

Local Experiences in Community Management of Water Resources: Case Studies in Integrated Water Resources Management (IWRM) in Lao PDR¹

FINAL PROGRESS REPORT

BACKGROUND

Lao PDR has the highest availability of renewable water resources per capita in Asia. This abundant supply of water represents one of Lao PDR's most valuable assets, supporting irrigation and agricultural production, fisheries, hydropower generation, tourism, and high freshwater biodiversity. Most of the population of Lao PDR, especially in peri-urban and rural areas, uses wetland products such as fish, frogs, vegetables, and fuel wood for both subsistence and income. In many parts of the lowland plains, fish and other aquatic fauna provide 70 to 90 percent of the animal protein in people's diet.

Recognizing the importance of freshwater resources to the health of the country, the Government of Lao PDR has taken a number of steps to promote sound management of its water resources. These include Decree 118/CCM (1989) on the Management of Wildlife and Hunting and Fishing, the Law on Water and Water Resources (1996), the Environment Protection Law (1999), and the Draft Water and Water Resources Policy (2000). Despite these achievements, mounting evidence from community sources indicates that aquatic resources, especially fish, are in decline. Possible causes include unsustainable fishing regimes, agro-chemical pollution, and habitat loss through infrastructure projects and changes in land use. These pressures can be expected to escalate rapidly in the next several decades. The country can also anticipate increased competition for freshwater resources among sectors within Lao and between Lao and its neighbors.

The status of freshwater resources in Lao PDR is further complicated by socioeconomic concerns. Lao is currently considered to be one of the least developed nations. Poverty alleviation, especially food security, ranks as one of the highest priorities for the Government. Strengthening and supporting the management of the country's aquatic resources is a critical component of efforts to alleviate poverty, but special care must be taken to balance short-term development goals with sustainable resource use that preserves aquatic resources for future generations.

The pilot study will therefore be undertaken with the following objectives:

- Document and disseminate community-based models of IWRM
- Enhance knowledge, awareness and understanding of IWRM at national, regional, and local community levels
- Initiate innovative, pilot IWRM projects that draw from successful models

¹ *The views expressed in this paper are the views of the authors and do not necessarily reflect the views or policies of the Asian Development Bank (ADB), or its Board of Directors or the governments they represent. ADB makes no representation concerning and does not guarantee the source, originality, accuracy, completeness or reliability of any statement, information, data, finding, interpretation, advice, opinion, or view presented.*

This pilot study was undertaken by the World Conservation Union – Lao PDR (IUCN) in collaboration with the Water Resources Coordination Committee (WRCC) of Lao PDR, for documenting, supporting, and enriching local knowledge of integrated water resource management, and for enhancing the local, national and regional information base across all sectors.

THE PROJECT SITE AND ACCOMPLISHMENTS

- **Approach and Methodology.** This case study of Attapeu province was developed through a series of consultations conducted at the national, provincial and local levels to better understand how people view water resources and to identify examples of integrated management, as well as those areas with potential for integration. This was done by analyzing local examples of water resources management based on the experience of the participants, taking a very broad perspective of what IWRM might include.

A series of consultations to collect the information for this case study were conducted as follows:

- The first step was a meeting with the Water Resources Coordination Committee (WRCC) Secretariat in Vientiane. This meeting introduced an overview of the water resource management issues already identified in the study area in the example activities, and the draft agenda for the consultations to be held at the local level. This meeting also provided an opportunity for clarification and revision of the planned approach based on the comments of the Secretariat members.
- The second step was a workshop held at the local level in Sanamsai district, Attapeu province. The participants in this workshop included representatives from the provincial Agriculture Office and Women's Union, the District authorities related to IWRM, and representatives from 3 villages that had been involved in previous activities related to the preparatory phase of the GEF Mekong Wetlands Biodiversity Project. The activities in this workshop were intended to begin to define the scope of IWRM and to discuss and document local issues related to the use of water resources.
- The third and final step was a workshop held at the provincial level in Attapeu. The participants of this workshop included representatives of the group in the workshop held in Sanamsai District, as well as representatives of the provincial-level agencies involved in water resources management. The participants were asked to review the experience from the local level based on the results of the district workshop and to apply it to the situation at the provincial level. The group was then asked to use this experience as a framework to describe experiences in management of water resources in the province.

The examples used for discussion were from two studies recently conducted in Attapeu in conjunction with IUCN as part of the preparatory phase of the GEF Mekong Wetlands Biodiversity Project. These included: (1) Participatory assessment of the role and nutritional value of aquatic resources in the livelihoods of rural people in Attapeu province, Lao P.D.R.; and (2) Participatory Poverty Assessment. Both these activities were aimed at gaining a better understanding of the livelihoods of people living in the wetland areas of Attapeu and of the relationships between local

livelihoods and aquatic resources. Summaries of the findings of these two activities are provided in Boxes 1 and 2 below.

Box 1: Participatory assessment of the role and nutritional value of aquatic resources in the livelihoods of rural people in Attapeu province, Lao P.D.R.

This study was conducted as part of the "Dialogue on Water, Food and the Environment" through a collaboration between IUCN and FAO. Activities for this study were conducted in Attapeu province during November and December of 2002.

Objectives of the study included:

- Assess the nutritional value of living aquatic resources in livelihoods
- Assess food security strategies at provincial, district and household levels
- Identify potential opportunities, constraints and treats to nutritional security that relate to water management and the environment

The results show that although aquatic resources in Attapeu are extremely diverse, relatively abundant, and play an important role in people's diets, that food insecurity, malnutrition and poor health are common. The issue of food security is of high priority in the province, but strategies to address this issue mainly focus on rice. Rice production is very important for achieving food security, but to fully address the needs of people, other aquatic resources such as fish are extremely important as well. Some main issues identified include the following:

The importance of aquatic resources:

- The most important source of animal protein consumed in terms of frequency and quantity.
- Time and resources devoted to acquiring aquatic resources are substantial part of livelihood. This includes fishing and foraging activities, as well as making and maintaining fishing gears.

"Security" of aquatic resources is important because:

- Aquatic resources are currently the main animal protein in a protein-deficient diet
- Aquatic resources are a key part of the coping strategy for periods rice shortage
- Few coping strategies exist for fish shortages
- Fish shortages could have major impacts on peoples well being

Livelihoods are inseparable from aquatic resources:

- Food security and poverty alleviation strategies must include aquatic resources management
- Aquatic resources management needs to include elements of education and public health

The consultation activities conducted in Sanamsai district began with presentations of the results of the two recent studies as examples, as well as a brief explanation of some of the concepts of IWRM. Following the discussion, participants were asked to develop the scope of water related issues at the local level by brainstorming various types of water use. This was followed by group work where the participants were

asked to discuss each type of water use and present local experiences, strong and weak points, and lessons learned.

Box 2: Participatory Poverty Assessment

The Participatory Poverty Assessment (PPA) was conducted as a collaborative activity between Action Aid, an NGO, and IUCN as part of the preparatory phase of the GEF Mekong Wetlands Biodiversity Project. Activities were conducted in Attapeu in November and December of 2002. The objectives of the PPA included:

- To initially inform the development of the project proposal, i.e. to ensure that the project addresses poverty reduction and sustainable livelihoods effectively.
- To get potential stakeholders, with special reference to poor communities, involved in the project.
- To build up capacity for the local people and government staff in conducting research and surveys using participatory approaches for the design and particularly for planning poverty reduction projects.

To do this numerous participatory assessment, village-level activities were conducted to allow local people to express their experience and opinions concerning the status, cause and extent of poverty in their communities.

The results clearly show how water resources play an important role in people's livelihoods, and that these livelihoods are very complex. Examples of important issues that were identified during this study include:

- Natural resources from commons areas are essential for local livelihoods, but particularly for poorer people. Aquatic resources such as fish and other aquatic animals are extremely important, but seem to be declining due to over exploitation and degradation of natural resources.
- Rice production is low with many households unable to produce enough to last for a full year, and relatively undeveloped in terms of management and irrigation.
- The main emphasis of agricultural development is in terms of expansion of cultivated land and provision of irrigation. There are significant distributional issues as poorer people face considerable constraints to becoming involved in irrigated agriculture.
- Flooding and drought have huge impacts on peoples livelihoods
- Poor health is a key cause and indicator of poverty
- Clean drinking water is not widely available or accessible

Provincial level workshop activities in Attapeu were similar to those conducted at Sanamsai district. One of the differences was that participants were asked to elaborate on the list of water use issues developed at the district level and expand the list based on the provincial prospective. Participants were then asked to elaborate the local experience, strong and weak points, and lessons learned in the province concerning the management (rather than use) of the various issues identified.

The approach used at both the district and provincial levels was to investigate issues and activities related to IWRM without trying to impose a rigid definition of IWRM.

This approach was taken because there is currently no clear understanding of many of the complexities of integration or how to address them directly. There is, however, good knowledge of local water resources, their use and current management. It is for this reason that local experiences were used as the starting point for this case study, rather than the potential development and application of IWRM.

ISSUES ARISING FROM THE STUDY

WRCC Meeting in Vientiane

Representatives from a range of national government agencies with responsibility for water related issues (including, irrigation, water planning, sanitation, fisheries and aquatic resources) participated in an introductory meeting hosted by the Water Resources Coordinating Committee. The two participatory livelihoods studies were presented as a focus for discussing issues related to IWRM. Poverty alleviation, particularly in terms of food security and health, is the cornerstone of national and provincial development planning, and both studies illustrated the fundamental importance of water management for both alleviating poverty and for ensuring sustainable equitable development.

IWRM was presented as *"a holistic view of water management, aims to ensure the coordinated development and management of water, land, and related resources to maximize economic and social welfare without compromising the sustainability of vital environmental systems"* and as *"a strategy for **alleviating poverty**, promoting **food security**, and conserving the **environment** through wise management."*

The concept of IWRM was new to most of the participants, although the objectives and the need for a range of water management strategies to address poverty alleviation that would be environmentally sustainable were readily acknowledged. The lack of effective integration between different sectors related to water management was discussed as a cause of vulnerability and poverty, and a threat to long-term sustainable development.

Questions were raised about the scale at which IWRM should and could operate in Lao PDR whether on ecological (eg river basin) or administrative (provincial, district) boundaries. The notion of 'integrated management' was a cause of much discussion, as to the extent to which it should refer to coordination between sectors, or whether it should refer to an approach to development and natural resource management that takes integrated ecosystem approach as its starting point. Participants were more familiar with the notion of integrated management as referring to cross-sectoral coordination.

The detail of the presentations on local livelihoods generated a great deal of interest. It was felt that focusing on the relationship between water management and poverty alleviation would be an appropriate strategy for introducing the concept of IWRM at provincial and district levels. The proposed objectives and activities planned for conducting this case study were readily approved.

Questions were raised, however, on the methodology to be used at the local level. There was concern that local people would not be aware of important issues related to IWRM and that a prescriptive, rather than "brainstorming", approach should be used. After detailed discussion it was finally agreed that to fully meet the objectives

of the case study that an open approach, exploring the local understanding of IWRM would be most appropriate to meet the objectives of the study.

Sanamsai District

The participants in Sanamsai district confirmed the findings of the results of the study on the nutritional role of aquatic resources and the Participatory Poverty assessment. They agreed that aquatic resources are central to the livelihoods of rural households in the area. The issues of food security, health and nutrition, and livelihood vulnerability are all closely linked to water resources and their management.

Expanding on the examples presented from the two previous studies, the participants developed an expanded list of issues related to water resource uses to include:

- Aquatic resources (biodiversity)
- Forests at the water sources (top of the watershed)
- The use of water for irrigation
- Water for household use, communication and transport
- Public awareness raising and knowledge
- Regulations and laws for water management
- Conservation

This list exemplifies the local water resource management challenge of maintaining the livelihoods of local people by preserving traditional uses of water (e.g., fishing, transport, household use), while at the same time meeting people's growing development needs (e.g., forests being opened for agriculture, the use of irrigation to improve production). While at the same time, other issues related more directly to management than use and reflect cross-cutting themes that are relevant to several water use scenarios (i.e., awareness and knowledge, regulations and laws, conservation).

Aquatic resources (biodiversity):

Historically, fish and other aquatic organisms were abundant in Sanamsai district, but continuous declines had been experienced in the last 10 years. Reasons for declines include over-fishing and destructive fishing activities. Degraded aquatic habitats largely attributed to changes in land use patterns in the watershed and deforestation, also contribute to declining fish catch. Protecting the watershed was seen as extremely important to protecting people's livelihoods. There is a view that stronger, better enforced rules and regulations are required to improve the situation.

Forests at the water sources (top of the watershed):

Watershed forests are recognized as extremely important to maintain water resources. Until about 10 years ago the watershed forests were intact and there was plenty of water to feed streams, and no flooding problems. Recently, however, the forest cover has been greatly reduced and erosion and flooding are becoming more common. The reasons for this for deforestation are clearing land for agriculture production and the harvest of timber. There are, however, forests being successfully maintained by two main mechanisms -- village managed forests and some forests were protected by traditional beliefs. It proposed that measures to improve the situation include protecting the remaining forests and planting new forests to protect the watershed.

The use of water for irrigation:

Irrigation is being developed in the district as a way to increase agricultural production, reduce the risk of agricultural production loss to drought, and to provide a more sustainable option to rotational upland cropping. Management of irrigation systems is done through local committees. These committees are established for management of water use and are responsible for over-all management of the irrigation system, as well as for village-level management of water use.

Water for household use, communication and transport:

Logistics and transportation are considered among the most important everyday, household uses of water. Sanamsai district has numerous waterways (e.g., Sekong and Sepian rivers, Huay Samong stream, etc.) which provide important logistical links to many villages. These waterways provide important means of transportation and are important for commerce. Water transport groups are formed on the local level to ensure that people in remote areas can reach other villages and towns. Although these waterways are seen as important sources of income and economic activity, they are viewed as relatively underdeveloped.

Public awareness raising and knowledge:

Participants agreed that this topic is a cross-cutting theme rather than a use-related issue. Existing onstraints to full participation include lack of experience of people involved, coordination between stakeholders (government and public, public and public), insufficient numbers of technical staff for backstopping, and lack of understanding of the public. Experience shows that to keep people fully informed, a coordinated effort with sufficient funds, trained people, equipment, and transportation to reach communities would be required. One of the challenges is that the district and province do not have the resources (both human and financial) to implement such an activity.

Regulations and laws for water management:

Conservation and management areas have been established in the district to protect aquatic and forest resources. Local villages play an important role in managing these conservation areas and ensuring their protection. Forests are still encroached on, however, largely because a large segment of the public does not fully understand the existing regulations and laws. To help solve this problem of law enforcement, which is considered as another cross-cutting theme, the coordination between management and implementation needs to be improved, the general understanding of the public needs to be increased, and methods for monitoring and evaluation need to be established.

Summary of discussions

In general, discussions in Sanamsai district reflected a view of water use related issues as relating to the watershed, rather than waterways alone or water itself. Forest cover, land use and conservation were included as important issues along side more direct uses of water such as irrigation and transportation.

The Sanamsai discussions likewise revealed that "integration" of water resources as reflected in the livelihoods of local people is difficult to express in simple terms of use. One example of this is in the key issue of "aquatic resources". Fish and other aquatic organisms are extremely important to the well being of local residents, but was rarely described as a "use of a water resources". On the other hand, the inclusion of cross-cutting issues such as public awareness and

regulations, even though considered by the participants as themes rather than issues, are examples of how the integrated aspects of livelihoods might be related to the use of water resources.

Attapeu Province

The participants in the provincial-level workshop conducted in Attapeu also confirmed the findings of the results of the study on the nutritional role of aquatic resources and the Participatory Poverty assessment. They agreed that aquatic resources are central to the livelihood of rural households in the area. Expanding on these examples and the list of water use issues developed in Sanamsai district, the participants developed a revised list of issues related to water resource management. This list represents the perceived scope of water resources management in Attapeu province and includes:

- Water and aquatic resources (biodiversity)
- Forests protecting the watershed (including reforestation to control erosion)
- Water use for agricultural production (including irrigation)
- Water for daily household use
- Water for transportation and communication
- Tourism
- Disposal of waste water
- Water and environmental protection
- Water use for industry (including generation of electricity)

The issues agreed on at the provincial level were broader than the list developed at the district level, with emerging areas for development clearly represented. Because the workshop participants were representatives of the provincial local government, many representing specific sectors (i.e. health, agriculture), the development agenda of the province is clearly represented in the issues included for discussion.

Water and aquatic resources (biodiversity)

Water and aquatic resources are extremely important for everyday existence, as well as provide opportunities for future development. Water is emphasized to acknowledge that the aquatic resources are not the only important components of the ecosystem, but that the water itself is important to sustain the said resources. The watershed, however, is being degraded with no concern for negative impacts. For instance, sand and gravel extraction are causing increased erosion problems and reduced water availability, while fish and other aquatic organisms are becoming less abundant or have completely disappeared. To address this situation, local forests need protection and management areas need to be established with strict rules for land use.

Forests protecting the watershed (including reforestation to control erosion):

Rules for forest management have been developed by the Department of Forestry with some responsibility for management being delegated to the extension office. Activities at various levels included national tree planting day, provincial and district reforestation initiatives and community managed forestry areas. Despite these efforts many areas are still being deforested for cultivation of upland crops, important parts of the watershed are being left without forest cover, and some groups conduct logging activities in unauthorized areas. General public awareness

on the protection of watershed forests needs to be improved, and important watershed areas need to be clearly demarcated and protected.

Water use for agricultural production (including irrigation)

The use of water for agriculture is primarily associated with the development of irrigation systems, which had been the province's priority in recent years. Various types of irrigation systems have been developed allowing farmers to produce two crops a year, reduced risks due to drought and improved production. Developing the irrigation system was to provide people with an alternative to upland cropping.

When irrigation systems are developed, committees which include a management group for the whole system as well as village level user groups, are elected at the local level to assist in managing the system. Despite this, there is little experience in addressing issues related to strategies for improving food security and optimal management of irrigation systems. More training and management experience are required for government staff, locally elected management committees, and villagers.

Water for daily household use:

Water resources are abundant in the province and available for consumption, household use, agriculture, transporting and is very important for commerce. However, the water is taken for granted and water resources are being degraded. Water that is available for use does not always meet acceptable standards for cleanliness or health. People, however, continue to use inefficient water habits, or simply do not understand issues related to water management.

Water for transportation and communication:

Attapeu province has abundant rivers and streams that are extremely important for local communication and transportation, as many villages are only accessible by water navigation for much of the year. Without these routes, fishing and agriculture can only be carried out at the subsistence level or for small, local markets. To ensure that people have access to water transportation, local groups have been established. Water-based transport, however, is still considered underdeveloped and there is a need to develop this resource use further.

Tourism:

There are many beautiful sites in Attapeu province that could attract both domestic and international tourists. These sites include scenic waterways such as waterfalls, rivers, wetlands and other natural attractions. Tourism, especially eco-tourism, has the potential to be an important source of income for the province, but there has been very little development in this sector. There is a need to advertise local tourist locations, and improve these areas to raise interest and attract more people.

Disposal of waste water:

Wastewater, in this case, is primarily sewage. Increasing population in large villages and town consequently increases the importance of sewage disposal issues, as presently, appropriate sewage and septic systems are available only to some people a a very few areas.

Water and environmental protection:

There is an effort in the area to protect the aquatic environment from contamination and pollution through water quality testing; rules for water quality

conservation exist and water quality is monitored; and specific protected areas to protect water quality have been established. However, some constraints to monitoring and managing water quality exist such as non-enforcement of rules and inadequate number of staff for implementation at the district and village levels. There is a need to improve public awareness and to develop rules and laws to advance law enforcement.

Water use for industry (including generation of electricity)

Electricity generation has potential to be an important source of revenue for the province in the future. Currently, however, industrial uses for electricity have not yet been developed and many people still do not have basic access. To fully benefit for electricity there is a need to develop the industry to provide alternatives to agricultural production and the exploitation of natural resources. There is also a need to develop a more extensive electric grid to ensure that electricity is available in all areas. Currently, the use of water resources for hydroelectric generation is underutilized.

Summary of discussions:

The discussions conducted at the Attapeu workshop, when compared to the Sanamsai workshop, more clearly expressed a sector-based view of water resource management issues. Participants were able to develop a clear list of water resource management issues. Although the complexity and importance of issues such as fishing and watershed management to local livelihoods were discussed, the water sector remained the clear basis for discussion. Also noteworthy was the initial inclusion of public awareness and regulations in the issues related to water resources management. These issues were not included in the final list of topics to be discussed in detail during the group work because of their cross-cutting nature, but they reflected the importance of people in water resources management.

The discussion at this workshop clearly reflects that "management" is typically handled in "sectors" at the provincial level. In the earlier workshop conducted at Sanamsai district, participants were asked to discuss "uses" and found discussing "livelihood" related (and thus integrated) issues unavoidable. In this workshop when asked to discuss management rather than use, the link to livelihoods was not as obvious.

LESSONS AND NEW KNOWLEDGE FROM THE PROJECT

- The water resources management issues that were raised, outlined and discussed by the workshop participants for this case study can be broken down into three main groups.

Traditional uses:

The issues that are related to traditional uses include the uses and functions of water and aquatic systems that have the closest links with local people's traditional livelihoods. These include fish and aquatic resources, forestry and land use in the watershed, and water for household use. There are links between these issues, but the most obvious is the need to maintain the integrity of the watershed and low lying wetlands to have enough quality water for aquatic resources and household use. The current management challenge these issues present is to maintain their quality and quantity to insure the well-being of the people who depend on them.

Target uses:

Target uses include those issues that are being targeted for development. These include the intensification of agriculture through irrigation and modern technology, developing the industrial sector by exploiting hydropower potential, developing tourism, and the use in waterways for transport to improve trade and commerce. The province, to change its current status of being rich in resources but poor in terms of modern standards, is planning to develop these areas that are currently considered underutilized. Developing these areas has high potential to impact traditional uses and functions of water resources, the mitigation of which could present a large developmental challenge.

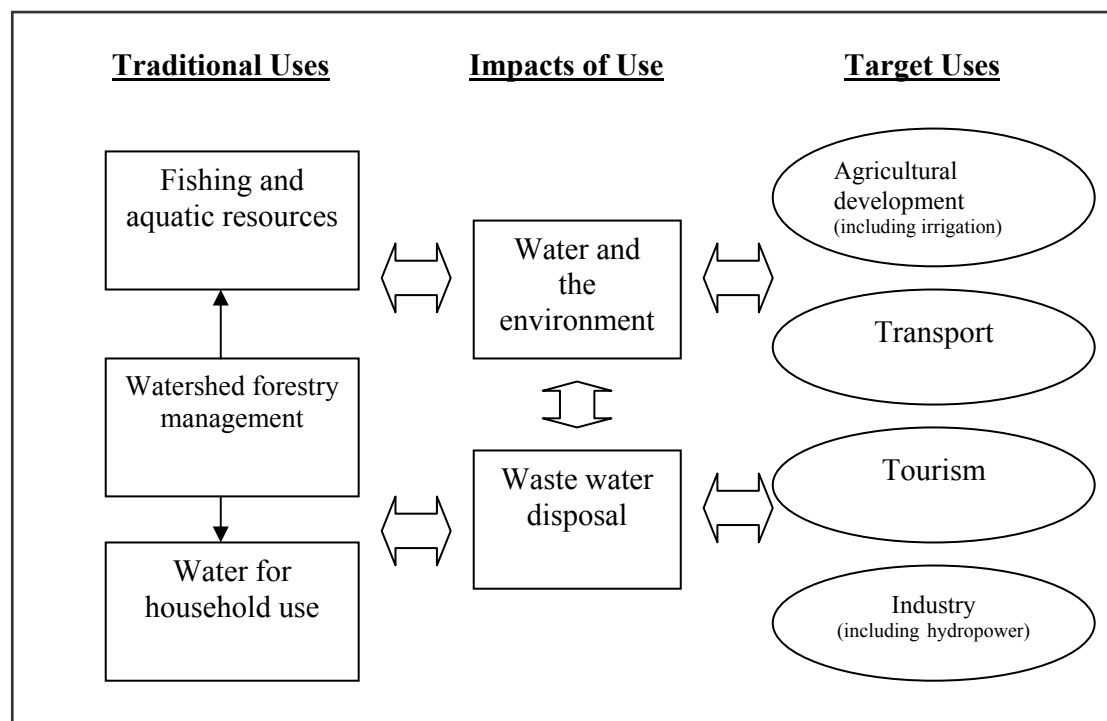
Impact of uses:

Issues presented that can be classified under this category include waste water disposal and water quality monitoring. These are actually issues that emerged as developmental symptoms (i.e. target uses) impacting on the environment (i.e. traditional uses). These issues will have to be monitored and problems mitigated to ensure that development does not come at the expense of the quality of the environment, and thus improve natural productivity and traditional livelihoods.

IWRM, in the case of Attapeu, is an issue of balancing these three types of water uses and management issues. Traditional livelihoods and the well-being of local people must be preserved and improved, but at the same time opportunities for development must be pursued. Therefore, successful IWRM will require finding a balance between conservation and different types of utilization.

A representation of the relationships between the different component issues of IWRM in Attapeu province is presented in Figure 2. On the left are the traditional uses that have the closest links with rural livelihoods. On the right are the target uses that are, for the most part newly emerging and will be the focus for continuing development. In the middle are impacts of use, representing issues resulting from impacts of one use on other potential uses. The most obvious impacts are currently related to increased target uses affecting traditional uses.

Figure 2. Relationship between identified component issues in Attapeu Province, Lao PDR



Although the linked nature of water resource uses and the potential benefits of an integrated approach are easily seen, actual mechanisms for effecting such integration are less obvious. Sector agencies have a tendency of developing and prioritizing activities based on their own development agenda, often without addressing the issue of potential integration. In the case of Attapeu, a remote province in a very poor country, this situation is compounded by the lack of sufficient financial support. Budgets for local agencies are largely inadequate to fully cover the needs of the province and issues must be addressed in a piece-meal fashion. This being the case, although the advantages of developing an integrated approach to water resources management are recognized, the financial and institutional resources to proactively pursue such an approach are often not available. Because of this constraint, local agencies tend to focus on the more immediate, short-term needs for development, rather than consider the broader picture.

A major constraint to management is the lack of capacity in terms of human resources of the local institutions. Local government offices are often understaffed to fully carry out their mandate, and the staff that are available are often under trained. One strategy for overcoming this lack of capacity is to delegate responsibility to the village level and include local people in the management. Local involvement in management facilitates an integrated approach because the resource users view the resource from a livelihoods prospective rather than a sectoral perspective.

Despite these institutional constraints to management concerning financial and human resources, there are also positive points for integration of activities. On the local-level, government agencies are often able to work together and share responsibilities for addressing management issues. This aspect of local cooperation

is very conducive for developing an integrated approach to water resources management. An overview of the different local government agencies involved in the management of water resource use issues is included in Table 4. Also included are those areas that have structured village-level involvement in management.

Table 4. Issues related water resources use and the institutions included in their management, Attapeu Province, Lao PDR.

	Agriculture	Industry	Public Health	Environment	Communication and	Extension	Tourism	Village-level authorities
Water and aquatic resources (biodiversity)	X	X	X	X	X			X
Forests protecting the watershed (including reforestation to control erosion)	X		X			X		X
Water use for agricultural production (including irrigation)	X			X				X
Water for daily household use	X		X		X			
Water for transportation and communication					X			X
Tourism	X		X	X	X		X	
Disposal of waste water		X	X	X				
Water and environmental protection		X		X				
Water use for industry (including generation of electricity)	X	X	X	X				

- Involving various stakeholders in discussions and consultations concerning IWRM is a good way to assess the status of local perceptions and to better understand the priorities of local people. The understanding of IWRM and its potential is different at different levels; ranging from holistic to creating links between sectors
- Examples of holistic approaches to IWRM (such as in livelihood strategies of local people) are more difficult to express than sector-based approaches to IWRM (such as linking concerns over fisheries with the establishment of irrigation).
- Representatives / proponents of governmental management sectors have a stronger voice than representatives of local areas and proponents of livelihood strategies. This being the case it is important to hold consultative workshops at various levels so that participants can voice their opinions inform of there peers rather than those representing authority.

- The lack of public awareness, weak legal systems, and resources for implementation (both human and financial) are the most prevalent problems cross-cutting the issues related to IWRM at the local level
- More stakeholder consultations (such as the workshops conducted for this study) should be conducted to continue to promote a local understanding and awareness of issues related to IWRM.
- Local government agencies involved in water resources management should be made more aware of the importance IWRM in rural livelihoods. Local level IWRM committees should be established to facilitate the exchange of information and prioritization of water use issues
- More studies should be conducted to better understand how rural households (especially those who are poor or disadvantaged in some way) depend on water resources and what aspects of integrated management may have the most impact on their livelihoods (or how the lack of integrated management might have negative impact).