MUS in the Challenge Program on Water & Food

CPWF Management Team

MUS-Network Meeting
Rome, 24-25 August 2009
From CPWF Phase 1 to Phase 2

Management of Water Storage for Multiple Uses and Users: 
_The experience of the CGIAR Challenge Program on Water and Food_

_Sophie Nguyen Khoa_
_and Project Teams: PN10, 25, 28, 37 & 46_

Stockholm World Water Week
19 August 2009
“Integrating the Unusual” in the Management of Water

Livestock
Fish
Crop
Other Uses & Users
Domestic Use
Ecosystems
Health

CPWF International Forum on Water and Food - After Peden et al. 2006
Livestock Water Productivity in the Nile Basin: the Water-Food-Livestock Nexus

- Improved livestock management has provided opportunities to increase agricultural water productivity

- **Key strategies:**
  - Feed sourcing based on water productive vegetative material
  - Improved animal husbandry, health, genetics and nutrition
  - Water conservation practices to reduce contamination and degradation of water
  - Optimal spatial balance of feed and drinking water sources

*After: Peden et al. 2008 (PN37)*
Fresh/Brackish Water Management in the Mekong basin

- Vietnamese River Systems and Plains (VRSAP) Model
- Provincial Land Use Policy: viewing saline and brackish water as a resource and opportunity rather than a constraint to food production
- Participatory extension approach: assists farmers select appropriate technologies
  - Diversification of production systems and livelihood strategies
  - Demonstration site farms made approximately $250 US/ha/year more than the controls.

Sources: Tuong et al. 2007; Hoanh et al. 2007
Multiple Use Systems

Nile, Limpopo, Andes, Indus-Ganges, Mekong

Promoting ‘climbing the MUS Water Ladder’

<table>
<thead>
<tr>
<th>Service level</th>
<th>Volume (lpcd)</th>
<th>Water needs met</th>
</tr>
</thead>
<tbody>
<tr>
<td>High MUS</td>
<td>100-200</td>
<td>All Dom needs; Garden, Trees, Livestock &amp; Entpse</td>
</tr>
<tr>
<td>Intermediate MUS</td>
<td>50-100</td>
<td>All Dom needs; Garden, Trees, Liv. or small Entpse</td>
</tr>
<tr>
<td>Basic</td>
<td>20-50</td>
<td>Consumption ok; Hygiene low, basic Liv., Trees</td>
</tr>
<tr>
<td>Basic Domestic</td>
<td>&lt;20</td>
<td>Cons. just ok; Hygiene too low, no PDive use</td>
</tr>
</tbody>
</table>

- Targeting 50-100 lpcd or more (3 lpcd safe w)
- Cost-benefit ratios at homestead level
- Accompanying measures (hygiene, integrated farming, markets, etc.)

Van Koppen et al. 2006; 2008; www.musproject.net
Small Reservoirs Project (SRP) in the Volta and Limpopo Basins

Reservoirs ensemble
Major scales:
- Basin/catchment
- Community/household

SMALL RESERVOIRS TOOLKIT

Around 30 tools & techniques in 4 main areas:
• Intervention Planning
• Storage and Hydrology
• Ecosystems and Human Health
• Institutions & Economics including:
  - Water Allocation
  - Governance

Source: Andreini et al. 2008 (PN46)
Re-Focusing the Discourse of Agricultural Multi-functionality

_Fishing in the Asian Monsoon Paddy Fields_

Source: IWMI/WorldFish, CPWF Theme 3 - Nguyen-Khoa & Smith, 2008
Social Conflicts

- Pollution of aquatic environment
- Increased wealth
- More trading opportunities
- Productive use of low lying area
- More productive fishery
- Less productive home gardens
- Increased debt
- Increased inequality
- Damage environment
- High risk of failure

After: Tuong et al. 2008 (PN10)

- RICE
  - Low risk
  - Less indebtedness
  - Increased opportunity for wage labour
  - More productive home gardens
  - Less productive fishery
  - Low income
  - Low production on ASS
  - Increased use of agro-chemicals

- SHRIMP
  - Low risk
  - Less indebtedness
  - Increased opportunity for wage labour
  - More productive home gardens
  - Less productive fishery
  - Low income
  - Low production on ASS
  - Increased use of agro-chemicals

Freshwater environment ↔ Social Conflicts ↔ Brackish environment
Companion Modeling for Resilient Water Management

Stakeholders’ perceptions of water dynamics and collective learning at catchment scale

How to model & integrate different stakeholders’ perceptions for collective action?

Source: Trebuil et al., 2008 (PN25)
MUS Framework: from Local to National Scales

- Multi-stakeholders governance platforms and negotiation support tools for water mgt & up-scaling
- “Learning Alliances” at multiple levels: interlinked platforms of diverse stakeholders
- Building upon communities’ IWRM
- MUS in a Watershed
  E.g. combined domestic and livestock water use in Ethiopia, Tigrai region: water treatment gallery, washing slabs and livestock watering points

After: Van Koppen et al. 2008 (PN28)
Proposed Research Areas, CPWF Phase 2: 2009-2013

- Characterization and diagnosis of MUS costs and benefits; identification of factors of success across basins
- Assessment and management of MUS water quantity, quality and timing
- Improvement MUS technical performance (design, operation)
- Social-ecological evaluation of trade-offs
- Enabling policies and institutions at local and catchment scales
Different Uses & Users of Water at Local & Catchment Scales

**Land & Water Resource Systems**
- Water body: river, floodplain, lake, pond, lagoon, reservoir, canal
- Irrigation system
- Ag. field (e.g. rice)

**Water Users**
- Agriculture
- Fisheries
- Livestock
- Forestry
- Domestic Use
- Ecosystem

**Management & Governance**
- Institutional arrangement
- Management options
- Rules, rights

**INTERACTIONS**
- Access to water (physical, social)
- Use of water (consumptive, non-consumptive)
- Impact on water quality
- Opportunity cost of the activity, sector
- Livelihood strategies
- Distribution of water and respective costs & benefits
- Potential conflicts over water, within and between sectors

**MUS Objectives**
- Increased Water & Food productivity
- Poverty Alleviation
- Ecosystem Conservation
- S&E Resilience

**Proposed MUS Conceptual Framework**
Some information on CPWF Phase 2

- Information in this presentation is preliminary

- Basin challenges and projects are described more fully in the Medium-Term Plan 2010-2012 (posted on CPWF web site)

- Announcements and information on contracting to be posted in early July
HOW IS PHASE 2 DIFFERENT FROM PHASE 1?
Number of basins

- **Phase 1**
  - 10 basins, including BFP Niger

- **Phase 2**
  - Six basins
  - Reduced agenda for
    - Karkheh
    - Niger
    - Sao Francisco
    - Yellow River
Number of projects per basin

- **Phase 1**
  - 6-12 or more projects per basin, plus Basin Focal Projects

- **Phase 2**
  - 3-5 projects per basin
Basin research agenda

• Phase 1
  – Not necessarily a coherent research agenda at the basin level

• Phase 2
  – Projects to be interrelated and coordinated, focusing on a well-defined basin development challenge
Research locations

• Phase 1
  – Pretty much anywhere in the basin, and at any scale

• Phase 2
  – Research concentrated in a smaller defined area, with an eye to larger cross-scale consequences
Coordination model

• Phase 1
  – Basin coordinator did not have much influence over individual projects in a basin

• Phase 2
  – Basin leader will have stronger coordination role: project leaders report to Basin leader
  – Basin leader in turn reports to one of the CPWF Directors
Cross-scale consequences of innovation

• Phase 1
  – Whole basin consequences of innovation were not systematically studied (some projects did, others did not)

• Phase 2
  – Research on whole basin consequences of innovation to be systematically included in one of the 3-5 projects
Cross-basin learning

• Phase 1
  – Cross basin learning not really emphasized

• Phase 2
  – Cross-basin learning to be encouraged through “topic working groups”
Phase 2 topic working groups

- Foster cross-basin learning and sharing
- Synthesize experiences gained in different basins
- Strengthen the science
- Apply lessons learned to further improve research in basins
- Provide capacity for cross-scale analysis within basins

*Iterative learning process*
WHAT ARE CPWF PHASE 2 BASIN DEVELOPMENT CHALLENGES AND PROJECTS?
Andes

• Challenge:
  – To improve rural livelihoods and increase water availability through **benefit-sharing** in selected basins

• Projects
  – Designing and implementing benefit-sharing mechanisms (such as payment for environmental services)
  – Assessing and anticipating the consequences of introducing benefit-sharing mechanisms
  – Learning from the past (insights regarding different land and water management practices and their consequences)
Mekong

• Challenge
  – To reduce poverty and foster development through management of water for multiple uses in large and small reservoirs

• Projects
  – Optimizing reservoir management for livelihoods
  – Water valuation
  – Optimal management of cascades of dams and reservoirs
  – Water governance
Nile

• Challenge
  – To improve rural livelihoods and their resilience through a landscape approach to rainwater management

• Projects
  – Learning from past experience on rainwater management research
  – Integrated rainwater management strategies – technologies, institutions and policies
  – Spatial targeting of innovation strategies
  – Assessing and anticipating the cross-scale and downstream consequences of innovation
Ganges, Limpopo, Volta

- Preliminary versions in MTP, still being developed

  - **Ganges**: To improve rural livelihoods in the delta through **integrated**, diversified cropping and aquaculture, and through **better use of** flood- or salt-affected areas

  - **Limpopo**: To improve rural livelihoods and their resilience through better management of rainwater

  - **Volta**: To improve rural livelihoods and their resilience through better management of rainwater, including management of small reservoirs
HOW ABOUT ANNOUNCING AND CONTRACTING PHASE 2 PROJECTS?
Process

• Most projects open competition, some commissioned
• Early July – invitation to submit proposals for projects selected for open competition (forms, rules, formats to be announced)
• Late August – deadline for submissions
• September – proposals externally reviewed
• October – successful proposals selected and announced
Innovation Research

Learning to Innovate

Building and testing theory and method to inform implementation

Learning and theory from outside, esp. Phase I; influencing theory and practice, i.e., IPG generation

Learning and theory from outside

IMPACT PATHWAY 1

IP 2

IP 3

ETC

Learning and theory from outside
Adaptive management, coherence and innovation research through monitoring impact pathways
FAQ on MUS

*How can the MUS Topic Leader influence the design and implementation of BDC projects in basins?*

- It is too late for the MUS TL (or any TL for that matter) to influence how project proposals are written for the first three basins - even though “basin priorities are not very specific on MUS”.

- It is not appropriate to make an MUS focus a criterion for evaluation and selection of projects awarded through competition for the first three basins.

- There is still time for the MUS TL to have an influence on how project proposals are written for the second three basins.
• The MUS TL can still influence research design in projects in the first three basins by helping with work plan development in the inception workshops (“highlight past CPWF MUS experience and cutting-edge research issues and methodologies on MUS”)

• The MUS TL should help with work plan development in inception workshops in the second three basins.

• It is appropriate to negotiate with project teams for commissioned projects so that MUS is properly included.

• BDC research agendas are designed to be dynamic: the MUS TL can have continued influence on MUS in projects in basins through reflection workshops

• The MUS TL can help improve the quality of MUS-related research in projects in basins through mainstream coordination activities: support for BLs; fostering cross-basin learning, mentoring, and capacity-building; cross-basin synthesis.
**What is the role of the MUS TL in designing and commissioning cross-basin research on MUS?**

- TLs will have resources to commission research, e.g. to develop a “generic cost-benefit analysis protocol”; “design of research on MUS across basins”.

**What is the role of the MUS TL in developing synthesis papers?**

*What kind of synthesis papers?*

- TWGs will generate synthesis papers, developed by the TL or through commissioned research. An updated MUS topic paper is an obvious first step. The TL may propose other subjects for synthesis papers. This question is closely related to the previous one.
How much time should the MUS TL spend on coordination vs. research?

- To be decided on a case by case basis.

Should TWG TLs all be contracted for the same number of days per year? If yes, how many? If no, how do we decide on TL days per topic?

- The MUS TL will be contracted for more than 20 days; probably for 30-40 days.
- Flexibility on number of days depending on the topic and respective needs.

How will the TWGs meet?

- Building a community-of-practice will require both face-to-face and virtual interaction and part of the TL’s responsibility is seek facilitate such interaction through, for example, organizing side meetings at conferences or other fora, and setting up and moderating an on-line discussion group.