operation and Maintenance (O&amp;M) is collected as in-kind services, and/or water fees from water users?</td>
<td>0</td>
</tr>
<tr>
<td>Adequacy of the actual dollars and in-kind services that is available (from all sources) to sustain adequate Operation and Maintenance (O&amp;M) with the present mode of operation.</td>
<td>2</td>
</tr>
<tr>
<td>Adequacy of spending on modernization of the water delivery operation/structures (as contrasted to rehabilitation or regular operation)</td>
<td>4</td>
</tr>
</tbody>
</table>
### Employees

<table>
<thead>
<tr>
<th>Employees</th>
<th>1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training</td>
<td>1</td>
</tr>
<tr>
<td>Availability of written performance rules</td>
<td>1</td>
</tr>
<tr>
<td>Power of employees to make decisions</td>
<td>2.5</td>
</tr>
<tr>
<td>Ability of the project to dismiss employees with cause.</td>
<td>2</td>
</tr>
<tr>
<td>Rewards for exemplary service</td>
<td>0.0</td>
</tr>
<tr>
<td>Relative salary of an operator compared to a day laborer</td>
<td>0</td>
</tr>
<tr>
<td><strong>Mobility and Size of Operations Staff:</strong> Operation staff mobility and efficiency, based on the ratio of operating staff to the number of turnouts.</td>
<td>0.0</td>
</tr>
</tbody>
</table>
## Water User Associations

<table>
<thead>
<tr>
<th>Water User Associations</th>
<th>0.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of all project users who have a functional, formal unit that participates in water distribution</td>
<td>0</td>
</tr>
<tr>
<td>Actual ability of the strong Water User Associations to influence real-time water deliveries to the WUA</td>
<td>0</td>
</tr>
<tr>
<td>Ability of the WUA to rely on effective outside help for enforcement of its rules</td>
<td>1</td>
</tr>
<tr>
<td>Legal basis for the WUAs</td>
<td>1</td>
</tr>
<tr>
<td>Financial strength of WUAS</td>
<td>0</td>
</tr>
</tbody>
</table>
Water scarcity in DBK LBC (1 crop/year)

Limited areas under scarcity (one crop per year)
BLOCK 3

MASSCOTE:
A methodology for developing a modernization plan for irrigation management

Mapping systems and services for canal operation techniques
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
Multiple uses of water
Example of a critical issue: Canal lining!

- Questioning the rationale?
- Quality of work?
- Maintenance of canal lining?
- Management?
BLOCK 4

Capacity development
The NRLW conceptual approach to Capacity Development
Means for capacity development
Strategic planning

This is the beginning of a strategy development process for capacity development that includes:

- Diagnosis: identification of the gaps
- Definition of the goals
- Means
- Monitoring of performance
Means for capacity development

- Research
- Education & Training
- Networks (professionals)
TOP DOWN Approach
Designing implementing strategy for water policy: NEPAL
Integrated Water Resources Management is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

Global Water Partnership
Irrigation Policy Nepal

Background

- DOI primary institution for large and medium sized projects
- WUAs & local institutions for small systems
- Equal importance: new dev. & modernization
- Extension of services to marginal farmers
- Develop storage capacity

Objectives:

- Expand year round irrigation capacity
- Develop institutional capacity of WUAs for sustainable management of existing systems
- Capacity building of technical human resources, farmers, water users and NGOs.
POLICY = 9 key points:

1. Legal authority for fees within DOI
2. Projects guided by IWRM principles to ensure water for all stakeholders
3. Modern management techniques for year round irrigation (reservoirs, groundwater, rainfall harvest)
4. Master plan for trans-basin
5. Priority to reservoirs with power production capacity
6. Equal priority for groundwater management/surface water
7. Water services should be evaluated quantitatively
8. Local institutions capacity development
9. Legal & institutional improvements to achieve the objectives, capacity development of irrigation staff.
Our proposed FAO intervention aims to design:

- practical means to implement IWRM

and to define:

- specific strategies to help vulnerable groups becoming real stakeholders
- strategies for DOI to become an operator of IWRM
- options for a real stakeholders governance of IWRM
Importance of an integrated approach

Basic assumption = the continuity of water flow in the system
- Upstream and downstream
- Quantity & quality
- Different uses of water
- Positive and negative impacts (externality)
- Different sources of water
- Consistent with other natural resources
- Different users as stakeholders
BOTTOM UP Approach

Policy issues emanating from field survey: KARNATAKA

4 Masscote exercises POLICY to enable cost-effective irrigation management and IWRM will be the focus of the 2nd session in the afternoon
Conclusions

- A consistent fine tuning between policy and project levels
- Crafting policy with very practical insights from the field
- Reliable assessment of performance and issues are the foundations
- Ownership of policy change requires field study and capacity development for the practitioners
Further references

- **Modernization of Irrigation Systems**  [www.watercontrol.org](http://www.watercontrol.org)