Learning:
Experiences from West Bengal, India

Photo: CIFRI
Objectives of this session

• Explain some of the principles behind the methods used in the learning part of the process.

• Show how these principles were put into practice in West Bengal.

• Share some of the results, learning outcomes and experiences from West Bengal.
What are we talking about?

The learning cycle

Generating information: Passive and active

Utilising information

Sharing information
The resource systems.

Small (0.2 – 0.5 ha) brackish water, privately owned, systems with alternating brackish water fish/shrimp culture followed by freshwater fish with paddy rice culture.

Large (8 - 80 ha), freshwater, leased, systems with alternating dry season rice followed by freshwater fish with paddy rice culture.
The learning strategy in India: freshwater systems

• Compare yields and incomes from fish species mixes including high growth (carp) and high value (Punti and bata) species (active).

• Compare performance of Jaya cross rice variety with varieties traditionally used (active).

• Examine the benefits from the management systems being used (passive).
The learning strategy in India: brackish water systems

• Compare the performance of different saline tolerant rice varieties (active).

• Collect information on culture procedures to identify potential for future experimentation (passive).
Implementing the strategies

- Transplanting
- Stocking
- Generating information
- Monitoring
- Analysis
Principles guiding monitoring and data collection

• Focus on data collection relevant to the learning strategy.

• wherever possible use/adapt methods of collection and recording that are familiar and/or are already in use.

• where new systems or data collection methods are needed, these should developed together with those who will use them.
Indian situation

- CIFRI and Fisheries/Agriculture staff most comfortable with forms and sampling. Cannot visit sites often.

- Fishers generally low levels of literacy. Are present at the sites all the time and managing but their involvement is voluntary.
Monitoring methods

- Interviews (CIFRI staff)
- Rice monitoring (Agriculture staff)
- Fish identification and sampling (CIFRI & Fisheries staff)
- Farmer records (community responsibility)
The information we generated
Active stocking experiment (freshwater)

High value bata (*Labeo bata*)

High growth common carp (*Cyprinus carpio*).

Photo source: CIFRI
Passive experiment (freshwater): benefits from management (leasing)

- Leaseholder profit: 37%
- Labourers: 46%
- Wholesaler: 6%
- Fish for poor: 3%
- Farmers: 3%
- Village development: 5%
Active rice experiment (brackish water)

Production of different rice varieties

<table>
<thead>
<tr>
<th>Variety</th>
<th>Rice Yield (kg/bigha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh Patnai</td>
<td>350.00</td>
</tr>
<tr>
<td>IT5656</td>
<td>250.00</td>
</tr>
<tr>
<td>CSR1010</td>
<td>150.00</td>
</tr>
</tbody>
</table>
And what we didn’t...
Active rice experiment (freshwater)

- Poor implementation of experimental design.
- Insufficient training of farmers in cultivation of the new varieties.

Active fish experiment (freshwater)

- Compromise on stocking treatments meant that experiment was less informative.
Principles guiding information sharing

• Doing is better than seeing which is better that hearing.

• People learn best in familiar and comfortable learning situations.

• Allow people to develop their own understanding and knowledge.

• Making the most of experiences within and between stakeholder groups is as important as any new information.
Sharing - possible methods

Extension staff had quite a high level of education.

Farmers have low levels of literacy and prefer face-to-face methods, especially amongst trusted groups.
How we shared

Analysing and interpreting the data

Discussing results

Group work

Presentations

Demonstrations and practical training
What we learned (outcomes)

We can examine learning in terms of:

- Knowledge
- Skills
- Attitudes
- Practices
Outcomes: knowledge and skills

Both farmers and extension workers believed that their knowledge and skills had improved in a range of subjects.
Outcomes: Attitudes (Researchers and extension staff)

FROM:

“Farmers do not adopt the correct scientific practices”

TO:

“This is a new way of working for us but it is interesting and it has made working with farmers and understanding their problems easier”

“we can see that some of the farmers practices work well now we should try to understand why they work”

“Some of the farmers should come to our workshop with the director general so each can see how they are part of the bigger picture”
Outcomes: Attitudes (Farmers)

FROM:

“I would like to learn from the experiences of others but I do not want to share my own secrets”

TO:

“Now within the group discussing with my neighbours has helped me deal with my disease problems better”

“It is good that the government staff listen and try to understand our problems”

“Now I understand much more about paddy and fish culture”
Outcomes: practices

• At freshwater sites lease prices (used for village development funds) increased by about 12%.

• At brackish water sites villagers working together more and number of farmers involved increased from 25 to 38.
The end...
Evaluating Learning

Sommano Phounsavath, Malasri Khumsri, Chhoun Kimchhea, Kanokporn Deeburee, Kaing Khim, Nhung and John Sollows, Wolf D. Hartmann

Uptake of Adaptive Learning Approaches in Enhancement Fisheries: Final Workshop
30-31 May 2005, IFREDI, Phnom Penh, Cambodia
The learning cycle

**Learning**
- Generate knowledge
- Share knowledge
- Utilise knowledge

**Preparing for learning**
- Select learning options
- Understand resources, users and managers
- Identify frameworks for sharing information

**Evaluating learning**
- Identify and engage stakeholders
- Evaluate the outcomes
- Evaluate the process
Session topic

- Experiences and lessons learned from implementing adaptive learning in the Mekong Basin
- Evaluating learning
  - Methods
  - Outcomes
  - Processes
  - Cost effectiveness
Preview

- MRC/FP and MRRF
- Activities under MRRF/MRAG AL collaboration
- Experiences from MRRF/AL activities
- Some comments on ‘learning’ and ‘(co-)management’
- Case (Daklak and Soc Trang, by John)
What are we talking about?

The learning cycle

Generating information:
Passive and active

Utilising information

Sharing information
MRC/FP Programme Outputs

Output 1: Information generated

Output 2: Information communicated

Output 3: Information Use facilitated
MRRF Sites

- About 25 water bodies in four countries of LMB
- Reservoirs; floodplains; rivers (deep pools); rice/shrimp culture;
- Multi-scale/multi-village
MRRF/AL Sites

Pak Peung, Huey Siet reservoirs

Kaeng Lawa Reservoir

Khong Island

Sirinthorn Reservoir

Huay Luang Reservoir

Huay Luang Reservoir

Pak Peung, Huey Siet reservoirs

Baseline data collection/sharing (Huay Luang)

Nam Ngum Reservoir

Nam Houm, Nam Suang reservoirs

Boeung Chen Len, Chroy Chhek, TmorDa/Teuk Chhar reservoirs

Khong Island

Nam Ngum Reservoir

Nam Houm, Nam Suang reservoirs

Deep Pools, Stung Treng

Fishing Lots No. 13-15

Lak Lake, Ea Soup, Buon Tria reservoirs

Fishing Lot No. 18

Community Fisheries

Hoa Tu 1 Commune
AL activities

- Routine management planning and review
- Creation of AL opportunities
  - Stocking
  - Decentralized fingerling production (mobile hatcheries)
- Workshops:
  - “Fisheries Enhancement in the central Highlands”, BMT, VN, Feb 2004
  - “Learning from Community Fisheries”, Phnom Penh, Cambodia, February 2005
  - “Participatory water management”, Soc Trang, VN, May 2005
  - “Data and information collection and sharing”, Huay Luang, Thailand, January 2005
AL activities

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  - “Participatory water management”, Soc Trang, VN, May 2005
  - “Data and information collection and sharing”, Huay Luang, Thailand, January 2005
Emphasis of MRRF’s AL work

- Sharing information
- Utilizing information
- Generating information
Structure for AL (Lao PDR)

Co-management

Community-based management

FMC
DAFO
Fisheries Management Plan

LARReC
NAFRI

FMC
DAFO
Fisheries Management Plan

FMC
DAFO
Fisheries Management Plan

FMC
DAFO
Fisheries Management Plan
Process for AL (Cambodia)

Community-level management

| PRA | Trustbuilding | Setting up of Core Group (temporary) | Community committee election | Formulation of by-laws | Community management planning |

Federation-level (waterbody-wide) management

Federation election

Formulation of fishing regulations

Federation management planning

Monitoring/ Evaluation/ Adaptation Election/(Re-) Plan

Implementation

Implementation
## Management concerns

<table>
<thead>
<tr>
<th>Country</th>
<th>Management Concerns</th>
<th>Management Objectives</th>
<th>Management Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>Effort increase Illegal fishing Habitat destruction Inefficient management</td>
<td>Income diversification Combat illegal fishing Habitat protection Efficient management</td>
<td>Training Organizing management Revise/enforce rules Credit provision</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>Low/decreased yields Illegal fishing Habitat destruction Lack of management Fish disease</td>
<td>Income diversification Combat illegal fishing Habitat protection Efficient management</td>
<td>Training Organizing management Revise/enforce rules Improve marketing Fund raising</td>
</tr>
<tr>
<td>Thailand</td>
<td>Low/decreased yields Habitat destruction Inefficient management Fish disease</td>
<td>Income diversification Habitat protection Efficient management</td>
<td>Training Organizing management Revise/enforce rules Improve marketing</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Low/decreased yields Inefficient management</td>
<td>Income diversification Efficient management</td>
<td>Training Organizing management Credit provision</td>
</tr>
</tbody>
</table>
## Management Plans, Lao PDR

<table>
<thead>
<tr>
<th>Plan items</th>
<th>Reservoirs</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NH</td>
<td>NS</td>
</tr>
<tr>
<td>Organize reservoir fishing committee</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Data collection</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Review fishing regulations</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Conservation zones</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Cage-culture</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Stocking</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Organize fisher groups</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>
User management needs and interests

Compliance

Management plan implementation

Fish marketing

Fish harvest
User management needs and interests

Banking and accounting

Management impact
Is there “Co-management” at Bung Wa Tai?

<table>
<thead>
<tr>
<th>Management function</th>
<th>Community</th>
<th>Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making of regulations</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Enforcement/patrolling</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fisheries enhancement</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fish marketing</td>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td>Capacity-building</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>Funding</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Creation of income alternatives</td>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td>Management decision-making</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Methods

- JUGO workshops
- Subcontracting information generation
- Exchange and study/information visits
Joint User/Government Officer Workshops: Conservation Zones, 2001

Thailand

Lao PDR
Linking “research” and management

Scientific/technical services to be provided by LARReC for implementation of reservoir management plans 2003/2004

<table>
<thead>
<tr>
<th>Study/ Technology transfer</th>
<th>NH</th>
<th>NS</th>
<th>HS</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish disease study</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing survey</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecotourism study</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cage-culture research</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pen-culture</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile hatchery operation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CPUE analysis</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Study visits

First transboundary exchange by users on management issues (fish processing)
Sharing and communicating

Vertically
Across levels
(local → national → regional)

horizontally
between communities & waterbodies
Information sharing by users

- Lao reservoirs
- Lao and Thai reservoirs
- Khong Island districts
- Central Highland reservoirs
- National Community Fisheries
- TAB
Does co-management work? Satisfaction and perceived benefits

<table>
<thead>
<tr>
<th>Gender</th>
<th>Vietnam Satisfaction</th>
<th>Thailand Satisfaction</th>
<th>Vietnam Benefit</th>
<th>Thailand Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>33%</td>
<td>75%</td>
<td>67%</td>
<td>73%</td>
</tr>
<tr>
<td>Women</td>
<td>58%</td>
<td>96%</td>
<td>8%</td>
<td>61%</td>
</tr>
<tr>
<td>Total</td>
<td>44%</td>
<td>82%</td>
<td>75%</td>
<td>92%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Much better</th>
<th>Somehow better</th>
<th>No difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge sharing</td>
<td>59%</td>
<td>16%</td>
<td>25%</td>
</tr>
<tr>
<td>Improved communication</td>
<td>32%</td>
<td>48%</td>
<td>20%</td>
</tr>
<tr>
<td>Opinions are heard</td>
<td>78%</td>
<td>22%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Does co-management bring benefits?

- Increase in production
- Increase in income
- Decrease in illegal fishing
- Strengthening of management organization
Experiences in evaluation

- Multiple issues/dimensions
- Emphasis on
  - Outcomes – not process
  - Facts – not learning as such
- Attempts at user evaluation of learning process not very successful (tacit leaning?)
# Contrasting our experiences

<table>
<thead>
<tr>
<th>Item</th>
<th>MRRF</th>
<th>MRAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issues</td>
<td>Multiple</td>
<td>Single?</td>
</tr>
<tr>
<td>Villages</td>
<td>Multiple</td>
<td>Single?</td>
</tr>
<tr>
<td>Objective of doing</td>
<td>Improved resource use</td>
<td>Learning</td>
</tr>
<tr>
<td>Design</td>
<td>‘For real/Tangible results’</td>
<td>Experiment</td>
</tr>
<tr>
<td>Emphasis</td>
<td>Routine management P&amp;I by ‘co-managers’</td>
<td>Research project approach</td>
</tr>
<tr>
<td>Information source</td>
<td>‘Experience’</td>
<td>Experiment</td>
</tr>
<tr>
<td>Subject of adaptation</td>
<td>Institutional (Management plan)</td>
<td>Management implementation</td>
</tr>
</tbody>
</table>
What’s in a word?

- Learning; adaptive learning; management; co-management; adaptive co-management 
  what next?

- What we do is ‘management’ (“The What”)

- Involving two key partners, i.e. users and government in management, is called ‘co-management’ (“The How”)
What is ‘management’?

- Riparian languages: First and foremost *controlling*, also *caring of and about* something.
- *To manage* is to exercise “the right to regulate internal use patterns and transform the resource by making improvements.”
AL and ‘good governance’

- Management (the “what”) – a governance issue (the “how”)
- Good governance’ (participation; accountability; transparency) = democracy (“adaptive democracy”?)
- Co-management: an example of ‘good governance’ = democratic management; adaptive by definition?
Cases: Stocking in Central Highlands, participatory water management in Soc Trang
Organizational Capacity-building

- PRA (Problem identification)
- Set up Fisheries Management Committee (CFMC)
- Define roles and responsibilities of CFMC

Institutional Capacity-building

- (Re-) Formulate Fisheries Management Plan
- (Re-) Formulate fisheries management measures
- Plan implementation

Monitoring/ Evaluation/ Adaptation/ (Re-) Plan

Process for AL
Immediate Objective
*(Desired change in behavior of target groups)*

- ‘Jointly’ *(multiple stakeholders)* develop and implement plans for sustainable management of selected river and reservoir fisheries at different levels.

- Disseminate *(fisheries line agencies; TAB; etc.)* experiences made as models for basin-wide aquatic resource *(co-)* management.”
What is ‘management’?

- **Strategic management (fishery policy formulation and planning)**
  - Definition of objectives and directions to meet them
  - Legislation
  - Decision regarding structure of management system

- **Tactical and operational management**
  - Formulation of suitable mix of management measures
  - Annual levels for each management measure
  - Day-to-day decisions
  - Research and data collection to provide necessary knowledge base
## Management Functions and Activities

<table>
<thead>
<tr>
<th>Functions</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy decision-making</td>
<td>Setting objectives; planning; training; researching; organizing;</td>
</tr>
<tr>
<td>Data collection/monitoring</td>
<td>Gathering; analyzing;</td>
</tr>
<tr>
<td>Regulating access</td>
<td>Licensing; formulation/ratification of restrictions on areas and seasons</td>
</tr>
<tr>
<td>Regulating harvest</td>
<td>Restricting gear; setting quotas etc.</td>
</tr>
<tr>
<td>Enforcement</td>
<td>Policing; awareness creation;</td>
</tr>
<tr>
<td>Habitat/resource protection/</td>
<td>Creation of conservation zones; stocking, bank restoration, etc.</td>
</tr>
<tr>
<td>enhancement</td>
<td></td>
</tr>
<tr>
<td>Resource use coordination</td>
<td>Stakeholder identification; IRUP&amp;M; Establishing of negotiation platforms;</td>
</tr>
<tr>
<td>Benefit maximization</td>
<td>Supply management; quality enhancement; product diversification</td>
</tr>
</tbody>
</table>

(adapted from Pinkerton and Weinstein 1996)
Our working defining and concept of co-management

A formalised process of sharing authority and responsibility by government and organised user-groups in decentralised decision making....’

- Openly stated and regularly followed
- Power or right to control actions
- Ability/capability to act on one’s own
- ‘Divide or join in’
- ‘Decisions are made at the lowest possible level’
- ‘Management is decision making’
Learning

- Reducing uncertainties?
- Tacit/discursive
Learning and Knowledge

Calvin and Hobbes

The more you know, the harder it is to take decisive action.

Once you become informed, you start seeing complexities and shades of gray.

You realize that nothing is as clear and simple as it first appears. Ultimately, knowledge is paralyzing.

Being a man of action, I can't afford to take that risk.

You're ignorant, but at least you act on it.
MRRF Outputs

Output 1: Management strategies developed

Output 2: Fisheries (co-) management plans formulated and implemented

Output 3: Capacity of co-managers strengthened
MRRF Interest in AL: Perceived problems (Kolkata, June 2003)

- Incompatibility of information needs of co-managers?
- Division of labor in co-management
- Incompatibility of methodologies of information generation
- “Scientific” orientation of counterparts and line agency
- Difficulty of explaining why and what for information is necessary (to users)
- Cost of information generation (for users)
Some Ex-Post Evaluations of Adaptive Learning Experiences from MRRF Viet Nam

-- Management of (River and) Reservoir Fisheries, Dak Lak
-- Strengthening of Participatory Management of Water Resources, Soc Trang
Structure for each “Project”

• (1) A little background
• (2) The Evaluation Questions
  • 1. Was the information generated what was expected?
  • 2. Has the information been effectively shared and utilized?
  • 3. Were the methods and processes used to generate and share information effective?
  • 4. Are the benefits from the information gain worth the costs in acquiring it?
• (3) Additional stuff, where appropriate
MRRF Dak Lak

1. Dak Lak province, Central Highlands, since 1995.
2. Fisheries co-management in six water bodies began 1998
3. > 300 reservoirs in Dak Lak, mostly under 100 ha, mainly for irrigation
4. Stocking common, usually under contract with local authorities (privatised or quasi-privatised)
5. Reservoir fisheries managers decide what to stock, invest, regulate, and sell.

Focused workshop on “Learning for Fisheries Enhancement in the Central Highlands of Viet Nam” (February, 2004)
Enhancement Workshop Objectives

• To compile pertinent information available with the Viet Nam sub-component of MRRF as well as, possibly, other agencies involved, to be presented at the workshop;

• To provide an opportunity for people involved in reservoir fisheries development activities to exchange knowledge and experiences on stocking practices for small(er) water bodies in Viet Nam;

• To systematically evaluate experiences made so far and formulate “lessons learned” on fisheries enhancement in Viet Nam;

• To develop recommendations for future enhancement activities and disseminate these recommendations in a simple leaflet.

• Start-up with preparatory activities for the formulation of a programme of stocking Lak Lake.
In general, how do people manage?

- Own knowledge plus training
- Experience, communicating, **adapting**, and repetition of same.
- Planning tends to be short-term, flexible, and adaptive.
- If you can get them away from day-to-day problems, they can define their objectives.
  - Sustained living standards and peace of mind
  - Organize to assure sustained high fish yields
  - United approach to community welfare
  - Cooperation with local governments in fisheries management
In general, how do people know what to stock?

• A: Mainly from experience / Trial-and-error.
  ■ It works not too badly!
  ■ In 1999-2000, the Reservoir fisheries manager at Ea Kao “followed” our “recommendations” before we made them.
  ■ (A lot of good scientists never went to university.)
  ■ Therefore, if a farmer or fisher disagrees with or doesn’t follow your recommendations, try to find out why!

• B: Recommendations from our project or experienced reservoir managers?

• C: Limited by what is available and how much money they have.
Was the information generated what was expected?

• By and large, yes, as well as other information related to reservoir fisheries management.

• Every reservoir is different: The “best” management depends on the reservoir, and should adapt to changing circumstances, from year to year.

• Some “meat”: 
Ea Soup Stocking recommendations, February, 2004

- Best time for stocking: March to May.
- A stocking combination of Silver/ bighead carp (50%), grass carp (30%), Indian carp (10%), and tilapia (10%) is acceptable for fishing.
- Selection of good, healthy fingerlings is important.
- Patrol the fishery closely for ten to fifteen days after stocking.
- Stock far from outlets and spillways.

May be interesting to know current opinion.
Buon Tria Stocking recommendations, February, 2004

• **Best time for stocking: February-March.** Water levels in the reservoir are high and there is plenty of natural feed.
• -- The fishers lack the money to buy suitable gear to catch stocked fish, considering the abundance of bamboos and tree stumps in the reservoir.
• -- Silver barb and tilapia are easy to catch and get a good price..

May be interesting to know current opinion.
Note the differences from Ea Soup!
What did we learn from following stocking and production in various reservoirs from 1996/97 to 2001?

• Every manager stocks, based on his own experiential learning and what is available. Our experiment was passive, to get very rough guidelines/point of beginning for inexperienced managers.

• General guidelines will not apply perfectly to any reservoir. Experiences managers do not need them.
The guidelines

<table>
<thead>
<tr>
<th>Species</th>
<th>Number per hectare</th>
<th>Size (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Res. Area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>150-200 ha</td>
<td>50 ha</td>
</tr>
<tr>
<td>Silver</td>
<td>1250</td>
<td>2500</td>
</tr>
<tr>
<td>Bighead</td>
<td>800</td>
<td>1500</td>
</tr>
<tr>
<td>Indian</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Common</td>
<td>Depends; 1000 in small reservoirs?</td>
<td>?</td>
</tr>
<tr>
<td>Grass</td>
<td>Depends</td>
<td>?</td>
</tr>
</tbody>
</table>
Why stock silver carp?

- (a) MRC: Stock indigenous species.
- (b) Government: Stock high-value species.

No arguments against either principle.

So, why stock silver carp, which is both exotic and low-priced?

From the Head, Ea Soup Fishers’ Union:

- **Food security!** Nothing beats it as an easily-caught, easily-raised protein producer.
Fishers’ Wisdom (2)

What size should be stocked?

• Conventional wisdom: Stock big fingerlings, for higher recovery and better returns
  • BUT
  • Difficult to get in Dak Lak AND more expensive per fish.
  • Good returns from stocking smaller ones.
  • Most reservoirs are poor in wild species: high drawdowns/ small catchment areas.
  • “Optimal” stocking size seems species-specific.
Has the information been effectively shared and utilized?

- Based on observations at the workshop and the post-workshop evaluation by participants, information seemed to have been effectively shared.

- Key project staff missing. No follow-up to assess utilization.

- The fishers’ groups adapt their stocking strategies continuously, based on experience and circumstances.

- Project guidelines have been shared in various fora, mainly within Dak Lak province. Staff have used them. Level of utilization is not known, but the Province requested such guidelines long ago!
Were the methods and processes used to generate and share information effective?

• By and large, yes, except for the field trips, for some participants.
• Visiting small reservoirs (< 5 ha.) doesn’t help managers of bigger reservoirs (>100 ha.) much. Too simple.
• Fisher groups managing reservoirs would benefit from visiting reservoirs managed by other groups, rather than visiting quasi-privatized fisheries.
Are the benefits from the information gain worth the costs in acquiring it?

Was the workshop worth the cost?
• Probably. The discussions were excellent, but the benefits may never be measured. Not a problem for the intended beneficiaries.
•

Is fishers’ monitoring worth the cost?
• Fishers will not monitor any more than they have to, since it takes time and maybe money, so their efforts are likely to be very cost-effective, but may miss some things.
•

Was our monitoring worth the cost?
• ?? Big effort, reduced some uncertainty about some stocking practices, and developed expertise in reservoir fisheries among government staff. To what extent are the guidelines used?
Strengthening of Participatory Management of Water Resources, Soc Trang

2. Two farmers’ groups in Hoa Tu 1 Commune, My Xuyen District, Soc Trang Province, Mekong delta
3. Rice-shrimp culture, evolving into shrimp monoculture, is the economic mainstay
4. Excessive dependence on shrimp culture, with a trend towards intensification
5. Problems with disease and pollution led authorities to organize farmers’ groups to coordinate and manage shrimp culture and water resources.

Preliminary Survey to assess progress of project against indicators (April-May, 2005)
The survey

- Aimed to contact all members of each participating organization (24 + 31 members)
- Contacted 17 non-participating farmers
- Indexed scores to qualitative questions:
  (-2 much worse or much less to +2 much better or much more)
Was the information generated what was expected?

• Yes. No major surprises at any level, but with better foresight, we could have developed a questionnaire which answered more questions.

• Some “meat”:
Your understanding of the Club/Cooperative plan, compared to one year ago is

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Score</th>
<th>% with improved understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLB 4</td>
<td>.92</td>
<td>75</td>
</tr>
<tr>
<td>Phu Loi Co-op</td>
<td>.80</td>
<td>81</td>
</tr>
<tr>
<td>Others</td>
<td>.20</td>
<td>30</td>
</tr>
</tbody>
</table>
Farmers’ Comments

• (a) Plans still needs improvement to assure compliance (1) and generate benefit for members (1), both from CLB 4.
• (b) Attendance at meetings is important for understanding the plan (3, from Phu Loi co-op) and following the plan (1, from CLB 4).
• (c) Division into four subgroups makes plan application easier (1, from CLB 4).
Your understanding of training courses given over the past year, as compared to earlier courses, is much better somewhat better the same somewhat worse much worse

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Score</th>
<th>% with improved understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLB 4</td>
<td>1.125</td>
<td>92</td>
</tr>
<tr>
<td>Phu Loi Co-op</td>
<td>.97</td>
<td>94</td>
</tr>
<tr>
<td>Others</td>
<td>.73</td>
<td>73</td>
</tr>
</tbody>
</table>
Farmers’ Comments

• (a) Twenty-five member farmers indicated that the courses had high applicability, and one indicated that applicability was low, because she had little money.
• (b) Training was more effective because it was by subgroup. (8, all from co-operative)
• (d) Regular follow-up is important. (1 each from Co-Op and CLB 4).
Have they applied the training?? (1)

- Results fragmentary (and probably always will be)
- Fish culture course (Aug. 2004)
- 64% stocked last year
- >72% plan to stock this year
Have they applied the training?? (2)

- Shrimp culture course (Feb./05) encouraged low stocking densities
- Mean stocking density has dropped by 28%
- 62% of farmers reduced densities
- WHY?

<table>
<thead>
<tr>
<th>Appropriate</th>
<th>Money</th>
<th>Area</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>39%</td>
<td>25%</td>
<td>16%</td>
<td>20%</td>
</tr>
</tbody>
</table>
How does your level of compliance with club/cooperative decisions and regulations in 2004 compare with your compliance in 2003?

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Score</th>
<th>% with better compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLB 4</td>
<td>.70</td>
<td>65</td>
</tr>
<tr>
<td>Phu Loi Co-op</td>
<td>.81</td>
<td>87</td>
</tr>
<tr>
<td>Others</td>
<td>.27</td>
<td>50</td>
</tr>
</tbody>
</table>
Farmers’ Comments

(a) Not all members follow regulations (3 each, from CLB 4 and the Co-operative).

• (b) Participatory decision-making important (3 from CLB 4).

• (g) Not satisfied with/ do not trust executive (3 from CLB 4, 2 from co-operative)

• (h) Technical training helps compliance (1 from co-operative, 1 from outside.)
(a) Did you raise any questions or concerns with your club or village head in 2004?
(b) Compared with 2003, response to your concerns was much better somewhat better the same somewhat worse much worse

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Score</th>
<th>% more satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLB 4</td>
<td>.65</td>
<td>65</td>
</tr>
<tr>
<td>Phu Loi Co-op</td>
<td>.55</td>
<td>55</td>
</tr>
<tr>
<td>Others</td>
<td>.25</td>
<td>37.5</td>
</tr>
</tbody>
</table>
Has the information been effectively shared and utilized?

• In terms of understanding and following plans and training courses, there has been good progress, but there is plenty of room for improvement, especially with non-participating farmers.

•

• This is important, because all operations use (and pollute) the same water resources.
Were the methods and processes used to generate and share information effective?

- Yes to (some) training courses, but how to be MORE effective?

- Sharing of survey results: remains to be seen. Project will use

- Meetings: Progress, but Rome wasn’t built in a day!
- A question continuously asked of local stakeholders.
Are the benefits from the information gain worth the costs in acquiring it?

Farmers, particularly subgroup leaders, monitor water quality, stocking, appearance of disease, harvests, and other items. Some do a better job than others, but this is improving.

Post-project, they will adapt these monitoring systems to their needs, limitations, and inclinations.

Good question for the farmers.

Project staff-monitored activities will be used to plan future project activities, so are probably cost-effective.