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Securing sustainable livelihoods through wise use of wetland resources

Reflections on the experience of the Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme (MWBP)

Richard Friend

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Acknowledgements

The MWBP was a programme of partnerships involving a diverse range of local, national and regional actors, with an almost equally diverse source of funding and co-finance. The programme was led and implemented by UNDP, IUCN and the Mekong River Commission (MRC) in partnership with national and local government agencies of Cambodia, Lao PDR, Thailand and Viet Nam and was implemented for two-and-a-half years, from mid 2004 until the end of 2006. MWBP covered a wide range of issues – including biodiversity and wetland assessments and mapping. These issues are presented elsewhere[1]. The main focus of this report is on the approach taken to address poverty and sustainable livelihoods.

The main sources of funding for the programme were the Global Environment Facility (GEF) and the Royal Netherlands Embassy in Bangkok (RNE). Support from the RNE has been particularly influential in the main focus of this report – ensuring that wise use of wetland resources generates livelihood benefits and contributes to poverty alleviation. The RNE provided funding during the Preparatory Assistance Phase of the MWBP, from 2002 to 2004, and additional support specifically designed to address poverty and livelihoods issues from mid-2005 to the end of 2006.

A number of other funding sources also contributed to the programme. The global IUCN programme the Water and Nature Initiative (WANI) provided important assistance in establishing the programme, in building links between the local research conducted in each demonstration site, in assessments (such as Environmental Flows in the Songkhram Basin, and monitoring of the Upper Mekong region) and in regional multi-stakeholder dialogues. In the Preparatory Assistance Phase, funding from Wetlands International-DGIS was used in testing the approach employed in strengthening the local capacity to assess, plan and manage wetlands resources in Thailand. This approach was to become an important model for the other countries during full implementation. During programme implementation CARE Viet Nam and Danida also provided additional support to livelihoods work in the Plain of Reeds.

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The report is an overview that draws on many sources, including programme progress reports, particularly those provided by Health Unlimited in Cambodia and Lao PDR, and from CARE Vietnam. As part of the process several MWBP staff and partners were brought together for a 'write-shop' to reflect on the experience of programme implementation. All of these people deserve a special mention – Peter John Meynell (UNDP Team Leader of MWBP), Mark Dubois, Souksavan Sisouvong, Rattaphon Pitakthepsombut, Chainarong Srettachau, David Blake, Susan Claro, Maria Osbeck, Madhusudan Bhattarai, Alvin Lopez and Phutavong Ladouanglerd. Contributions came from a distance from Nguyen Huu Thien.

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Part 1 – Programme Background

This report provides a reflection on the approaches adopted in addressing poverty alleviation and promoting sustainable livelihoods by a range of partners collaborating under the UNDP/GEF-IUCN-MRC Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme, or MWBP. This work has been supported by a number of donors under the framework of the MWBP and in particular through the MWBP Livelihoods Project supported by the Royal Netherlands Embassy, Bangkok.

The report draws on the experience of project implementation. It is intended to document collective experience across the four countries of the MWBP, contributing to the debate on the relationship between natural resources and poverty alleviation and to discussions on design and implementation of project interventions. As such the report has been prepared to both inform the conservation community of opportunities for supporting livelihoods, and to help the development community address environmental and natural resource issues.

The objective of the MWBP was to strengthen capacity, and in the period of project implementation discussed here, to build an 'enabling environment' that will continue to provide a context for addressing complex wetland conservation and livelihood issues. This involved creating partnerships and developing a shared vision and strategy for wetlands conservation and sustainable use. Wetlands have been largely overlooked in national development and the MWBP was an attempt to challenge the development orthodoxy in the Mekong region. Development projects have been described as 'policy experiments'[2]) and the MWBP attempted innovations to address the complex inter-relationships between biodiversity and natural resource management. After a limited two-year preparatory period (with much of the effort focused in Thailand), full project implementation lasted for two-and-a-half years (from mid-2004 until the end of 2006), and was planned as part of a larger, long-term initiative with a range of partnerships. These partnerships have allowed for a wide variety of work to be undertaken and many of the experiments begun under the MWBP will be taken up beyond the life of the programme.

This report summarises the livelihoods related strategy adopted under the MWBP and provides a discussion of some of the issues that have arisen. The main focus of this report is on the livelihoods-related work undertaken in the four MWBP demonstration sites. The major constraint has been the premature termination of the programme. Originally envisaged as a five-year programme in two phases, changes in donor funding priorities meant that it ended after its first phase. Although the MWBP formally closed at the end of 2006, its strategic approach has been endorsed by provincial partners in each of the four Lower Mekong Basin countries, and work based on this strategy is being adopted by partners under various alliances established through the programme.

Ensuring tangible livelihood benefits and long-term resource management initiatives requires concerted effort over many years. While it is unrealistic to expect concrete results from a two-year programme, the fact that much of this work is being continued by partners beyond the MWBP's brief life-span is a good indicator of the progress made in that short time. With the main programme focus being on establishing an 'enabling environment', much of the work concentrated on strengthening the abilities of communities to assess and plan resource use in their own localities. As its approach revolved around building the foundations for people to be able to assume ownership of wetland conservation and management, and to develop their own livelihood strategies, the MWBP needs to be assessed as a capacity building programme. The various innovations it has promoted for addressing wetland resources and resource users have often been overlooked in development planning processes. This report is not intended as an evaluation of the MWBP but as a record of the positive experiences of the programme. It is hoped that these can inform and provide suggestions for similar initiatives.

The Programme Area

The programme was specifically designed for operation in the four riparian countries of the Lower Mekong River Basin: Cambodia, Laos, Thailand and Viet Nam. The Mekong Basin is a complex wetland ecosystem that includes a range of wetland habitats – from rice fields, rivers and streams, to floodplains and seasonal ponds. These have provided the plentiful natural resources which allowed great human civilisations to flourish in various areas of the basin. In recent times however, these wetland resources and the people whose livelihoods depend on them have been largely neglected and excluded from decision making.

Wetlands and the waters that feed them remain essential parts of traditional culture throughout the Mekong countries, influencing diet and farming, and thence expressions of life such as architecture, crafts and arts, and also the relationships between different groups of people. Following the ever-

accelerating pace of development from the second half of the twentieth century onwards, particularly reflected in the growth of infrastructure and commercial agriculture, land-use change is having a huge impact on the wetlands of the Mekong region.

Map of the Mekong

Demonstration Sites

The programme was run from a regional management unit based in Vientiane, with national offices in each country and provincial offices that focused activities on four demonstration sites: Stung Treng, in Cambodia; Attapeu province of Laos; the Lower Songkhram River Basin, Thailand; and Viet Nam's Plain of Reeds.

Cambodia – Stung Treng Ramsar Site

The Stung Treng Ramsar site, covering a 37-km stretch with an area of 14, 600 hectares along the mainstream of the Mekong from north of Stung Treng town to the border between Cambodia and Laos, is a unique wetland system and biodiversity hotspot. It is the only MWBP demonstration site that is on the mainstream Mekong and the only established Ramsar site[3]. Stung Treng includes important habitats for a wide variety of fish species, including a unique flooded forest and a series of deep pools that are believed to be habitats for species that migrate between Stung Treng and the Tonle Sap great lake. The population is relatively small and spread about, with 13,000 people living in 21 villages across four communes and two districts. Fishing is central to local livelihoods and all households are involved in a range of economic activities. However, agricultural productivity is low and poverty rates are high. Communications are poor, and access to state services - including health and extension - is limited. Pressure on local resources is increasing as trade grows, and large-scale commercial land concessions become more common. There is a history of community fisheries management initiatives supported by Cambodian NGOs, primarily CEPA, but these have had limited success in reducing the pressure on valuable fishery resources. (For further details see Try & Chambers, 2006)

Lao PDR – Attapeu

The Lao demonstration site covers three low-lying districts of Attapeu: Samakhixai, Xaysetha and Sanamxai. Until recently Attapeu was been a remote province with poor communications – the main road into the provincial capital was only completed in 2005. Attapeu province is rich in natural resources including fisheries and forests, and has a rich ethnic diversity. In addition to the lowlands and rice fields there are a wide variety of wetland types, including lava fields. The demonstration site is dominated by the Sekong and Sepian rivers. Poverty rates are high while agricultural productivity is low. Rates of health, nutrition and education are poor, and state support services are limited. As communications improve, pressures are growing on natural resources. Provincial priorities target poverty alleviation through increased agricultural productivity and hydropower developments on the Sekong river, which also flows into Stung Treng province in Cambodia.

Thailand – the Lower Songkhram River Basin

The Lower Songkhram River Basin covers the two provinces of Nakhon Phanom and Sakon Nakhon[4]. While the boundaries of the Lower Basin are not clearly defined, it is estimated that within this area are at least 130 villages with an approximate population of 17,000–20,000 households, or 92,000-108,000 people. The Lower Songkhram joins the Mekong river and covers a rich but degraded river and flooded forest ecosystem, known in Thai as *pa bung pa tham*. As with the Tonle Sap in Cambodia, the annual flood covers a huge area with floodwaters coming from upstream run-off and backflow from the Mekong. The Songkhram is home to a rich and productive fishery with many species migrating from the Mekong. While the Songkhram lies within an area that is considered one of the poorest in Thailand, poverty indicators are better than in the other demonstration sites. Infrastructure is good and includes access to markets, and extension, health and education services. Human resources are affected by migration to labour markets in Bangkok and overseas. This is a common feature of local livelihood strategies and can be the most significant source of cash income. There is also a history of conflict between resource users, and of tensions over land encroachment and large-scale infrastructure development schemes. For further details see Blake & Pitakthepsombut, 2006.

Viet Nam – The Plain Of Reeds

Tram Chim National Park and Lang Sen Nature Reserve, both on the Plain of Reeds in southern Viet Nam's Mekong Delta, are under great pressure from their immediate surroundings due to high population densities, poaching of wildlife, unsustainable agriculture, over-harvesting of aquatic resources and inefficient wetland management. The pressure on natural resources is greatest on the Tram Chim National Park, which was established under Viet Nam's Special Use Forest System - a strict protection regime that has attempted to exclude local people from the park.

About 40,000 people live along the canal dikes near the park and in the district town of Tam Nong, and an estimated 3,000 households regularly use resources from within the protected area. The park managers are currently trying to restrict anyone from entering the area, with armed guards patrolling from guard stations built along the perimeter. Despite this poachers still regularly enter the park and guards frequently capture trespassers. Skirmishes between poachers and guards have resulted in several incidences of bloodshed. The vast majority of poachers, from the poorest households in the area, need the catch for income and consumption purposes. A buffer zone has been considered but does not yet exist.

Following the problems with the strict protection approach in Tram Chim National Park, the provincial government of Long An established Lang Sen as a provincial Wetlands Reserve. This is the only protected area in Viet Nam established as

a wetlands reserve and is suitable for testing participatory resource management approaches. The nearby villages of Vinh Loi and Vinh Dai have a population of 9,000 people who depend on rice cultivation, fishing, and gathering from local Melaleuca forests. Another 50 households (250 people) are located inside the nature reserve. For further details see Nguyen Xuan Vinh & Wyatt, 2006.

Wetlands Livelihoods in the Mekong

There is something special about the livelihoods of the people who live in wetland areas. Rural livelihoods in the Lower Mekong Basin are essentially wetland livelihoods – based around the cultivation of rice - a wetland crop - and the harvesting of a range of aquatic resources such as fish, crustaceans, amphibians and insects. People living in wetland areas in the Mekong Basin undertake a wide range of activities as part of their livelihood strategies. With dramatic seasonal changes in water levels, livelihood strategies in wetland areas need to be able to change according to periods of flood and periods of less water. In order to do so people need to be adaptive – innovating according to the changing conditions of their environment.

Wetlands are the basis of food security and nutrition, provide the resources for drinking water and sanitation, and are essential in controlling water-borne diseases. Good management of wetland resources provides opportunities for improving economic activity and human health, thereby making a lasting contribution to poverty reduction. The significance of diversity of activity in wetland livelihoods, and the cultural importance that this represents, has largely been overlooked in national development strategies. Diversity allows people to minimise risks to their livelihoods and maximise the benefits the environment offers. Communities in these areas are often repositories of natural resource knowledge that will be lost if their ways of life are irreversibly damaged.

Wetland livelihoods can be summarised as being:

- *Diverse* – Households use multiple resources, growing rice, harvesting aquatic animals, raising livestock, and collecting Non-Timber Forest Products (NTFPs) – as well as trading and selling their labour. All members of the household play important roles in these livelihood strategies.
- *Dynamic* – People in wetland areas move and alter their activities in response to seasonal and annual variations, in particular the changing patterns of flooding and water recession.
- *Adaptive* – Exponents of wetland livelihoods display a remarkable capacity to innovate, using knowledge and skills acquired over generations to adapt their environments to their needs.






Some of the most significant threats to these livelihoods come from environmental degradation and habitat loss. The potential for preserving and promoting these sustainable livelihoods, and so alleviating poverty and contributing to national development through wise management of wetland ecosystems, has not yet been realised. The main thrust of agricultural development in all four Lower Mekong countries has been overwhelmingly based on the expansion and intensification of rice production. This requires conversion of more land to agriculture and extension of irrigation systems. While it is important to develop wetland agriculture, the continued natural productivity of wetland systems must also be safeguarded. Many wetland systems, particularly backwater swamps and floodplain areas have been regarded as wastelands with limited potential for economic development in their natural state. Often these wetlands have been specifically targeted for development through draining for agriculture or by flooding to establish irrigation sources.

The intention of the MWBP has been to generate alternative visions and strategies that will in the future create opportunities for generating economic development and reducing poverty through wise management of wetland livelihoods and resources. The programme has spent two years testing approaches to this through project implementation in the four demonstration sites.

Aquatic Resources in the Mekong Basin

The huge diversity of aquatic resources constitutes the single most important wetlands resource in the Mekong Basin for the majority of rural people, yet have been consistently overlooked in policy and planning. Focusing on aquatic resources has been an important entry point for addressing both conservation and sustainable use concerns. Vital features of the MWBP have been its support to the effective management of aquatic resources, and the provision of working examples of how management of wild aquatic resources can contribute to rural livelihoods, and how small-scale aquaculture of indigenous fish species can address poverty alleviation by supplementing capture fisheries.

Aquatic resources – including fish, snails, shrimps, frogs and insects – provide a rich resource for rural people in the Mekong Basin. Over 1,300 species of fish alone have been identified. For many years the full value of these animals to local people was not recognised. However, recent estimates of aquatic resource production suggest that around 2 million tonnes are harvested per year, at a value of US$2 billion. This represents approximately 17% of global inland fisheries production.

This rich diversity of aquatic resources is dependent on dramatic annual flooding patterns. It is not simply a matter of more water equals more fish: the timing, peaking, duration and extent of the flood are all important. Additionally, the various wetland habitats across the floodplains provide essential feeding, breeding and spawning grounds (see Baran et al, 2001).

Culturally, fisheries represent an important dimension of what has been called the 'moral economy' of wetland and river communities, with fish often traded for rice and other necessities. Aquatic animals are deeply engrained in the history and psyches of peoples in the Mekong region.

While the vast majority of rural people in the Mekong harvest and consume aquatic resources, only a small proportion consider themselves 'professional' fishers. For most people, fishing is an important component of wider livelihood strategies. Fishing activities vary throughout the year, with the two most productive seasons occurring when the flood waters rise and again when they recede. A wide range of different fishing gear is used depending on the specific species being fished, and its habitat or seasonal conditions. Fish and aquatic resources are staples – consumed fresh, smoked, fermented or pickled - and constitute the single most important source of protein and minerals in diets that are otherwise often poor in nutrition. Aquatic resources also provide an important safety net in periods of rice shortage, economic difficulty or household crisis.

"Villagers livelihoods in the Songkhram are based around fishing….anyone can fish, even a four year old… Fishing teaches villagers that they can help each other, and not only to think in terms of money".

Suriya Kotamee, Tai Baan Researcher, Songkhram River Basin 2002. Quotation taken from the video Tai Baan; Life Pulse of the Songkhram by WANI/Infocus Asia. Author's translation from Thai.

Wetlands and Health

Health is a key issue in many rural communities and a priority for many poor people in the Lower Mekong Basin. Illness, disability and death are major factors in poor people's poverty and vulnerability. Health indicators in many rural areas of the Mekong illustrate the extent of the problem – in terms of child and infant mortality, malnutrition, prevalence of water-

borne diseases and malaria, lack of access to safe drinking water and sanitation.

Ill health is one of the major causes and characteristics of being poor in rural communities. For rural people, paying to treat health problems or losing household labour due to temporary disability or death can put such a strain on household economics that they are forced into poverty. Reducing vulnerability to poor health can make a dramatic and lasting contribution to households and local economies. Empowering individuals and communities, by building their capacity to take action to manage their human and natural resources and so improve their health and well-being, can contribute to sustainable natural resource management.

There is increasing awareness of the links between poverty and the environment. Most attention towards poverty from wetlands conservation interests has occurred as a result of recognition that degradation of wetlands and water resources will have negative impacts on the people that depend on these resources. These concerns can be summarised thus:

- Loss of wetland functionality reduces the availability of wild food sources and the basis for household nutrition. These food sources are of particular importance for poorer households, and provide a safety-net in times of crisis in countries where social welfare is limited.
- Changes in the hydrological regime – whether through water management schemes or climate change - reduce the availability of water and wetland resources, but also increase the prevalence of some diseases.

As well as preventing further degradation of threatened resources, managing wetland and water resources can make an important contribution to reducing poverty, particularly through generating food security and improved nutrition, providing drinking water and sanitation, and through reducing the incidence of water-borne diseases. The health sector has also become more interested in natural resource management issues. Recognising the fundamental importance of natural resources for providing food and water, there is growing interest in the health sector in how natural resource management can contribute to health agendas. Improved health service delivery needs to be supported by a strong ecosystem that provides the natural resources for nutrition, safe drinking water, and sanitation. Poor nutrition, particularly among pregnant women and young children can lead to poor health throughout people's lives. Water-borne diseases and malaria are prevalent throughout rural areas in the Mekong and are major causes of illness and death, particularly among children and pregnant women. Lack of access to clean drinking water and good sanitation is a common cause of child mortality and illness. All of these health issues are related to management of wetlands and water.

Ensuring that the natural water sources used for drinking water are used in such a way as to be safe for consumption, for example through boiling and use of filters, can reduce prevalence of water-borne diseases and diarrhoea. Additionally water supplies from wells to extract groundwater can provide clean and accessible drinking water. While it is essential that safe drinking water supplies are provided, the long-term sustainability of these water supplies depends on the viability of the ecosystems that generate the water. Wetland resources are essential components of the water ecosystem. Ensuring their sustainability is essential for ensuring the sustainability of water supplies.

Emerging Issues and Trends in the Mekong

The Mekong Basin is going through a period of rapid change that presents significant opportunities and threats. The living conditions of many rural people in the region have undoubtedly improved in the last decade, with access to markets and health and education services all improving. The changes have not brought equal benefits to all, however. Poverty persists in almost all communities, with many households subject to health, income, and food security problems. While investment is promoting trade and improving communications and market opportunities for rural people, it also places new demands on limited resources. This is leading to changes in land use, with encroachment on wetlands, fisheries and forests by local people, and more significantly by large-scale commercial interests. Large-scale water resource infrastructure development is also very much part of the

development agenda with hydropower projects, intra-basin water transfer and large-scale irrigation schemes being planned for each of the lower Mekong countries. All of these trends present possible threats to natural hydrology and floodplain connectivity and thus to the productivity of natural resources and people's livelihoods in the lower Mekong Basin.

Historically, wetlands, aquatic resources and the rural livelihoods that they support have been overlooked in national economic development planning (Ratner et al, 2006). There is growing concern that current development pathways will continue to underestimate the significance of these resources, and in so doing, miss opportunities for reducing poverty and promoting equitable, sustainable development through the management of natural wetland systems. This oversight might intensify problems of poverty and vulnerability.

The wetlands of the Mekong region, connected through flooding processes, draw together a range of stakeholders with diverse interests, across different communities and even across national boundaries. While there is a long tradition of local management regimes – and more recent experience in promoting these management regimes - the challenges facing these communities are ever-changing and becoming more persistent. It is in this context that the MWBP has attempted to promote an integrated, participatory approach to managing wetland resources to ensure conservation and promote sustainable livelihoods. In doing so, the programme has sought to build capacity and encourage innovation. This report provides a reflection on this experience.

The Pace of Change and the Upper Mekong Monitoring - a Summary

The Mekong River Basin is now being targeted for a wide range of development interventions. The pace of change is truly staggering. With the growing economy of China looking for markets and resources in the lower Mekong, huge economic opportunities are being opened up. In the pursuit of economic growth the implications for the environment of the Mekong and for the majority of rural people living within the basin are not always appreciated.

The Upper Mekong area – from the southern China border to the area joining Burma, Laos and Thailand – is an area rich in biodiversity and home to a unique system of deep pools, reefs and rapids that provide habitats for economically important fish species, including the critically endangered Giant Mekong Catfish. As well as being exposed to the impacts of hydropower development in southern China, the area is increasingly experiencing the expansion of river and road navigation. As part of a joint agreement between these four Upper Mekong countries, river modifications that involve the removal of reefs and rapids are being implemented to allow easier dry season river navigation for larger vessels. However the environmental and social impacts of these modifications and the resulting increase in trade, largely from China, has not been adequately addressed.

These impacts were of particular concern in the Lao PDR. Starting in 2003[5], a partnership involving IUCN and Lao government agencies began a series of assessments to identify the kinds of issues that should be assessed through a regular monitoring programme. The assessments found that there were no working mechanisms in place to manage the growth in river traffic and prevent environmental degradation. Local communities were found not to be in a position to take advantage of the growth in trade and to be vulnerable to declines in river productivity. Local people also reported a series of dramatic changes that seemed to coincide with the navigation project. These include unusual daily fluctuations in water levels, increased river bank erosion and declines in fishery productivity. The assessments did not provide conclusive evidence to support these perceptions but illustrated the need for a more thorough and regular process of monitoring and assessment among the four countries, and for the protection of key areas of biodiversity and livelihoods importance. For further information see Lazarus et al, 2006 and IUCN, 2003.

Part 2 – MWBP: Developing a Livelihoods Strategy

The MWBP has attempted to develop integrated conservation of natural resources and promotion of sustainable livelihoods and poverty alleviation. This has drawn on the two complementary 'Ecosystems' approach and 'Sustainable Livelihoods' approach in an attempt to pilot and demonstrate the scope for wetlands management.

During the original design of the programme, the emphasis was placed firmly on biodiversity conservation, although with an acknowledgement that ensuring conservation of wetland biodiversity in the Mekong region inevitably included a human dimension. Along with conservation the notion of 'sustainable use' was promoted within the programme. The development of the programme coincided with a growing interest in what have been loosely termed 'livelihoods approaches' and a renewed concern within the conservation world for addressing global challenges of poverty alleviation (for example, see Fisher et al, 2005).

Livelihoods Definition

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable in that it can cope with and recover from stress and shocks, can maintain or enhance its capabilities and assets, can provide opportunities for the next generation: and can provide net benefits to other livelihoods at the local and global levels in the long and short term.

From Chambers & Conway, 1992.

While 'livelihoods approaches' are now widely advocated, there is some confusion as to what is actually meant by the term. At one level, 'livelihoods' is a word that is easily understood in everyday language and is taken to mean what people do to make a living. Generally, this is the kind of interpretation of livelihoods that is most widely found. 'Livelihoods' is a comfortable word, and most people feel intuitively they know what it means.

There is a rich intellectual history of attempting to understand complex rural economies, the dynamics of resource use and what makes people vulnerable. From this tradition approaches that can be called Sustainable Livelihoods approaches have been developed. These have been influenced by a range of disciplines – particularly sociology and anthropology, economics, and political science. While there is a range of different 'livelihoods' approaches[6] some elements and principles are common to all. These can be summarised as:

- Taking people, their values and aspirations as the starting point of inquiry, and emphasising how people themselves understand and talk about their livelihoods, vulnerabilities, values and strengths.
- Emphasising the importance of diversified household and individual livelihood strategies that are based on the use of a wide range of assets – natural, human, physical, financial, socio-cultural and political.
- The viability of livelihood strategies requires the managing of these diversified portfolios of resources to achieve livelihood outcomes such as income, food security, health and well- being.
- People, including poor people, are active, capable managers of their resources even in conditions of extreme hardship. However, their ability to manage their resources in order to achieve livelihood outcomes is influenced by wider socio-economic forces: household and community dynamics of wealth and power, the influence of markets, state institutions and policy, regional and global economic and development trends.
- Securing sustainable livelihoods requires interventions at numerous levels – individual, household, community etc – and requires an integrated approach.
- Emphasising the importance of participatory approaches – both as a means and an end to good development.

While these approaches recognise the importance of environment and natural resources, the conservation world has also maintained an interest in promoting established approaches, in particular the Ecosystem Approach enshrined in the Convention on Biological Diversity.

Principles of the Ecosystem Approach

Ecosystem Definition

An ecosystem is an interconnected community of living things, including humans, and the physical environment within which they interact

The Ecosystem Approach emphasises the importance of maintaining ecosystem functions for both biodiversity and

human livelihoods. In order to achieve these goals, the Ecosystem approach promotes management of natural resources at the landscape level (such as the river basin or catchment), recognising the need for engaging with a variety of sectors and stakeholders.

The twelve principles of the Ecosystem Approach as defined by the Convention on Biological Diversity:

1. Objectives of management of land and water and living resources are a matter of societal choice;
2. Management decentralised to lowest appropriate level;
3. Ecosystem managers consider effects of their activities on adjacent or other ecosystems;
4. Manage the ecosystem in economic context;
5. Conservation of ecosystem structure and functioning should be a priority for the EA;
6. Ecosystems managed within the limits of their functioning;
7. EA undertaken at the appropriate spatial and temporal levels;
8. Objectives for ecosystem management set for the long term;
9. Management must recognise that change is inevitable;
10. EA should seek balance between integration of conservation and use of biological diversity;
11. Consider all forms of relevant information – scientific, indigenous and local knowledge, innovations and practices;
12. Involve all relevant sectors of society and scientific disciplines.

There are considerable similarities between the Sustainable Livelihoods and Ecosystem approaches. A combination of these two approaches has been used to bridge the gulf between exclusively conservation-oriented approaches and exclusively development-oriented approaches.

The similarities can be summarised as being recognition of:

- Addressing natural resource management and development at the micro- and macro-levels in terms of both socio-economic and landscape perspective, at the local and an ecosystem level; linking village households to regional decision-making, and linking wetlands to river basins.
- Recognising the agency and capabilities of people, particularly poor people.
- Promoting local knowledge, as well as scientific knowledge.
- Promoting effective participation as both a means and an end of good conservation and development.
- Being socially inclusive – facilitating dialogue, exchange and learning across all sectors of society.
- Recognising that good development and conservation is a matter of societal choice – and that promoting mechanisms for participatory, transparent decision-making leads to improved decisions.
- Accepting that change is inevitable and that there is a need to balance use of resources with ensuring the long-term viability of ecosystems.

Applying these principles has been the basis for developing an integrated approach to ensuring healthy ecosystems and sustainable livelihoods.

Taking People's Livelihoods as a Starting Point

Wise use of wetlands is defined by principles of sustainable livelihoods and ecosystems. One of the main challenges of the MWBP has been to define the scope of a wetlands biodiversity conservation programme in addressing livelihoods and poverty issues.

While some traditional conservation approaches have promoted sustainable use of wild areas as a conservation tool, this dimension has essentially been seen as a secondary concern of nature-oriented work. In the wetlands conservation sector, sustainable resource use has most commonly relied on promotion of craft activities such as basket weaving, and also eco-tourism. While these approaches have provided some important achievements, their limited focus has restricted understanding of wetland livelihoods. The MWBP approach was based on two guiding principles: that addressing key livelihoods issues and needs should be the starting point for designing project interventions, and that the scope for working with people engaged in wetland livelihoods should be broad and open.

The MWBP Approach

As a project, the MWBP focuses on building capacity to manage wetland resources and on generating tangible benefits for local people from wetlands management.

Strengthening Capacity to Assess, Plan and Manage Resources

As a capacity building programme, the initiatives of the MWBP have depended on local partners – local resources users, government agencies, NGOs and civil society groups – being able to take on responsibilities for assessment, planning and management of their resource base. This base is regarded in its broadest sense, including not only natural resources but also the range of economic, physical, human and social resources that contribute to household livelihood strategies. The starting point for the MWBP was strengthening this local capacity to assess the natural resource base and health resources.

Enhancing Natural Resource Productivity and Sustainability

A key component of the capacity-building strategy has been to ensure that the assessment and planning processes lead to improvements in the productivity and sustainability of the wetland resources on which local livelihoods depend. This includes promoting management of capture fisheries, taking on responsibilities for rehabilitation and protection of important breeding and spawning grounds, and promotion of integrated rice-fish techniques.

Generating Local Benefits from Natural Resources

Improving the productivity and sustainability of natural resources does not necessarily lead to livelihood improvements. It is important to ensure that the productivity of natural resources is converted into tangible livelihood benefits for local people: improved food and nutrition, and improved income.

Prior to forming the multi-stakeholder teams for the PPAs, preparatory meetings were organised in Bangkok between IUCN and ActionAid staff to identify the parameters of the assessments. Stakeholders were identified through discussions at various national and provincial government offices while a parallel exercise was conducted with local NGOs working at the demonstration sites. Secondary data was collected simultaneously.

The team members were made aware of wetland ecosystems issues and the relationships that people have with wetlands. This was followed up with training on socio-economic analysis and participatory methodology for gathering perceptions about vulnerability and poverty, then by participatory fieldwork at the demonstration sites. The findings and interpretations were shared with the communities and site reports prepared in local languages. These reports were consolidated at the country level along with other relevant secondary data.

Country reports including comments from stakeholder institutions were prepared and presented to government and non-government groups from all four participating countries at a two-day meeting in Phnom Penh. These reports were finalised after comments made at the meeting and are now available on the MWBP website.

Promoting Effective Institutions and Responsive Decision-Making

A key factor in poverty and vulnerability has been the limited voice local people have in making decisions about how resources are managed and how the benefits of these resources are distributed. Wetland and water resources are often used by many different stakeholders who may have conflicting interests. An important part of the programme's efforts has been to build initiatives that promote local people's access and control over resources, to encourage dialogue and negotiation between different stakeholders, and to strengthen networks of resource users across different communities and between the four demonstration sites. Another priority lay in ensuring that local realities are considered in regional debates about development.

Ensuring the Voices of the Poor are Heard

In the early stages of preparation and consultation with project partners it became clear that to design a good strategy for activities, better understanding was needed of local livelihoods in the demonstration sites and of the causes and characteristics of poverty and vulnerability. Poverty in the demonstration sites was recognised as a priority issue by government partners, and it was acknowledged that innovation would be needed to run a wetlands biodiversity project that addressed this poverty effectively.

Towards the end of 2002, planning for a series of Participatory Poverty Assessments (PPAs) began. The PPAs were conducted by teams made up of staff from the NGO ActionAid and IUCN. These worked with provincial and district partners to develop appropriate participatory methodologies, undertake fieldwork, analyse findings, and hold discussion and feedback sessions with local communities. The teams did not attempt a complete overview of vulnerability and poverty in the demonstration sites but rather aimed at gaining a better understanding of local livelihoods and poverty dynamics from the perspectives of the local people themselves, and at supporting a process that would assist in programme planning.

PPA Reports: Main Conclusions

- Wetland areas were traditionally regarded as public or common property across the region, but are now increasingly being claimed as private property, owned individually, by corporations, or by the state.
- The situation in Viet Nam is particularly complex. Having been devastated by years of war, during which the area was deliberately drained to flush out North Vietnamese forces, the Plain of Reeds was very much degraded. After the war an extensive canal system was developed for high input agriculture. The area also attracted a large number of migrants, leading to growing pressures on limited resources from people without a history of traditional management regimes.
- Competition for wetland resources, particularly fisheries and forests, is increasing and resulting in the displacement of poor and vulnerable people. There is growing evidence of unsustainable use of these resources. The increasing penetration of the market economy also brings growing competition from external users for these scarce resources, leaving poor and vulnerable people less able to compete. This demand also affects long-established trade routes for fish and other wetland resources.

- Land ownership changes and differing abilities to adapt to new circumstances are leading to growing social and economic differentiation across communities.
- The considerable local experience of effectively managing common property and wetland resources is not reflected in policies or administrative practices.
- Growing pressures on these local level management practices and values is posing a threat to the cohesion of traditional communities.
- Problems of health, nutrition and sanitation in Cambodia, Laos and Viet Nam – particularly with water-borne diseases, diarrhoea, malaria and respiratory problems. Most rural people, particularly in Cambodia and Laos, are almost entirely dependent on natural resources for food, drinking water and sanitation requirements, and for many medicines. Thus management of natural resources cannot be separated from managing resources for health.

Summary of Participatory Assessment of Nutrition in Attapeu

A complementary participatory assessment of the nutritional role and value of aquatic resources to livelihoods in Attapeu was undertaken with support from IUCN, FAO and LARReC (Meusch et al, 2003).

The fisheries of the Mekong wetlands are the single most important source of animal protein for the people in this region. The health of the people, their food security, culture and economies are closely connected to wetland fisheries. Although government agencies largely define food security in terms of rice security, the people place equal importance on the harvest from their fisheries. Food security is the main indicator for identifying poor and vulnerable households in Laos, and promoting food security is the cornerstone of national policy for poverty alleviation and rural development. Promotion of increased rice production – through expanding the area of land under cultivation, extension of improved cultivation techniques and irrigation – dominates agricultural policy.

The MWBP has seen food security and, importantly, nutritional security as more than rice security. People in Laos eat a wide variety of foods that have important nutritional benefits. Chief among these food sources in Attapeu are the rich aquatic resources. However, there is a risk that some of the strategies being promoted for improving agricultural productivity might in fact undermine the productivity and sustainability of these rich wild aquatic resources, and that this might lead to a net nutritional loss, with a particular impact on poorer households.

Nutrition Study Findings

Rice fields are perhaps the most widespread and economically productive type of wetland in the Mekong. While agricultural development focuses on increasing rice productivity, the wild aquatic resources in these floodplains and rice fields are often overlooked. Participatory assessment of the nutritional role of aquatic resources in Attapeu revealed that:

- Aquatic resources are the main source of animal protein in protein-poor diets;
- Aquatic resources are of particular importance for poorer households, and for women;
- Harvesting aquatic resources is one of the main coping strategies for periods of rice shortage;
- There are no coping strategies for periods of aquatic resource shortage.

Given their importance to local livelihoods, any degradation of wild aquatic resources is likely to have significant impact. The potential for reducing poverty and promoting sustainable livelihoods through management of wild aquatic resources has yet to be realised.

Part 3 - Key Areas of Intervention

Summary of Approach in Each Demonstration Site

Each of the four demonstration sites applied similar approaches and working principles but the nature of each programme intervention was devised according to strategic concerns and the site context. Exchange visits allowed local partners – local resource users, government agencies and NGO partners – to learn from the experience of the demonstration sites in neighbouring countries and to adapt it to their own circumstances. Across all four sites the emphasis remained on strengthening the capacity of local resource users to develop natural resource management and livelihood improvement activities, and to facilitate improved partnerships between different groups of resource users, and between local people and government agencies.

In Songkhram, Thailand, participatory assessment, planning and management were promoted through a process of villager-led research known as *Tai Baan* research. This brought together teams of villagers to research data linked with their daily activities along with provincial and district government staff. Through this assessment and planning process the villagers identified a number of specific interventions that were then implemented. These included strengthening community fisheries management, promoting income generating activities such as fish processing, and clearing *mimosa pigra* for use as bio-fertiliser. The *Tai Baan* research area soon became an important training ground for partners from the other programme demonstration sites with villagers from Laos, Viet Nam and Cambodia visiting Songkhram before the Thai villagers reciprocated the visits to learn from their neighbours.

In Stung Treng, Cambodia, the emphasis was on strengthening the links between village-level assessment and planning and the decentralisation processes being implemented at the provincial level. Working in partnership with government agencies and the local Culture and Environment Preservation Association (CEPA), an NGO with a long history of working with communities in the Stung Treng Ramsar site, the programme applied villager research, assessment and management in the *Tai Baan* style after researchers from Songkhram provided initial training. This approach was given a Khmer name – *Sala Phoum* (or 'village school'). Health issues were identified as priorities during the PPA work and so a programme of health activities was started in partnership with the NGO Health Unlimited, and with villagers and provincial health institutions. Additionally, a series of assessments were undertaken to support the development of interventions to promote sustainable livelihoods in line with provincial and commune strategic priorities. These included sustainable agriculture assessments conducted in partnership with the Cambodian NGO CEDAC, development of a strategy to promote community-based ecotourism, and an assessment of the wildlife trade, particularly of aquatic wildlife (conducted in partnership with TRAFFIC).

In Attapeu province of the Lao PDR the emphasis was on promoting village-based planning that involved representatives from all key provincial line agencies and addressed both conservation and development objectives. The process was termed Integrated Participatory Planning (IPP) and was designed to allow provincial, district and village stakeholders to identify issues and appropriate intervention strategies. As a result, measures were taken to promote management of wetland resources, integrate fisheries, begin indigenous species aquaculture (including rice-fisheries), improve livestock health, and pilot sustainable agriculture. As in Cambodia, health and food security were identified as critical issues during the PPA process and a partnership with Health Unlimited and the Provincial Health Department was developed.

In Viet Nam's Plain of Reeds, a partnership with CARE Viet Nam sought to promote community natural resource management, alternative sustainable livelihoods and income generating activities. Local Natural Resource Management Groups (NRMGs) were established to help local people, government and park authorities develop participatory natural resource management plans. Household Interest Groups (HIGs) were also set up with target households to develop household business plans, assess the economic viability of activities, secure credit and implement new income generating activities.

Participatory assessments were undertaken in the demonstration sites to improve management practices for both conservation and livelihoods concerns. In Songkhram a process of Environmental Flows assessment has been initiated, incorporating the partnerships established under the *Tai Baan* as part of a river-basin-wide approach. In the Plain of

Reeds an assessment of current fire and water management practices was undertaken to identify opportunities for new management regimes. In Attapeu provincial and district government agencies underwent capacity building exercises to enable them to undertake Environmental Impact Assessments (EIAs) in consultation with local people.

As part of the overall programme, additional initiatives were undertaken in each of the countries, at both demonstration site and national levels. A series of Wetland Inventory, Assessment and Mapping exercises and biodiversity assessments were carried out to help identify important resources and planning approaches. At national levels, a series of policy reviews drew on the practical experience of addressing wetlands management in the demonstration sites[7]. At the regional level, both IUCN and the MRC supported processes to assess change and its implications, and promoted dialogue between regional stakeholders to capitalise on the experience and partnerships established under the MWBP. The MRC Environment Programme's work on assessing the possible impacts of regional development, known as Integrated Basin Flows Management (IBFM) has been an important link with the MWBP. As part of a global initiative to present children's views of water resources to the World Water Forum, IUCN funded a photographic essay from around the world, including the Mekong, published as *Tales of Water*.

Participatory Planning – Strengthening the Capacity to Assess, Plan and Manage People's Resource Base

The initial priority in all four demonstration sites was to strengthen the ability of local people to undertake their own resource assessment, planning and management. This applied to both environmental resources such as fisheries, and also to health resources. In doing so partnerships were developed with local government agencies to ensure the approaches and outcomes were incorporated more readily into administrative planning processes, and to develop a working partnership between these agencies and local people.

Helping Villagers Assess and Plan Resource Use - *Tai Baan* and *Sala Phoum*

Concerns about fisheries and the livelihoods they support have become more prominent in debates about the impact of infrastructure development in the Mekong region. There is a growing argument that not only have fisheries been

overlooked in regional development but that the people whose livelihoods depend on these resources have been excluded from the whole process. This argument recognises the need to harness the considerable local knowledge of aquatic resources in such a way that villagers can participate in planning and management responsibilities.

The processes of generating information and promoting public participation have been brought together in the *Tai Baan* and *Sala Phoum* village-led research initiatives in Thailand and Cambodia respectively. The names given to this research are also significant. *Tai Baan* is a term used by local people in local dialects throughout NE Thailand (and other parts of Thailand and Laos) to refer to 'villagers'. The title *Sala Phoum* means 'village school' and was selected by villagers themselves in Stung Treng.

Tai Baan research began as part of a grassroots political movement. It was initially started by local people and Thai NGOs such as SEARIN involved in the campaign to decommission the Pak Mun Dam. In 2000 the Thai government agreed to open the Pak Mun dam gates for an eleven-month trial period to assess whether such a move would have an impact on the fishery and livelihoods. The University of Ubon Ratchathani was contracted to undertake an assessment of the impacts of opening the gates. However, local people were concerned that such a study would not represent their interests fully and therefore decided to undertake their own *Tai Baan* research. This proved highly influential in documenting the impacts of opening the gates and also encouraged other groups in different parts of Thailand to attempt similar research projects. By 2005 *Tai Baan* research was being conducted in five areas of Thailand coordinated by the Thai NGO SEARIN (see Srettachau & Deetes, 2002)[8].

Developing *Tai Baan* in the Songkhram River Basin

The *Tai Baan* research in the Songkhram River Basin was conducted in a rather different manner to that in Pak Mun, where the focus was on campaigning against a state-led development project. While a irrigation dam across the Songkhram has been planned for over a decade, the project had been shelved by the time the MWBP began, although the threat of its future implementation remains a concern for all involved. NGOs such as Project for Ecological Recovery had been active in Songkhram for many years. Around the Songkhram it was the rich fisheries that were rather very much a concern to local people. Declines in the productivity of this resource and degradation of the unique flooded forest system known as *pa bung pa tham* had been provoking growing worries over the future of the Songkhram wetland system. Retention of traditional lore was another priority: during early discussions among local people on the objectives of *Tai Baan* research, the most commonly expressed desire was people's need to document their own knowledge of their resources and culture for the benefit of their children and grandchildren.

The Songkhram area is of considerable importance to the wider Mekong fishery. Several research projects have attempted to document the productivity of the Songkhram Basin and to address management problems, particularly regarding degradation of the flooded forest habitat, blocking of migration pathways and use of damaging fishing gear. Local people complained that even though they had been interviewed and had provided data to research projects, the findings of this research had never been made available to them.

For local people and Department of Fisheries officials exchange visits were organised with support from SEARIN to Rasi Salai, another area of northeast Thailand with a dam project which failed to deliver what had been promised. Unlike at the highly controversial Pak Mun site, this failure had been readily recognised by the state, so the project was felt to be less confrontational. The visit to Rasi Salai generated great enthusiasm among the villagers and the district agency staff, enabling them to see the research process as something that they could direct and own and that could provide clear benefits. For the district government workers the *Tai Baan* approach offered a way of overcoming conflicts between their agencies and local people.

The link between *Tai Baan* research and current government decentralisation initiatives has been a critical factor in gaining local government support in Songkhram. From 2001 Thailand has been undergoing a period of radical bureaucratic reform with public participation and the role of *Tambon* (sub-districts) Administration Organisations (TAOs), as guaranteed in the 1997 constitution, being established in practice. TAOs have become responsible for local development and natural resource management and district line agency budgets are now dependent on providing services to TAOs. This has put great pressure on both line agencies and TAOs to engage more effectively with local people. News ways of working were thus imposed on all concerned.

The *Tai Baan* research in Songkhram has become a means of addressing the information needs of public participation through a wide partnership between key local stakeholders: villagers and their institutions, TAOs, district and provincial line agencies, schools and colleges, and local NGOs. This partnership approach, typical of the MWBP, also matches Thai local development policy. Utilising the capabilities of government agencies, NGOs and academics provided a forum for the *Tai Baan* approach to bring together stakeholders who had previously more often been in conflict. The MWBP provided a forum to facilitate a partnership between a grassroots political process to engage with state-led decentralisation. This experience in Songkhram then provided a model for the other countries to learn from and adapt according to their own needs. In the early stages resource users and partners from the neighbouring countries were invited to attend feedback workshops, to join the Songkhram *Tai Baan* researchers in the field and to discuss how such approaches might be adapted for each of the other countries.

Participatory Fisheries Assessment and Management

Assessing the production and value of capture fisheries in the Mekong Basin is problematic. The huge species diversity, with seasonal and annual variations, and differences in the ways people catch fish all present significant challenges to modelling techniques. To this must be added the huge geographical scale of the fishery, the limited personnel and budgets of regional fisheries agencies, and the political conflict among resource users and between resources users and the state. As a result these 'participatory' approaches to fisheries assessment and monitoring have attracted considerable interest from many sources in the region, including national fisheries departments, FAO and the MRC Fisheries Programme.

In each of the countries similar approaches were subsequently taken up but the greatest similarity with the Songkhram *Tai Baan* has developed in the *Sala Phoum* research in Stung Treng. Villagers from Stung Treng and representatives from NGOs and the Cambodian Department of Fisheries visited a *Tai Baan* feedback workshop in Songkhram. This provided the first opportunities to learn about the process and practicalities of conducting *Tai Baan* research and how it might be adapted and applied in Cambodia. In February 2005 a small group of *Tai Baan* researchers from Songkhram and Rasi Salai visited Cambodia to discuss how *Sala Phoum* might progress: villagers talking to villagers, learning from each other and establishing friendships. These discussions formed the basis for the *Sala Phoum* strategy.

The visits between these demonstration sites proved particularly fruitful as villagers from both sites were able to communicate with each other in similar dialects. Added to this were comparable shifts in government policies: Cambodia had begun to implement a radical reform of fisheries legislation, recognising the rights of communities to manage their aquatic resources. As in Thailand, Cambodia had also begun a decentralisation process that encouraged integrated natural resource and livelihoods planning and linked village-level planning to communes and provinces. This initiative, known as the SEILA programme, linked with the MWBP in its efforts to build the capacity of local people in assessment and planning, and in developing cross-sectoral linkages and strengthening partnerships between government agencies and NGOs.

The methods employed by *Sala Phoum* and *Tai Baan* were essentially the same. All Cambodian partners had identified the fisheries of Stung Treng, particularly those associated with deep pools in the Mekong mainstream, as critical fish habitats within Stung Treng but also for the productivity of the Tonle Sap. CEPA had supported community fisheries in Stung Treng for over ten years but saw *Tai Baan* style research as an opportunity to mobilise greater involvement from community members and to strengthen partnerships with government agencies. *Sala Phoum* was recognised as a chance to generate and disseminate information based on local knowledge that would otherwise not be available. The interests and aspirations of local people in Stung Treng were similar to those of *Tai Baan* researchers across Thailand – to document their local knowledge in such a way that it could be passed on to future generations and to strengthen community solidarity for fisheries management. In both sites villagers recognised that it was important that people joined the process voluntarily, so as to ensure local ownership and the long-term sustainability of their efforts. *Tai Baan* and *Sala Phoum* researchers were not paid to conduct their research, and The MWBP provided only logistical and backstopping support.

The *Tai Baan* and *Sala Phoum* Research Methodology

The starting point for *Tai Baan* and *Sala Phoum* research has been for villagers to discuss among themselves the objectives, scope, methods and outcomes of the planned research. The process starts with a 'workshop' where villagers meet to informally discuss the benefits that community research could provide and why they might want to undertake it. This process helps clarify research goals and objectives, and creates a common sense of purpose among the villagers. In each of the *Tai Baan* research areas, all villagers were encouraged to participate. The participation of women was held to be particularly important because of their extensive knowledge about food and health.

During the first village workshop, villagers decided who among them was interested in becoming involved in the research, and the important issues the research should address. In Songkhram the research focused on:

- Fish species – local names, habitats, breeding and spawning grounds, migration patterns, how they are used, prices, traditional beliefs, trends in availability;
- Sub-ecosystems – local names, characteristics, resources available, traditional beliefs;
- Fishing gear – how, where and when the different types are used, how they are made and from what materials, traditional beliefs;
- Flooded forest vegetation – local names and descriptions, where and in what seasons they are found, what they are used for (including whether they are food for fish), use in traditional medicines, trends in availability;
- River bank agriculture – documenting crops, local names, how they are used;
- Cattle and buffaloes – documenting characteristics, local names, history and availability, market values.

In Stung Treng *Sala Phoum* research began in the second half of 2005 with 90 village researchers in four villages - Koh Khondin, Koh Sneng, Voen Sean, and Koh Langor. It was agreed that the main focus of *Sala Phoum* would be on fish species, with supplementary research on sub-ecosystems and flooded forest vegetation. There was concern among the Stung Treng villagers that covering such a wide range of research topics as had been undertaken in Songkhram might be too ambitious, requiring too much time given the greater

distances to travel between the villages in Cambodia. Thus the topics were limited to fish species, fishing gear, sub-ecosystems, and in one village only, Koh Sneng, wetland plants. In both Songkhram and Stung Treng the research also addressed social and cultural issues, and local history.

Within the same workshop, the membership of the research teams was established. Teams of *Tai Baan* Researchers (TBRs) were selected by villagers to focus on each issue. Some members were selected because of their specialist knowledge and became core researchers, while interest and availability were criteria for other members. Research Assistants (RAs) – young villagers, NGO workers or volunteers from universities – also joined as research team members. Their main responsibilities were to help coordinate fieldwork, documentation (e.g. collecting samples, taking photographs), arranging regular meetings, and assisting in field research.

Training of TBRs and RAs was led by a combination of NGO workers and experienced members from other *Tai Baan* research teams. Preparatory sessions were required to lay down the methods for each aspect of the work. For example, research teams looking at fish agreed on tools for collecting data, local names of species and whether they are commonly found or endangered, migration patterns, habitats, spawning grounds, and differences between local and introduced species. Training was also given on how to document field research. In Stung Treng the RAs were CEPA field staff, who were trained by RAs from Songkhram.

During the research period the teams attended at least three workshops to present, discuss and comment on their findings. These sessions allowed discussion of possible ways of improving methods and logistics and were attended by *Tai Baan* researchers from other sites. The exchange of experience and ideas among the teams from the different research sites has been an important step in introducing and strengthening the *Tai Baan* approach and in developing a network. Villagers have had the opportunity to learn from other people's experience in documenting and addressing resource management problems. Networking on a regional scale represents an important start in dealing with the issue of scale in management of natural resources: many of the threats to local resources come from the macro level. While local *Tai Baan* and *Sala Phoum* research can help with local management issues, developing a network of researchers raises and questions the issues facing the whole Mekong Basin.

Throughout the process, RAs prepared draft reports for comment by the research teams. The RAs were also involved in special training on organising information, writing skills, photography, and made regular field visits to *Tai Baan* research areas. As the research progressed, the draft reports from each of the teams were compiled into main reports that were further discussed at interim workshops. The final reports were presented at the final workshops. Academic researchers, government officials, journalists, NGOs and other interested people were invited to participate and comment on the research findings at each workshop.

Tai Baan and *Sala Phoum* Fieldwork

While *Tai Baan* and *Sala Phoum* research is based on empirical methods – collecting data, documentation, analysis and peer review – it is grounded on traditional rural values of cooperation and undertaken as a communal activity. Village teams organised the logistics themselves and combined research activities with traditional celebrations of eating and merrymaking (*kin khaow ba*). Data collection, discussion and learning were viewed as social activities that helped build a sense of community across different villages, and ultimately across the different countries. The research in Songkhram involved 240 village researchers from four villages. In each village teams of ten villagers addressed one of the six research topics.

All the research findings are supported by evidence including specimens, samples and photographs. Social and cultural information was gathered during group discussions with all villagers including village heads, fishers, farmers, traders, teachers, taxi drivers, and small business owners. Representatives of village and sub-district committees also participated. This wholesale participation ensured that any development conflicts occurring within the villages could be addressed and resolved. It also meant the research gained credibility with all local stakeholders rather than being perceived as belonging to a single group.

As well as specimen collection and photography, data collection involved field surveys and mapping. During field trips TBRs asked RAs to record supplementary information about the issues, leading RAs to ask more detailed questions and record more complete information. Interviews with key respondents, sometimes not on the research team, also provided important information. For example, RAs prompted elders with knowledge of traditional fishing gear that is no longer used to join interviews, and then recorded their information.

Steps Involved in *Tai Baan* Research

Activity	Purpose, Method, Details
Preliminary village workshops	To clarify goals and objectives of the research, and to generate a common understanding among villagers. A number of different villages participated in each of the *Tai Baan* research areas.
Village workshops	Villagers decided who wants to participate. This helped clarify the geographical scope and numbers of villagers to be involved
Identifying Research Issues	Villagers selected research issues: e.g. ecosystems, fish, fishing gear, natural plants and vegetation, agriculture along river banks and other areas, livestock in wetland areas, traditional water management, social and cultural issues.
Training *Tai Baan* Researchers and Research Assistants (TBRs and RAs)	TBRs were selected by local people from among themselves to focus on each of the issues. Women are encouraged to be TBRs. Young RAs from the villages, NGOs, and university volunteer groups joined to help coordinate field work, documentation, and group meetings. Training for TBRs and RAs on methodology for each research issue was led by NGO workers and experienced *Tai Baan* research groups. Exchange visits were organised with other *Tai Baan* groups.
Practice research methods	Research teams practice research methods in the field, and then discuss how to adapt the methods. This was then the basis for planning the *Tai Baan* research: field research activities, discussion groups and workshops for the next 12 months.
RA support	RAs prepared draft reports for the research teams to comment on and were involved in special training, particularly on organising information, writing skills, photography etc, and made regular field visits to different *Tai Baan* research areas. Each research issue was addressed in each village, with teams in each village focusing on one particular research issue.
Conducting research	Field work was undertaken as a communal activity. Organisation activities were combined with celebration.
Empirical research	*Tai Baan* is based on empirical methods – collecting data, documentation, analysis and peer review. All findings were supported by evidence such as specimens, samples, photographs. Social and cultural information was based on group discussion with all groups within the villages.
Ensuring quality	To ensure quality of research and flexibility for field work and group discussions, each research issue was initially addressed by at least 20 people. During later group discussions, for example when discussing broad issues such as fish, at least ten people participate.
Regular workshops	During the 12 months of research at least three workshops were held for all the research teams to present, discuss and comment on findings. This helped to ensure the information was correct and allowed the teams to suggest ways to improve the process.
Group discussions	Research findings had to be agreed upon by all participants involved in group discussions, providing another filter for data quality. Specimens and photographs were used as the basis of discussions, to stimulate provision of further information. RAs maintained records of these meetings and their conclusions. Group discussions involved free exchange of knowledge and allowed resolution of disagreements.
Data collection	Data collection began with group discussions for each research team, to establish starting baseline knowledge within the teams. For example, fish research teams listed the species they knew and used the lists as the basis for gathering field samples. Data collection involved field surveys, mapping, specimens gathering and photography.
Interviews	Key informants provided important information such as older people with knowledge of obsolete traditional fishing gear. TBRs identified key informants and coordinated interviews, which were recorded by RAs.
In Summary	Good relationships between villagers and other partners are essential. Regular initial meetings are used to select researchers and prepare research TORs. Research workshops help teams to prepare methodology and practice data collection. Continued regular workshops are required to adjust research methods.

What the Research Addressed - *Tai Baan* and *Sala Phoum*

Songkhram

The *Tai Baan* researchers identified six research topics:

- Ecosystems
- Fish species
- Fishing gear
- Flooded forest vegetation
- River bank gardening
- Livestock

The research findings are in themselves highly significant. The *Tai Baan* research identified 28 sub-ecosystems, representing a more sophisticated classification system than had been applied in national wetlands classification. 128 fish species were also identified, while their breeding, spawning and feeding habits and migration pathways were documented along with the cultural beliefs associated with them. 13 species that used to be caught are no longer found in the area. *Tai Baan* research identified 79 kinds of traditional fishing gear, eight of which are no longer in use. Some large-scale commercial gear is also in use. In addition *Tai Baan* research raised the issue of auctioning concession rights to important fishing grounds. This was identified as an important factor in the overall decline of the Songkhram fisheries.

Research into flooded forest vegetation identified 208 species used by local people for food, traditional medicines or household purposes. Links between flooded forest vegetation and fish feeding were also recorded. For example, a particular wild fruit in the flooded forest provides an important food source for the Mekong Giant Catfish that used to migrate to the Songkhram from the Mekong. The near disappearance of this fruit has been associated in the decline of the catfish.

Fishing rights and practices, including changes in types of fishing gear were documented in detail, as were changes in the way fish and other aquatic animals are processed, marketed and sold. Cultural beliefs and practices were also shown to be changing, with taboos on catching specific species or fishing in special areas disappearing as fish become rarer and markets more lucrative. The results categorically showed that the number and size of the fish that migrate to the Songkhram from the Mekong have decreased in the past few decades. In the past, for example, villagers would catch several Mekong Giant Catfish weighing as much as 270 kg but the last specimen was caught in 2003. Such falling yields are visible across many species, and villagers identified several possible reasons for the decline in their fisheries including degradation of flooded forest feeding and spawning areas, use of illegal fishing gear, land-use changes and changes in the Mekong mainstream flows. Addressing this decline would therefore have to involve action and management locally, nationally, and even across the entire region.

Agriculture was also found to be in transition, with farming becoming more market-oriented and influenced by central government policies. A variety of rice farming methods was documented and 47 different varieties of rice were identified. However, of these only seven traditional varieties are currently grown in the Songkhram, with the majority of rice production now being based on high-yield varieties introduced by state extension agencies. While these new types of rice give higher yields in a shorter time, more fertilisers and pesticides are now used, which affect the quality of the environment and the productivity of fisheries and forests. More chemicals than before are also used in market gardens. The new rice varieties are more prone to flood damage than traditional wetland rice varieties, and government schemes to subsidise flood-affected fields led to scams and deforestation to try and maximise revenues.

Livestock rearing practices have altered considerably in the last thirty years, with buffalo becoming less common since the advent of farm machinery. The Songkhram river basin forms one of the largest areas of grazing land for cattle in Sakon Nakhon province. Villagers in the basin have traded cattle with the central plains and eastern Thailand for over a century. Nowadays the bulk of cattle trading is within local markets but cattle remain an important resource and an important savings mechanism. The number of households owning cattle has increased but the number of head per household has decreased with growing pressure on common grazing lands, partly as a result of encroachment by agribusiness.

Sala Phoum in Stung Treng

The *Sala Phoum* involved over 90 village researchers, who recorded detailed information with photographs for 130 fish species. Of these species, 102 species are caught in the area throughout the year, 26 species migrate into the area, and two species that are new to the area were identified. The fish species were classified according to their apparent abundance with 106 species being reasonably common, 24 species being increasingly 'rare'. The Mekong Giant Catfish was not studied in detail but was identified as one of the fish that is no longer being caught in the area. The extant species feed on 22 types of identified fish food, the most common being insects, worms, moss, small fish, and forest debris.

Sala Phoum researchers compared the fish caught in the two years of the programme and found that 98 fish species are decreasing in volume caught per year, with catch of the remaining 32 fish species remaining the same. In terms of fish migrations, *Sala Phoum* identified 26 fish species that move upstream into the Stung Treng Ramsar site during the low water period in December-March. These species move back downstream during high water periods from June to August. For 127 fish species identified by the research the spawning period ranges from 1.5 to 5 months, with three months regarded as the main spawning season: in June 56 species spawn, in July 75 species and in August 48 species. There are four various fish species capable of spawning twice a year: *trey ros*, *trey kaey*, *trey kraysak* and *trey chror kaing*. *Sala Phoum* researchers found three species that do not spawn at the Ramsar site but migrate into the site to feed: *trey pasiy*, *trey pava*, and *trey pava mokbak*.

Local people have traditionally processed fish in five ways to preserve the nutritional value of protein caught and stored when fish are plentiful, for times when they are much harder to find. With the changing economic dynamic in the area processed fish can now be sold to gain income that is invaluable in supporting the family and in planning for the future. *Prohok* is made to maximise the utility of low-value fish and when there is a surplus.

Forty-four 'sub-ecosystems' were identified in the four target areas, with 23 habitats for fish identified. The most important in terms of numbers of fish were flooded forests, deep pools, streams and groups of rocks. Twenty-two main deep pools were noted in the four-village research area. The largest of these, found near Koh Langor, is the habitat of the endangered Irrawady dolphin.

The *Sala Phoum* research followed four main steps to document sub-ecosystem data. Firstly, in the group discussions researchers listed all the sub-ecosystems known by the participants and classified them all under one of the main sub-ecosystems identified in each village. Secondly, fieldwork was undertaken to check the classification of each sub-ecosystem and to document it with photographs. This information was then fed back to other *Sala Phoum* researchers for verification. Finally, Research Assistants and *Sala Phoum* researchers used Global Positioning System units to confirm the location of each of the deep pools.

A total of 23 fish habitats were identified in the villages: 18 in Koh Khondin, 17 in Koh Sneng, 14 in Voen Sean, and 11 in Koh Langor. Deep pools, flooded forests, islands and rapids were the most important habitats in terms of number of fish species. Many types of food were also found in these habitats. The deep pools have been identified by the Community Fishery Committees as conservation areas. All 23 fish habitats are used as fishing grounds during the wet season, but in the dry season some drain completely.

The different sub-ecosystems host important functions for both animals and people. Flooded forests and islands in particular serve as habitats for fish, birds, lizards and other animals. These sub-ecosystems are spawning grounds for some fish species and provide villagers with various kinds of river vegetables, fish and animals that are important to their diets and livelihoods. Several plant species found in these environments are used in traditional medicine. When the water recedes at the beginning of the dry season, the islands and riverbanks then become vital locations for growing vegetables and rice. Islands and flooded forests served as temporary resting places for fishermen in the dry season and also provide additional resources or income in the form of firewood, sand, stones, and gravel collected from December to June.

The local researchers in Koh Sneng village identified and classified 94 varieties of plants, 77 of which are used to make traditional medicine. Another 32 species are used daily for food, with five species used for both medicine and food. These 94 plants are classified in four categories - vines, woods, soft plants and grasses. The 77 plant species that are used to make medicines can be used for a variety of ailments including toothache, malaria, coughs, dizziness, serious and non-serious diarrhoea, and snake bites.

In Short – *Tai Baan* and *Sala Phoum*

Perhaps the most significant outcome of the *Tai Baan* and *Sala Phoum* research has been its effect on the confidence of the researchers themselves, and the subsequent impact the villagers have been able to have on local government agencies. Some people who are not able to read and write have stood at formal meetings to present the findings of the research to audiences of government staff, academics, NGO workers and journalists, and have afterwards confidently responded to questions from the floor. This in itself has led to important changes in local management and policy.

The actual processes of undertaking the research and analysing the findings have contributed to intense discussions among resource users on how to address management needs. For example in Ban Tha Bor, one of the participating Thai villages, the community debated its situation and eventually decided to

expand an established fish conservation zone along a stretch of river in front of the village temple. Negotiations continue between *Tai Baan* researchers and some fishermen who have been using large-scale small-mesh seine nets that are believed to be destructive to the wider fishery.

Integrated Participatory Planning in Attapeu

The approaches to strengthening capacity for assessment and planning differed considerably in the Lao PDR and Viet Nam. In both these countries there is a commitment to public participation that is more closely incorporated into existing state planning processes than it has been in the Thai and Cambodian demonstration sites. Lao and Vietnamese government agencies have in recent times at least played more prominent roles in facilitating participation. One of the main challenges to effective wetlands planning and management is generating inter-sectoral coordination. This has been a particular challenge in Laos, which during the period of MWBP implementation was the only country in the programme that had not ratified the Ramsar Convention. Despite renewed interest in wetlands issues over the last decade and a move towards ratification of Ramsar, there was still something of a lack of understanding among government agencies about what is meant by the term 'wetlands'. While people easily recognise the many varieties of resources that are classified as wetlands the translation of 'wetlands' into Lao is a technical term that is not commonly used.

The Lao authorities have placed considerable emphasis on poverty alleviation and also on promoting participation, particularly at the village level. The village is seen as the 'implementing unit' of Lao development policy. This then became the cornerstone of MWBP intervention in Attapeu – promoting an integrated participatory approach to village level planning by involving a range of provincial and district government stakeholders. The approach adopted the term 'Integrated Participatory Planning' (IPP) and identifying the scope and roles of the various stakeholders became a critical issue. Although as a project the MWBP was under the responsibility of the Ministry of Agriculture and Forestry, the provincial authorities were keen to develop an integrated, cross-sectoral approach to wetlands management. In Attapeu a multi-disciplinary team was assembled to undertake village level consultations. This team included a range of government agencies: the Provincial Agriculture and Forestry Office, Planning Department, and Health Department, and the Lao Women's Union. The formation of the team and their subsequent application of participatory methods in the villages was itself a significant innovation. Villagers worked with the IPP teams to develop village level plans that were then discussed, and where appropriate endorsed, by the Provincial Management Board. In each of the villages the IPP process helped to identify ways in which these different sectors could provide relevant and inter-linking support.

The IPP process aimed to provide an understanding of the diversity and complexity of local livelihoods, strategies and visions that could then be used to inform project activities. In this way a wide range of activities were considered for action, some which would normally fall outside the remit of a traditional conservation project but would make the programme more relevant and engaging to local people. In one of the target villages for example, Ban Kasom, villagers were interested in improving management of their fishery resources and the agricultural productivity of their rice fields and flood plains. Through the IPP process village-level plans were developed to strengthen community fisheries management, promote small-scale aquaculture of indigenous fish species, vaccinate livestock and undertake rice production trials using sustainable agriculture techniques. Each of these initiatives was feasible as the relevant local government departments and national agencies had the expertise to provide technical support and backstopping. In addition, health sector workers and the Lao Women's Union helped to identify a number of health issues that provided opportunities for further support.

Planning with Natural Resource Management Groups and Household Interest Groups in Viet Nam

The particular management challenge on Viet Nam's Plain of Reeds has been to develop a mechanism for improved collaboration. Resolving the long history of conflict between community groups, and between park authorities and communities has been an important component of the work. The lead partner in addressing livelihood issues here was CARE – an international NGO with considerable experience and expertise in addressing natural resource management and livelihoods.

Strengthening public participation has been both a means and an end for the programme in Viet Nam. The starting point for project interventions in the Plain of Reeds has been the principle that local people have the knowledge and capacity to take on natural resource management and income generating improvements for themselves, but lack confidence and access to information to make informed decisions. Although not designed as a credit-based intervention, the livelihoods work in Viet Nam built on experience of credit schemes in which support was provided to households without adequate technical support, and without households preparing their

own business plans. These initiatives invariably collapsed. The programme thus focused on helping people develop livelihood activities that would meet the objectives of wetland conservation, be economically viable, and fit the management objectives of the state authorities. The process adopted under the MWBP was designed based on these principles, and with the recognition that time and effort would be required and that initial actions might well face criticism from local people and even the project partners – CARE, the commune Group Facilitating Teams, Lang Sen Wetland Reserve and Tram Chim National Park officers, Long An Department of Science and Technology (DOSTE), and the People's Committees in the project communes.

Community Management Groups

The pilot approach combined community-based natural resource management with direct poverty reduction measures. Two types of group were set up within the communities: Household Interest Groups (HIGs) and Natural Resource Management Groups (NRMGs). In Lang Sen, where many group members live inside the nature reserve, the two groups were combined into one with mixed activities. In Tram Chim the activities of the two groups focused on raising living standards while improving people's ability to use natural resources effectively and sustainably. The effectiveness of these approaches means that local group members have already managed to increase their income while reducing exploitation of natural resources in both Tram Chim and Lang Sen. By easing the pressure on natural resource harvesting, it was hoped that the relationships between National Park (NP) and Wetland Reserve (WR) officers and people living in and around these areas could be improved. The coordination and collaboration of the two biggest wetland areas in the Mekong Delta, Tram Chim and Lang Sen, was sought as the basis for networking of resource users in the future.

The HIGs were designed as the foundation for implementing all livelihood activities in the communities, so the way they were set up was very important. To make sure the procedure was in line with both project goals and local needs, CARE staff and the main project partners held meetings to discuss and agree a 15-step procedure for establishing both HIGs and NRMGs. For HIGs this involved selecting members, conducting livelihood surveys, selecting suitable livelihood choices and helping group members increase their incomes while ensuring the ecological balance of the wetland area. For NRMGs a similar group formation process was followed with the addition of resource inventories, development of regulations and resource use plans, and NP/WR approval.

The 15-step process for HIGs was carried out to ensure that local people selected new livelihood activities based on land, capital and production resources, and not based on fanciful ambition. HIG members had to take part in the livelihood survey, to select and develop the 'livelihood basket', choose their own livelihood activity and then make their business plans. These steps helped group members change their ways of thinking about doing livelihood activities and improved their ability to make business plans and calculate costs and benefits. Each HIG had 12-15 members from the same village and with the same livelihood interests, making it easy to hold regular meetings and activities like training, experience sharing and study tours. Each group has a head, a deputy and a secretary. Group members set regulations by themselves. In the monthly meetings, group members joined in general activities, shared production experience, administered loans, or took part in training sessions.

According to the guidelines for HIG and NRMG establishment and operation, a set of selection criteria was agreed by the project staff and partners and applied to appointing group members. The criteria gave the poor an opportunity to take part in the groups. Due to significant variations in the distribution of population, the geographical characteristics and the management paradigms of Tram Chim and Lang Sen, the criteria for selecting households for the HIGs in these areas was different. Although Tram Chim is a protected area, local people still poach and fish in the park. As a result, relationships between the park authority and surrounding communities are tense. Thus in piloting a participatory resource management approach, the targeted group for NRMGs are the households who, according to the 'black book' of local forestry inspection services, have poached in the park. In Lang Sen on the other

hand, there are about 100 households living inside the reserve and their livelihood activities have significant negative impacts on the conservation of local wetlands resources. Accordingly, at this pilot stage all these households were included in seven groups established in two communes, Vinh Loi and Vinh Dai. In Tram Chim, 46 households formed four HIGs and 100 households formed four NRMGs in the two communes of Phu Duc and Thanh B.

Project Support to HIGs and NRMGs.

A Group Facilitation Team (GFT) was set up to facilitate activities in each project commune. The GFTs comprised six members, from the National Park or Wetlands Reserve, the Women's Union, Farmers' Union and Village heads. Training was given by agriculture extension officers, CARE and MWBP staff to improve capacity among the GFTs and heads of HIGs and NMRGs. Training topics included conducting group meetings, natural resource management and conservation, and the role of wetland areas. Meetings were held regularly with the NP and WR authorities to facilitate agreements on the groups' rights to use and manage natural resources. In late 2006 a panel representing villagers, GFTs and park authorities was set up to approve natural resource management plans. By planning and approving issues together, it is hoped that the groups will be fully supported and to some extent regulated by the park authorities, who now recognise the role that community members can play in ensuring more sustainable management and use of protected areas.

Participatory Assessment and Planning for Health, Food Security and Nutrition

During the PPAs health, food security and nutrition were identified as key livelihood issues in Attapeu and Stung Treng, and clear connections were established between these issues and wetland resource management. Wetlands are the main source for food and drinking water and their management is essential for ensuring food security, nutrition and access to safe drinking water. With high incidences of malaria and parasites such as schistosomiosis (bilharzia) in these areas, management of wetland resources also includes management of water-borne pests and vectors. Improving health and nutrition can have a significant impact on promoting development by reducing vulnerability and poverty. The need to cover health care costs can force people to sell assets and put them in situations from which it is difficult to recover. Health, food security and nutrition interventions tend to address the needs of some of the poorest and most vulnerable groups in communities. Women play critical roles in managing household nutrition and health.

The approach to health and nutrition applied the same principles of strengthening people's capacity. This would enable communities to understand and address some of the key causes of ill-health and poor nutrition, and to make better use of and demand more from health service delivery systems. With poor health infrastructure in place, particularly in remote villages, the main sources of support when health problems occur are family, friends and neighbours within the village. Generating knowledge and information within communities can help vulnerable people to decide on the best ways to deal with health issues. This is a key factor in individual and community transformation and development: information and knowledge strengthen bargaining power in household decisions and personal relationships, particularly for women. Such knowledge can result in improved allocations of household budgets to cover health, nutrition and schooling.

In both Cambodia and Laos health-related work was integrated into the wider programme, and health specialists operated as key members of the inter-disciplinary, cross-sectoral MWBP teams, working in partnership with provincial and district health agencies and local health institutions such as Village Health Volunteers (VHVs), Traditional Birth Assistants (TBAs), traditional healers such as the *Kru Khmer* in Stung Treng, and organisations such as the Lao Women's Union. The starting point for this work was a participatory assessment for planning information, education and communication activities. In Stung Treng and Attapeu this included a village diagnosis, working particularly with local women. The diagnosis focused on attitudes, knowledge and practice regarding common health problems. This provided important insights into the dynamics of health and nutrition and facilitated the design of appropriate interventions.

Malnutrition is by far the most common single cause of illness and death, so in Stung Treng additional assessments were undertaken to determine sources of food and how people use them.. Low weight for age is associated with more than half of all deaths in young children. The costs of malnutrition in terms of lost development and productivity are enormous. Even mild to moderate malnutrition in the womb reduces future cognitive development.

Some of the key issues coming out of the village diagnosis can be summarised as follows:

- Women are aware that poor nutrition is related to eating spoiled food and not eating enough. They are less aware of the importance of eating a variety of food sources, even though many food sources are often available.
- Some babies are being fed rice (pre-chewed by the

mother) before the age of six months, sometimes even from the age of one month. It is believed that giving infants rice will keep the child feeling full for longer, thus allowing the mother to continue with household work and other responsibilities. During the village diagnosis and follow-up discussions women became aware about the need to exclusively breastfeed for six months, learning about the negative effects of feeding sticky rice to infants too early.

- Many households, particularly female-headed households, face several months of rice deficit each year. In Attapeu's Ban Had Oudomxai and Ban Phone Sa-At some women do not have access to food and are dependent on neighbours.
- In Stung Treng many households face regular rice deficits and live in perpetual debt, owing as much as 50% of future harvests. However villages with high fishery productivity, such as Koh Langor, are able to clear these debts and meet their rice needs through the sale and barter of fish.
- Poor nutrition was found to stem not only from lack of food. Malnutrition was identified even in villages with a relative abundance of natural and agricultural resources, and even among relatively wealthy households: it is also associated with food choices and practices and health knowledge. Improving health status will require raising awareness and facilitating discussion about nutrition.
- In Attapeu the main water sources for the majority of rural people are the rivers. Most people do not boil river water before drinking as this requires time and fuel, and in popular opinion, mars its taste. Even when well water is available people tend to prefer the taste of river water. In Stung Treng rain water is collected in large tanks but the cost of these is prohibitive for poorer households and they do not function in the dry season.
- In all villages there is a high incidence of parasites, gastrointestinal problems and diarrhoea. Intestinal parasitism is one of the most common causes of malnutrition in children and adults, often causing diarrhoea. Important contributory factors are inadequate food preparation and poor personal hygiene and sanitation. The vast majority of households do not have access to latrines and washing of hands before eating is not commonly practiced.
- Malaria rates are also high. The causes of malaria are not always well known in Attapeu, where some people believe it is caused by drinking dirty water. In some cases people were aware that it was important to sleep under a mosquito net, but there are often not enough nets for all household members. The risk of contracting malaria when not sleeping is not widely understood. In Stung Treng the causes of malaria are more widely understood but a shortage of mosquito nets makes it difficult for people to protect themselves adequately.
- Schistosomiosis is prevalent in Stung Treng but there is limited knowledge about causes and prevention.

The village diagnosis revealed that relatively straightforward interventions can have significant impacts. It also showed the importance of ensuring the productivity of wetland resources, including rice, and of converting these resources into tangible livelihood benefits. In Attapeu, alongside the participatory monitoring of Fish Conservation Zones (FCZs) - largely the responsibility of men - a programme to monitor household food consumption was begun with women in target households. This assessed whether a perceived increase in fish numbers as a result of establishing community fisheries and FCZs was directly leading to increased fish consumption and higher nutrition, or generating improved income that was in turn leading to better household nutrition.

Environmental Flows Assessment

Environmental Flows assessments have been undertaken in a number of countries around the world, and is an important approach being undertaken by the MRC's Integrated Basin Flow Management (IBFM) project to assess the possible impacts of development on the Mekong mainstream. To complement this work, MWBP has been piloting an Environmental Flows assessment on the Songkhram River, as an important tributary of the Mekong.

The Songkhram River, with its vast seasonal floodplain, backwater and occaisional backflow effect from the Mekong and large human population, poses practical and methodological challenges to such assessment. In order to address these challenges a combination of scientific methods and local knowledge was incorporated into the process, which also encouraged ongoing active participation from diverse local stakeholders. Bringing stakeholders together increased the joint understanding of the importance of the Songkhram River, plus its unique flood plains and its tributaries, to community livelihoods and the environment. The assessment built on the *Tai Baan* experience, employing qualitative participatory methods such as focus group discussions, ranking, a seasonal calendar and community transact. The information generated during the assessment process has been widely shared and discussed among water sector decision-makers and planners nationally and regionally.

Involving the Next Generation - Schoolchildren Water Quality Testing

Engaging younger people in natural resource management has been identified by local partners as vital to ensuring the sustainability of conservation measures. In the Songkhram River water quality has never been systematically monitored at regular intervals: existing data has mostly been obtained by a handful of government agencies, with long time gaps in sampling frequency. The data is mostly kept internally and rarely made public. In the interests of acquiring a good baseline data set and building capacity amongst schools to take responsibility for environmental quality monitoring, a pilot water quality monitoring initiative was started with schoolchildren in cooperation with the Walai Rukavej Botanical Research Institute (BRI), Mahasarakham University.

Eight secondary and two primary schools close to the Songkhram River were ready and willing to participate in water quality testing. Pupils and teachers were trained in the use of basic water quality testing equipment by Walai Rukavej BRI, and shown how to test temperature, turbidity, pH, dissolved oxygen, and biological oxygen demand. The schools tested water samples at weekly intervals between June 2005 and February 2006, over two academic terms. Walai Rukavej BRI staff provided technical back-up and support, both in the field and at a progress workshop half way through the exercise. The results were shared and disseminated at a final workshop with project partners in April 2006. Besides gaining knowledge on water quality monitoring and scientific testing, the schools involved established a Songkhram Schools Conservation Network. This network won a 2006 national Green Globe Award, sponsored by the Petroleum Authority of Thailand, collecting a prize of 50,000 Baht (about US$1,400). The participating schools are now planning on expanding the network and conducting further water quality monitoring, with on-going institutional support from the regional environment area office.

Key Lessons

- Villagers have a wide range of knowledge and experience that can strengthen locally appropriate natural resource management.
- Local people – including those that cannot read and write – make capable researchers, and can use their research to make informed decisions about natural resource management and resource use.
- Community-driven research is a powerful mechanism for mobilising people and strengthening links across communities.
- Conducting research strengthens people's capacity to discuss management issues with all stakeholders and to present their concerns in policy debates.
- Good links between local people, government agencies, NGOs and academics leads to stronger policy decisions.

Improving Productivity and Sustainability

The process of strengthening capacity to assess and plan people's resource bases was also used to introduce management initiatives. Given the importance of fisheries in the wetlands and the limited time for the programme, emphasis in all four demonstration sites was placed on establishing fisheries management initiatives that would address production and sustainability. A number of other initiatives were also piloted, aimed at tackling wetland resources more broadly.

Community Fisheries Management

Across the Mekong Basin there are long-established traditions of community management of fisheries and wetland resources. The variety of management regimes and resources reflects the knowledge of people on local

resources. Conserving fisheries resources by protecting key habitats, spawning grounds or migration routes is a common feature of traditional community management regimes. For example, crucial river habitats such as deep pools have often been associated with traditional beliefs and subject to limitations on their use. Migration routes such as streams that link rivers to inland water bodies and flood plains are often valuable fishing grounds, but traditionally have restrictions placed on them during peak migration seasons.

Notions of equity within and between communities are evident in various management regimes. While communities may claim access to and control over resources within their domain, their management regimes often allow neighbouring villagers to fish within this territory subject to certain restrictions – such as limiting the time permitted or restricting the gear that may be used. Within communities the rights of poorer people to fish have also traditionally been recognised. In some cases the use of gear that is otherwise banned is permitted for the subsistence use of poor households. In other cases needy community members are allowed to fish from community resources that are reserved for times of crisis – such as when there has been a death in the household, or when there is a household celebration such as a wedding.

Table: Summary of Community Fisheries Management Systems Data

Type	Location (all villages)	Property regime	User group/ (s)
Community fish ponds	Village ponds	Common	Host villagers Nearby villagers
Habitat modification			
> Trap ponds	Flood plain, rice field	Common & Private	Villagers
> Stream channel construction	River to flood plain	Common	Kinship group
> Stream channel construction	Pond to river	Common	Kinship group
> Pond enclosure	Private land	Common & Private	Individual actor
> Stream enclosure	Village area	Common	Kinship group
> Wetland/pond drainage	Small pond, pond, stream, small stream	Common & Private	Individual actor Village group
> Weir construction	Private property (RF)	Private	Individual actor
Restrictions			
> Gear restriction	River, pond, stream, rice field	'Open access', Common, Private	Concerned villages Kinship group
> Quantity restrictions	Community pond, FCZ, river	Common, 'Open access'	Host village
> Seasonal/spawning restrictions	River, stream, rice field, FCZ	Common & Private	Concerned villages Kinship group
> Size restriction	River, pond	Common	Concerned villages
> Area restrictions: I Deep pool II Migration run III Private property IV Spirit area	 River, stream River, stream Ponds, streams, RF River, pond, stream	 Common 'Open access' Private Common & 'Open access'	 Concerned villages Concerned villages Individual actor Concerned villages
Fishing days	Community pond, FCZ, stream	Common	Host & neighbouring villagers
Traditional gear > Fence traps e.g. Ton or Li	River, stream, pond, rf	Traditional access to common property resources/Rental	Kinship groups

Prepared by Mark Dubois
Villages: Ban Kasom, Ban Sakhe, Ban Xaisii, Ban Had Oudomxai, Ban Phone Sa-At

The distinction between private and public ownership can sometimes be blurred. For example, rice fields are generally held as private property. When paddy fields are flooded, access to fishing in these private fields is often not restricted, but once the flood waters recede the rights revert back to the owners. However, in many cases fishing for small species and foraging for frogs and insects is allowed to people other than the owners of the rice fields. The diversity of management regimes within a relatively small location is revealed by the table below, summarising fisheries management regimes in Attapeu.

These traditional management regimes are coming under pressure from fishers outside local communities and the spreading use of modern fishing gear. In some places, fishing has become commercialised by outside investors. Access is increasingly being determined by power and influence. Community fisheries in Stung Treng are now organising themselves to protect their local resources from marauding armed gangs. Such threats may continue to grow across the four countries.

The participatory assessment and planning processes set in motion in each site provided a platform for community members to identify management issues and discuss mechanisms to improve their situations. Exchange visits were organised in all of the demonstration sites so that community members and district government officials could learn for themselves from communities involved in various forms of local management initiatives. In some cases these exchange visits were between villagers within the same demonstration sites, but visits to other parts of each country were also arranged. In Laos for instance, villagers from Attapeu visited community fishery initiatives in Champassak and Savannakhet provinces. The experience of community fisheries was quite different. Some of the most influential work on community fisheries in the region has been undertaken in Champassak, with FCZs established around many of the deep pools in the Siphandone wetlands (see Daconto, 2001; Baird, 2001). In Savannakhet community fisheries have been established around smaller water bodies away from the mainstream river. These different contexts share a focus on establishing equitable management regimes and representative village committees. The main priorities have been to cease destructive fishing practices, ensure community access and control rights, and increase productivity through nurseries and restocking.

The *Tai Baan* network in Thailand provided an opportunity for villagers from Songkhram to visit communities in Chiang Khong in northern Thailand and community initiatives in other parts of the northeast. The *Tai Baan* researchers also received visitors from villages and local government agencies from all the other demonstration sites. Merely visiting community initiatives in neighbouring countries provided an important learning experience for people who share similar Mekong River Basin resources but had never travelled far. The way community fisheries are run varies around the region. From the process of establishing fisheries management in Attapeu, with the formal consultation and involvement of the local government, the following steps and recommendations can be summarised:

Establishing Community-Managed FCZs

Step 1 **Village identifies the need for support in establishing a FCZ**

The need for a FCZ should be identified by the village, and translated into a request for support. Ideally this will take the form of a formal request through either a written statement or verbal request from the village authority.

Step 2 **The village convenes a meeting to discuss setting up the FCZ**

Issues would be expected to include the objectives behind setting up the zone plus initial ideas on rules and regulations. Provisional agreement from the villagers is a prerequisite for furthering the process. It is important that a range of voices, including those of the less well-off or powerful groups, are heard. Ensuring this level of effective participation requires facilitation.

Step 3 **Participatory assessment on impacts of FCZ activities**

These should include social as well as environmental considerations, with a special focus on poor female-headed households, the landless and other disadvantaged groups. The area in question should be delineated, mapped and geo-referenced to record the area, average and maximum depth, substrate and other key habitat characteristics. This will allow medium- and long-term comparison of the effectiveness of FCZs based on habitat characteristics.

Step 4 **Discussion of community management rules and regulations**

This meeting should be conducted without outside 'interference' in any of the decisions taken but may well involve representatives of the surrounding communities. Discussion points might include the terms and levels of use of the FCZ, the management committee structure (making use of existing committees where appropriate) and roles and responsibilities, and the function of the FCZ within the broader resource landscape.

Step 5 **Meet with neighbouring villages and government staff**

The purpose of this meeting is to openly discuss the plans, objectives and rules and regulations of the proposed FCZ. Communities are given the opportunity to comment at the meeting and discuss and reflect on the plans in their own villages. Government and project teams should be included as observers and advisers only. It is very important that the FCZ remains a community initiative, for sustainability and ownership, but also for the opportunity this provides to seed broader community fisheries management schemes.

Step 6 **Receive comments from all stakeholders and hold a meeting to finalise the plans**

Through a final meeting agree and endorse the FCZ plans. Assign roles and responsibilities as discussed and draft a letter for the district and provincial authorities to seek official endorsement and support. If there is project involvement this is an area where the project can provide a facilitating role.

Step 7 Signpost or mark the area

Village sign boards should be clearly placed at the site, indicating that a village community management scheme is in operation. Information provided should be clear and concise and refer interested parties who require more detail on the rules and regulations to the village authorities.

Prepared by Mark Dubois

Since starting this work, the project has been asked if it can advise on existing co-management schemes in neighbouring villages and on how to proceed with setting up similar FCZs along the Sekong River. The beginnings of a network of community fisheries management schemes are forming, linking both communities and habitats within the Sekong Basin.

FCZ Case Study: Ban Kasom - Co-Management In Action!

After several awareness raising and study tour activities carried out by the project office, the village head of Ban Kasom appeared in the office one day waving a piece of paper. He said it was the product of village discussions towards improving an existing fish conservation zone within the village boundary. He asked if the project team could help by typing up the notes on rules and regulations and provide additional comments.

A week or so later, the chief asked if the MWBP would support the cost of gathering surrounding village representatives and pay for lunch for a village meeting. Ninety people from all around the sub-district were invited to the meeting. Also attending as observers were government and project staff and chiefs from other project target villages. The head of Ban Kasom chaired the meeting with his assistants presenting the objectives and main ideas. Lastly, an open discussion was held to debate the rules and regulations being proposed. Discussion was animated, with all agreeing with the idea in principal but wanting to discuss it with their own communities. Another meeting was scheduled to endorse the FCZ and its regulations.

Some Ban Kasom FCZ Innovations

- Selected fishing days dispersed throughout the year;
- Money generated from the FCZ to be used to support aquatic resource management activities such as restocking of local species;
- An FCZ 'bank' to be set up;
- No specific FCZ committee but rather a water resources management committee;
- Participatory monitoring and evaluation to be conducted periodically;
- Visible and practical indicators on fish numbers used: fish coming to the surface (frequency and quantity of ripples) and visible sightings using a mask in the dry season;
- Families allowed to fish if they have problems such as sickness or death in the family;
- Special consideration for the poorest groups.

Lessons are being learned all the time in Ban Kasom. Those of note at this stage include:

- High level of community ownership seems to be the best approach. The project role should be advisory only;
- Active village administration an asset;
- Far-reaching community dialogue useful for seeding FCZ approaches;
- Don't rush: sometimes several meetings need to be held and a number of revisions made to the plans;
- Minimal or no financial support necessary from the project;
- Steps to be used as a guide not a blueprint. Community needs and situations differ.

Prepared by Mark Dubois

The *Tai Baan* researchers in Songkhram used their findings to discuss measures to halt the decline of fish species that were identified by research across several villages as dwindling in numbers. This led to a renewed interest in strengthening or establishing FCZs across all four villages. Having local Department of Fishery officers involved in the discussions helped adapt the management regimes to existing laws. The researchers then turned their attention to forest resources, establishing forest conservation zones around Ban Yang Ngoi, Ban Uan and Ban Tha Bo, and a seasonally-flooded forest conservation zone in Tha Bo village. These zones have been recognised by the local administrations and incorporated into local policy. The forest conservation zones provide protection for plants important to the production of traditional medicines. In Ban Yang Ngoi villagers have set up a local herb medicine group in which women researchers learn from village elders how to process medicinal plants.

Tai Baan research provided a platform to bring fishers with different interests together, creating a forum to assess management options and address illegal issues that had negative impact on people's livelihoods. The *Tai Baan* teams discussed the use of illegal fishing gear by influential people in the villages. Some of those using illegal gear were invited to be *Tai Baan* researchers. After working together with the teams and hearing the different opinions of those involved,

some of these reassessed their illegal fishing practices. A general decrease in the use of illegal gear followed. In Ban Uan all illegal fishing stopped, and across all four villages, local people have reported the complete end of electro-fishing.

Requirements for Community Fisheries Management

- Clearly defined group of people with rights of access to the community fishery;
- Clearly defined area to be managed. Often community management efforts have focused on deep pools in the rivers as these are easily recognisable;
- Manage areas that can be observed and monitored;
- Manage areas that are recognised locally as important for fisheries, and/or according to local customs;
- Ensure legitimacy of rules and regulation;
- Ensure the needs of poorer households are addressed in rules and regulations;
- Restrictions on specific habitats, gear, seasons and times;
- Ensure poorer households and women are well represented on management committees;
- Be realistic in what can be undertaken at the starting point;
- Build networks between neighbouring communities.

Combining Fisheries Management with Aquaculture in Attapeu.

Improving the productivity of natural fisheries through aquaculture presents considerable opportunities. Throughout the Mekong Basin there are examples of small-scale aquaculture that requires limited inputs and investments, and that can provide opportunities for poorer people. Breaking up the production cycle into its component activities - producing fry, nursing fingerlings, growing mature fish and marketing - can provide entry points even for households that do not have access to their own ponds or fish cages. Developing networks of fry and fingerling producers can also create a mechanism for 'decentralising' aquaculture production from the centralised hatchery – whether state or privately owned – and ensure improved access for more remote communities. There is also recognition that unless it is properly designed, aquaculture promotion tends not to benefit poorer people.

Aquaculture also poses significant conservation challenges. There is growing concern about the impact of the widespread use of introduced species – particularly tilapia and carp –on native species and habitats. This has led to renewed interest in the use of indigenous species. There is also growing awareness that aquaculture constitutes a component of wider fisheries management. Rather than providing a substitute for wild fish, capture fishery aquaculture can be a supplementary source of production.

Rice fields are important wetlands, providing habitat for a wide range of aquatic resources. People in many parts of the Mekong Basin manage rice fields so as to ensure not only rice harvests, but also the productivity of aquatic resources. For example, the Oi ethnic group in Attapeu prepare recesses and pits in their rice fields as dry season refuges for key fish species.

To promote the stocking of rice fields in Attapeu, exchange visits were organised with other farmers, and training provided in how to produce fish fry and raise fingerlings. Raising fingerlings for stocking in rice fields provided an employment opportunity for women who took on the handling and supply of fingerlings. Rice field – fish culture promotion started in May 2006 in Ban Xaisii. Six target farmers were trained in basic techniques by the Regional Development Committee of the Livestock and Fisheries Department. Farmers then began modifying their rice fields to create better habitats for fish by digging trap ponds, deepening and widening trenches, and using organic fertilisers. These measures allow villagers to keep fish longer in their fields because of the improved availability of

water, which in turn can improve rice productivity and also contribute to increasing the numbers of wild migratory fish in the floodplain. The six farmers received 9,000 fingerlings which they stocked in their rice fields. The fingerlings, sized between 5 cm and 7 cm, were bought from neighbouring Champassak province.

This experience has so far generated some clear recommendations for future action:

- The edges of rice fields need to be prepared;
- Organic fertiliser (buffalo, cattle, pig or chicken manure) is needed at least once per week;
- Water inlets and outlet gates are needed to maintain water levels at 15 cm-20 cm and give flooding protection;
- Fish fry require supplementary feed;
- Rice fields should be monitored every day.

Small scale aquaculture was also piloted in Attapeu. Following study tours and training of local village volunteers, pond culture was begun in individual ponds and also in a community fish pond to ensure wider distribution of benefits. Some habitat improvements were also required, such as digging trenches around the pond to increase depth and thus water quality and temperature. All fish food came from locally available sources, such as termite mounds and rice husks. Villagers were also trained how to handle brood stock so that it produces seed, so that in future brood stock can be caught from the wild.

Supporting Community Natural Resource Management Groups in Viet Nam

The very concept of NRMGs in the Plain of Reeds was in itself a challenge to the established official management approaches towards local people. Rather than engaging with local resource users in a collaborative manner, the authorities responsible for managing Tram Chim National Park and Lang Sen Wetlands Reserve tried to strictly prohibit the use of park resources. One of their main objectives was to keep local people from encroaching into the park. The pressure from local people on the park resources was seen as the main threat to conservation. This protectionist approach to park management led to ongoing conflict between park authorities and local people, without reducing the pressure on resources. Establishing NRMGs was considered a first step in building the capacity of stakeholders (both resource users and park managers) in preparation for the next step of establishing co-management of wetlands resources in protected areas.

The NRMGs were designed to work with the park authorities to draw up a 'Green Contract' allowing established groups of local people access to the park, with specific guidelines on what resources could be used and how. For example, the NRMG Management Plans include restrictions on which species of fish can be caught and on the mesh sizes of nets. In return the park authorities allow access to members of registered NRMGs to a designated 100-ha area of the park. The 15-step consultative process used to establish the NRMGs and approve their management plans involved the park authorities and helped build trust as the former began to recognise that local people could be responsible players in park management. Managerial issues, the importance of conservation, and the resources to be conserved were all discussed as part of the process of drafting operational regulations for NRMGs in Tram Chim NP. This experience demonstrates the need to adapt principles of participation and co-management to the specific institutional and policy context of each demonstration site.

Flooded Forest Rehabilitation

During the *Tai Baan* research in Songkhram villagers expressed their desire to attempt rehabilitation of the heavily degraded flooded forest. *Tai Baan* researchers joined up with the local administration to establish village-level nurseries, both household and community, to prepare the seedlings for replanting areas of degraded flooded forests. This activity spread beyond the four villages of the *Tai Baan* research to involve a total of 20 villages in five sub-districts, covering a total forest area of 8,605 *rai* of community forests. By the end of 2006 a total of 54,077 seedlings had been propagated.

Dealing with Invasive Alien Species

Another important innovation in Songkhram has been the *Catclaw Mimosa Control and Composting Project* in Ban Nong Batao[9],. This has involved testing methods to reduce the prevalence of an invasive alien species, *Mimosa pigra*, from a local gravity-fed dry season irrigation site and use the weed for local benefits through composting. This was a community-identified problem, and the solution was developed through the cooperation of a local teacher and MWBP staff. The mimosa was cut from communal areas by villagers, then mixed with buffalo manure and composted using aerobic techniques. The resultant compost was made available for use by villagers. It is of a suitable quality for sale, having been tested for macro-nutrients at a local university lab, and so offers a money-making opportunity for the future. Just recently, villagers growing dry season vegetables in Ban Nong Batao have participated in a new initiative to test the benefits of a liquid mimosa and micro-organism culture as an alternative to expensive commercial fertilisers. (*Prepared by David J.H. Blake*)

Key Lessons

- Basing management interventions on people's own knowledge, experience and ownership ensures locally appropriate measures and innovation.
- A wide range of measures are required for effective management of wetland and fisheries resources – it is not possible to undertake all measures at the same time.
- Protecting key fisheries habitats, spawning grounds and migration routes can generate improvements in productivity.
- Ensuring equity requires effective consultation with and representation of poorer people including women, and the establishment of rules and regulations that make concessions to the particular needs of poorer people.
- Stopping use of illegal gear may not be possible across the fishery but can work in areas that are important to the fishery and can be monitored by local people.
- Establishing working examples of natural resource management provides opportunities for learning with neighbours plus incentives.
- Principles of participation and co-management need to be adapted according to the specific institutional and political context of each demonstration site. What works in one place does not necessarily work elsewhere.
- Experimentation in natural resource management implies risks of failure but presents great opportunities for success.

Ensuring Tangible Livelihoods Benefits

Building on the approach to strengthening capacity to assess, plan and manage resources, the programme also sought to ensure that any improvements in the management of wetland resources also translated into direct livelihood benefits – whether in terms of income, improved human health and nutrition, and also improvements in livestock health. This very much depended on the partnerships established with diverse NGOs with particular expertise in these areas – such as CARE Viet Nam and Health Unlimited. After less than two years of implementation (at the time of writing this report), progress with these initiatives has been somewhat limited. However, much of the work initiated under the MWBP is continuing – particularly in Attapeu and the Plain of Reeds.

Generating Income – Promoting Household Interest Groups for Better Livelihood Options

The Household Interest Groups formed the main mechanism for identifying and promoting income generating activities in Viet Nam. The experience of these groups illustrates the importance of working with households to identify activities that are economically viable and environmentally appropriate, and then developing business plans to ensure the economic success of these activities. Prior to the programme, lack of access to viable sources of credit was a major issue for poorer households. Most were not able to access formal loan institutions and the only credit available was through private moneylenders at exorbitant interest rates of around 15% per month. For those households who were able to access credit, there was no technical support available to accompany the provision of loans, and no requirement on borrowers to develop sound business plans. As a result, the success rate of these loans was very low. To address this, a loan support programme was launched to help HIG members access low-interest credit sources and execute business plans.

Two livelihood surveys were conducted in October 2005 and March 2006 to analyse the effectiveness of specific income generating activities (e.g. raising livestock or establishing small businesses) and the investment, capital and skill requirements of each household. The survey also assessed market demand and reviewed the possibility of replicating and expanding production models. The survey team interviewed 163 households (128 in Tram Chim and 35 in Lang Sen), drawing up a list of 14 income generating activities and production models identified as appropriate for poor households in Tram Chim, and ten models for Lang Sen. These lists were reviewed by the district authorities to ensure the proposed activities were viable, both economically and in terms of meeting conservation objectives. For example, despite its economic potential, cage aquaculture was not promoted in Lang Sen as it would probably have negative environmental impacts. Rice cultivation is not promoted in Lang Sen for similar reasons. The final list was presented to HIG members as a 'livelihood basket' from which certain activities could be then assessed by each household. Households could select an activity that suited their ability and existing resources, and apply for a loan to pursue that activity. Pig and fish or eel raising were the most popular options.

All HIG members who wanted to participate in the loan support programme had to develop a business plan. This new approach, designed to enhance capacity while improving livelihoods, proved challenging for households and project officers. This process took time and great effort from the group members, and GFT and CARE staff. Villagers and GFT members complained about the complexity of business planning and loan borrowing procedures. Households were given significant support in rewriting their plans by GFT and project staff and by early June 2006, 40 households in Lang

Sen WR, and 38 households in Tram Chim had finalised their business plans. These household business plans were subject to the approval of panels made up of representatives of programme partners. Panel members were all trained in the project goals and the purpose of the household business plans. Householders with approved business plans received their loans from the GFT and were offered extension training and study tours.

For proper management of this credit fund, the project partners agreed to a co-management mechanism. Guidelines for implementation of the loan support programme were developed and included the following decisions:

- Each selected household was eligible to borrow up to a maximum amount of 5 million dong;
- Loan cycles were flexible according to business plans, ranging from 6 to 12 months;
- Interest was paid quarterly and the full loans paid at the end of the production cycles or as indicated in the approved business plans;
- Interest rates were determined by commune authorities and set at 0.5% per month in Lang Sen WR and 0.8% per month in Tram Chim NP;
- Money accrued from the interest was used for management costs such as transportation for GFTs and stationery;
- New accounts were jointly opened and managed by commune authorities and the management boards of Tram Chim NP/Lang Sen WR. The GFTs forward to these boards the minutes of panel meetings, list of successful applications, and requests for release of funds.

To help HIG members implement their business plans well, support was provided by CARE staff with the NP/WR and local agencies. Meetings were held with loan-receiving households before the loans were disbursed and technical challenges addressed. Training courses were designed and delivered based on group members' needs, while local extension officers provided regular monitoring and support to the households and reported to Tram Chim NP or Lang Sen WR on the progress or further requirements of each member. Each HIG member had to record all activities undertaken within the business plan, such as all production costs, and all inputs bought and used. This helped them develop business skills and assess the profitability of their activities. It also recorded lessons learned for the next business cycle and spread experience around the community. 70% of group members have maintained their book-keeping so far.

Group Performance

By December 2006 there were 12 HIGs with 168 participating households, of which all were classified as poor or very poor. There were also 11 NRMGs with 191 members, of whom 83% belong to the two poorest groups in their communes. 72 HIG members received loans from the sub-project with a credit fund total of 400 million dong (over $25,000). All groups were set up following the procedure designed by the sub-project and members welcomed the livelihood basket approach. However, many wanted to be able to select two or more options so as to provide work in both dry and wet seasons. The delays and complexity of the loan process discouraged some households.

According to regulations, group members had to attend monthly meetings and participate in training on topics like agricultural extension or conservation. However, training meetings were infrequently conducted due to the limited capacity of group managers and GFT members. In Lang Sen, the wide distribution of group members and transport difficulties make it hard to meet. In both demonstration sites, travel in the rainy season is very difficult. Integrating the HIGs and NRMGs in Lang Sen brought better results than separate groups would have done. Group members were able to borrow production loans and realise the short-term benefits of the sub-project for their household, giving them an incentive to abide by group regulations concerning natural resource management and use.

Loan Performance

According to reports from commune GFTs, by December 2006, 85% of the 63 households who had received loans were running well. The most effective livelihood activities were small trading, and pig and fish raising because of the short loan cycle, low investment and simple methods required. Ten households in Tram Chim only received loans in November 2006 so the effectiveness of their activities cannot yet be seen. Households that selected rice cultivation and water-melon growing delayed their loans to coincide with the planting season following the end of the rains in October. Experience in other CARE projects has shown that basing loans on good business plans can improve repayment rates. Loan borrowing households have been dynamic, considering their profits and loss from the beginning. Labour has been distributed amongst household members, production experience exchanged within the groups, and study tours arranged for group members to learn new production models. This marks the exercise out from other credit programmes, which mostly provide only loan disbursement and repayment guidelines.

Ensuring Health and Nutrition Benefits

Improving health and nutrition requires a commitment beyond the limitations of a two-year programme like the MWBP. However, the potential for making lasting contributions to people's livelihoods has been demonstrated through some initial efforts. In Laos, following efforts to raise awareness of health and nutrition issues, villagers began to demand better health services. To address this, the two Village Health Volunteers (VHVs) in each target village were trained to diagnose and treat common illnesses, particularly those caused by water-borne vectors such as malaria, dengue and diarrhoea. This involved practical training in the provincial hospital and on-the-job training in the villages, with monitoring and supervision from provincial and district health staff. The VHVs were also trained to be able to give advice on eliminating mosquito breeding places. They now also know how to give information to villagers on medical services such as consultation, testing for malaria and tuberculosis.

Revolving drug fund kits comprised of basic drugs were supplied to each village to ensure an accessible and long-term source of essential medicines for the villagers. The VHVs were shown how to manage the drug kits, and to ensure that poorer households could access medicines when needed. In order to increase the mobility of the VHVs, bicycles were provided.

A nutrition programme was implemented after growth monitoring of children in the villages identified 137 undernourished children - 36% of the 382 children who were assessed. The nutritional status of the children was identified through the weight-to-age method based on UNICEF charts. The programme included nutrition and health education, cooking demonstrations, wet and dry feeding for the underweight children, de-worming and growth monitoring. Nutritious, simple and practical foods such as rice soup with fish and vegetables were cooked communally for pregnant women and malnourished children. Teaching preparation of such foods using locally available ingredients has helped improve cooking practices. Home gardens have been promoted as sources of fruit and vegetables. With the provision of water pumps, these activities are now more feasible and place less pressure on women's time. The combination of these interventions has greatly improved the nutritional status of malnourished children.

Teams of six women were trained in every village to weigh children and continue with the growth monitoring of children on a regular basis with the support of the District Maternal and Child Health team. Sustainability of feeding behaviour is encouraged by cooperation and regular monitoring from community leaders, the Lao Women's Union and the Provincial Health Department. There have also been changes in the ways that people make claims on health services. In Phone Sa-At, as a result of the health education efforts led by the director of the Provincial Health Department, most families were persuaded to start constructing their own pit latrine. A greater awareness of the causes of malaria has also resulted in requests for more mosquito nets -previously people were reluctant to use them, even when provided.

Despite these encouraging signals, experience in Stung Treng shows that the success of such approaches is limited unless they are supported by improved health service delivery systems. An assessment of health centres there revealed many problems with lack of resources and poorly trained health centre staff. Health centres are difficult to access for many local people, whose main means of transport is by boat. Local people are reluctant to use the centres, even when medical assistance is most needed.

Importance of Water and Health

Natural water sources provide most drinking water in Cambodia and Laos. Although there are traditional methods of managing river and ground water sources to reduce the risk of contamination, for most of the year these water sources expose local people to serious health risks. In discussing wetlands and water issues with local people, safe drinking water is often a priority, even though these issues are often seen to be beyond the remit of traditional wetlands work.

Access to safe drinking water was identified as a major issue in Ban Had Oudomxai, a remote village situated on the banks of the Sekong River in Attapeu. For most households

	1st Degree underweight	2nd degree underweight	3rd degree underweight	Total
Before the nutrition programme	120	15	2	137
After the nutrition programme	38	4	1	43
Change in the number of malnourished children	-82	-11	-1	-94

the Sekong is the main source of drinking water throughout the year. Boiling of drinking water was not widely practiced. Incidence of parasitism and diarrhoea was high, as were mortality rates. Although wells for drinking water have been previously provided in Attapeu, the drilling technology has not always been appropriate, and villagers have not always been involved or shown how to develop their own management and maintenance measures.

In partnership with the Provincial Health Department five groundwater tube wells were installed to provide clean groundwater supply for the communities. One tube well was placed in the village school. Before construction water from these wells was tested for arsenic and disease-causing micro-organisms and found to be safe for drinking. The villagers set up a village Water Supply and Sanitation (WATSAN) Committee and a trust fund to ensure the long-term sustainable management and maintenance of the wells. The approach is now being taken up by the Provincial Health Department and applied in other villages in Attapeu. Provision of the wells has been identified by villagers, particularly women, being the programme's most significant impact on their livelihoods.

In Had Oudomxay 80% of the villagers said that the most significant contribution of the MWBP was construction of the wells. Villagers use the wells on a daily basis for washing and collecting drinking water. This has resulted in improved health and especially benefited women and children, who no longer have to spend substantial time collecting water. The villagers also use the wells to irrigate home gardens. The number of home gardens has increased significantly in the village. Families discussed the nutritional value of each plant before deciding what to grow.

Installing wells alone is not enough to guarantee safe drinking water. Many people still prefer drinking river water, which "tastes better". There is also a social dimension in using the river as a place to socialise while washing clothes, bathing and collecting water. Therefore special emphasis was placed on raising awareness through health days, training of village health staff, and the substantial time spent by project staff in the village.

The importance of establishing local management structures such as the WATSAN committee to take on management and maintenance responsibilities is illustrated by the experience from Stung Treng, where wells had been dug by previous project interventions. In one village, Koh Sneng, three wells that had been dug with the support of a previous project were found not to be working at all. Of these only two were considered to be repairable, and with assistance from Health Unlimited this was possible. The experience in Stung Treng also demonstrates the potential for low cost interventions to improve access to safe drinking water. Based on a community diagnosis it was decided that provision of water filters to poorer households would be an efficient and effective way of providing safe drinking water. The diagnosis identified 300 households as being in the 'poorest' group. These households were given water filters and trained how to use and maintain them.

Improving Livestock Health and Profitability

Cattle – particularly water buffalo – are important livelihood resources that provide a source of investment and savings. Ownership of cattle can be one of the most significant determinants of wealth. In the Mekong Region a wide variety of local breeds are found. However animal health remains a problem with weak veterinary service delivery.

Working in Attapeu with the District Agriculture and Forestry Office the programme supported training to teach Village Veterinary Volunteers (VVVs) from each village how to vaccinate livestock, and also provided initial supplies of the required vaccines. The VVVs were given training on simple recording, book-keeping and reporting. Families who could not pay in cash for animal vaccines or treatment were allowed to pay in kind using chicken, rice, fish, etc. Instruction on how to produce cattle mineral licks was also provided. As a result, some people in Kasom village now produce mineral licks to

sell to other villages in the province, giving them increased income and at the same time helping other families to fatten their cattle.

Wetland areas also provide important grazing for water buffalo. In Songkhram, as a result of flooded forest conservation activities the area of land marked for agricultural expansion has decreased. This means that more land is now available for grazing and this has allowed people to increase their cattle holding. The Department of Livestock has joined in with this support by providing buffalo to target villages that are considered to have capacity for planting forage crops.

Building a Local Museum – and Developing Brick-Making Skills

The construction of a village museum and information centre was one of the recommendations that came out of the *Tai Baan* experience. The museum was intended to be a resource centre for the findings of the *Tai Baan* research. The style of construction was considered important, as researchers wanted to be sure that it reflected local skills and resources. It was decided that the museum should be constructed from soil-cement bricks made of local materials. Using these bricks also had the advantage of not requiring wood from the forest. The strength and thermal properties of soil-cement bricks make them more suitable for house building than the more commonly used but weaker cement blocks.

A group of 20 people from five villages were offered a training course in soil-cement brick making. This activity was perceived by local villagers as providing several potential benefits. Brick making may provide a new livelihood opportunity if those involved can turn the skill into a small business. To this end, the two-week training focused on the skills necessary to start a small business, as well as the practical details of brick making.

Addressing Trade in Natural Resources in Attapeu and Stung Treng[10]

Trading in natural resources is an activity that forms the main source of much-needed cash income for many households. The Attapeu and Stung Treng villages are on trade routes that have operated for many centuries: wealth in natural resources in these two provinces has attracted settlers and traders.

As communications improve the dynamics of trade are changing rapidly. Markets for natural products now stretch far beyond the villages and market towns of Attapeu and Stung Treng. Many endangered species are now being traded. The surveys identified ten globally-threatened (IUCN Red-List) wildlife species and 23 CITES-listed species in Attapeu, and 17 globally-threatened and 33 CITES-listed wildlife species in Stung Treng

In both Attapeu and Stung Treng demonstration sites, villagers considered fish to be the most important type of natural resource for their income-generation as well as for consumption and exchange. This is indicative of the importance of wetlands and river systems in the demonstration sites. In the case of Attapeu, the importance of fish in the demonstration site contrasts with provincial level assessments that consider trade in NTFPs most significant. Increases in trade in natural resources in the demonstration sites in Laos and Cambodia were most apparent in relation to fish. A frequently-heard comment in both Attapeu and Stung Treng Provinces was "now fish have a price" so more people fish for trade. In Attapeu villagers explained, "now people fish to sell and are selling more". Likewise, in Stung Treng villagers said, "in the past it was easy to fish, now it is difficult…people then did not sell fish. Now people are fishing to sell".

There is also increased diversity in trade. For instance, a village-trader in Stung Treng explained how the price for higher-value fish had been stable over several years whereas the price for small fish (mixed species and small-bodied fish) had doubled since 2000. In Attapeu the number of traders looking to buy fish in from villages and camps, as well as the number of villagers looking to sell fish, has increased over time. For example, of the fifteen smaller-scale traders interviewed in the demonstration site over half started trading fish only in the last six years. Gender has a strong influence on trade patterns in both Attapeu and Stung Treng. In villages the majority of traders were men whereas in local markets nearly all sellers were women.

Official perceptions of trade in natural resources tend to underestimate its real extent. The importance of this trade needs to be recognised so that its significance for local economies and rural livelihoods is fully appreciated and its continued development managed appropriately. Given the impacts of trade on consumption patterns, it is not surprising that while trade in natural resources is incredibly important for local livelihoods, villagers and officials regard unregulated trade and unsustainable harvest of natural resources as an issue of concern. Villagers often attribute unsustainable harvesting of natural resources for trade to deficiencies in regulations and enforcement.

Key Lessons

- Generating livelihood improvements requires addressing a combination of issues – including income generation, and health and nutrition improvements.
- Many of the most important interventions for improving the livelihoods of wetland based communities are outside the traditional 'wetlands sector' – including health and agriculture.
- Wetland resources alone might not be sufficient to address all the livelihood needs of wetlands-based communities.
- Local people have the knowledge and interest to take on new ideas and to innovate – but very often do not have the opportunities.
- Where local people can analyse problems and identify appropriate responses the chances for long-term change seem to be stronger.
- Generating long-term change involves a long-term, concerted effort – and requires building of partnerships that can bring in a range of expertise.

Promoting More Effective and Responsive Institutions and Decision-Making

Ensuring that wetland resources and the people who depend on them are better represented in decision-making and policy has been a central component of the MWBP approach. In all the demonstration sites, the programme has sought to strengthen the capacity of local people to take on assessment, planning and management responsibilities, and facilitating constructive dialogues and partnerships with local authorities. As a regional programme between UNDP, IUCN and MRC there have also been opportunities to ensure the local realities drawn from the experience of the demonstration sites are presented within regional-level debates on development and water resource management.

The MWBP approach has been endorsed by local government partners in all four demonstration sites and despite the early closure of the programme, the strategy developed under the programme is being taken up by programme partners in all four demonstration sites.

Strengthening People's Confidence

A key issue in the neglect of wetland resources has been local people's lack of voice in management and decision-making processes. An important factor in ensuring effective, responsive decision making is the capacity of people to represent their interests in a constructive manner, and to make claims on decision-making processes and the services of the state. The core platform of the MWBP has been one of promoting local people's capacity to assess their own situation, whether it be in improving their health and nutrition, developing income generating livelihood strategies, or assessing their natural resource base. Through these processes local people have developed greater confidence.

> "At first, I thought *Tai Baan* research was a new approach and difficult for local people to practice but after being involved in the research, I found it encouraged us to discuss and exchange experience with each other, and increased our understanding of flooded forest ecology. We are so proud when our neighbours come to join in our activities"
>
> *Boonterm Narongsin, Tha Bor Tai Baan Research*

Despite a rhetorical commitment to public participation in all four demonstration sites, the experience of government agencies in engaging with local people was previously limited. Traditional approaches tended towards a top-down style. Giving local people the chance to present their own research and assessments and to handle questions in a public forum has had an enormous impact on local government structures that may have been inexperienced with or suspicious of participatory approaches. This is leading to a more equal engagement and dialogue.

> **The View from Government**
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> "I recognise the importance of public participation in natural resource assessment. *Tai Baan* showed that local participation in the research process, analysis, brainstorming and presentation can be successful by using a networking methodology. At the beginning, the government did not recognise or understand *Tai Baan* research, but after being involved in several meetings to exchange experience and learn research results, they started to accept it. I found that many government organisations have come to adjust their integrated management plans by relating to the *Tai Baan* research goals."
>
> *Mr Jumphon Changin, Office of Natural Resources and Environment, Nakhon Phanom Province*

The *Sala Phoum* research has created new channels and opportunities for local knowledge to be communicated up to decision-makers at provincial and national levels. This has happened through progress and results workshops, to which multi-stakeholders from state and non-state sectors were invited, and through various provincial meetings that local representatives attended. Findings from the *Sala Phoum* research were presented as evidence at a Ramsar Site Planning meeting and are now widely accepted as valid by state officials.

Local people are now better able to communicate observations about changes in the river environment. For example *Sala Phoum* researchers in Stung Treng have noticed that in recent years that there has been more filamentous algae present in river channels during the dry season, covering rocks, branches and the river bed. As well as being unsightly, the spread of the algae affects livelihoods by clogging fishing nets and causing villagers to lose time cleaning the nets. It may also reduce fish catches. Local people are not sure of the cause of this algae but are concerned that it might be related to upstream developments or increased fertiliser or pesticide run-off from agricultural activity. Over the last four years local people have also noticed unusual fluctuations in water level, as never before been seen. Again they think that this is related to upstream dam construction. While the explanations behind these phenomena remain uncertain, the research has provided the most reliable evidence so far and allowed local people to present their concerns to government agencies for further assessment.

Involving Government Officials and Local People in Joint Planning Initiatives

Involving local resource users and government officials in assessment and planning activities has been a key principle of the MWBP. For example, budgets for provincial officials in Laos are limited, and it is therefore usually difficult for them to make regular visits to villages, particularly the more remote settlements. Supporting joint trips to villages for officials from different line agencies in Attapeu has raised their awareness of what is happening on the ground, and helped them to identify what each line agency can do. Events like World Wetlands Day and village health days provided opportunities for such visits, as did more regular planning and monitoring activities.

As a result of this more regular contact the Provincial Agriculture and Forestry Office responded to on-site requests from villagers for corn and rice seeds and led government ministries to liaise with the World Food Programme to arrange relief for flood victims. During a visit to one of the more remote target villages in Attapeu, the Director of the Provincial Health Department had the opportunity to listen to some of the poorer households complain about their inability to access medicines from the Drug Revolving Fund Kits. The Director reminded the VHVs that poor people have the right to access medicines and should be given necessary assistance even when they are unable to pay. The Director also suggested resourcing comprehensive assessment tools to understand the interrelations of health, environment and natural resources.

Supporting regular assessment or monitoring of progress has allowed for adaptive management. In Attapeu a team consisting of provincial and district Lao Women's Union members, plus Provincial Health Department and project staff goes to villages every quarter to check the drug kits and supervise the VHVs. Drugs found to be past their expiry date are replaced. Similarly, the Fishery and Livestock Officers and project staff conduct monitoring of the number of vaccinated livestock and management of the Village Livestock Revolving Fund. As a result, they are able to track down expired vaccines and plan more effectively for continuing subsequent rounds of vaccination. The change in attitude among park authorities in Viet Nam to dealing with people living in and around Tram Chim and Lang Sen has been highly significant. Tram Chim NP's agreement to cede 100 ha within the park for each commune to pilot participatory natural resource management can be seen as a milestone in co-management and public participation.

Strengthened Networks of Resource Users Within and Between Demonstration Sites

Within each of the demonstration sites loose networks of resource users have been encouraged. In most cases villagers had little previous experience of the circumstances in nearby villages and little understanding of the shared problems that other villagers faced. The *Tai Baan* Network in Songkhram started in four villages but has now spread to include nineteen villages. Researchers have established their own *Tai Baan* Research Network for the Songkhram River Basin, electing a committee, putting in their own funds and holding monthly meetings for network representatives. The Network is now better placed to take on some of the management challenges identified during the research process. As well as restrictions on fishing gear, the scope of the network has expanded to plan and start rehabilitation of flooded forests, fish conservation zones management, and co-management of fisheries between villages.

The *Tai Baan* Network has developed a proposal suggesting establishment of a management committee for the Songkhram River Basin with representatives from the 19 villages plus the government and private sector. The proposal has been submitted by the Provincial Director of Nakhon Phanom to the Office of Assets in the capital. The Network is also lobbying for land reform and demarcation of common area and private land. It wants more land to be allocated to communities and has drafted suggestions for improved land management. The provincial governor has accepted the land reform principles and advised the Provincial Department of Land Planning to implement them. Network members are now often invited to state planning and public forum exercises, and are more likely to offer their opinions or concerns about development projects, especially dam projects, than in the past. While an anti-dam movement was in existence before the MWBP started in the Songkhram Basin, the villagers were not as well informed about the potential risks and impacts of development projects as they are following visits to many sites within and outside the basin, including Pak Mun and Rasi Salai. Communities, NGOs and government officials in Cambodia and Laos have shown interest in developing similar networks. Villagers and *Tai Baan* researchers from Songkhram have visited Stung Treng and villagers from Cambodia and Laos have visited Songkhram to discuss the opportunities for using the experience from Songkhram to develop similar work in Stung Treng and Attapeu.

Participatory Monitoring and Evaluation

Under the programme people have been encouraged to monitor and assess the impacts of project activities and to express their opinions in their own ways. As well as a more formal monitoring of project impact, two monitoring innovations have been tested: recording of the 'Most Significant Change' (MSC), and use of participatory video.

The MSC approach was been tested across the four demonstration sites, with villagers, government staff and NGO workers contributing their opinions and ideas. It allows people to relate the impacts of programme interventions in their own words, using their own stories. The approach has been tested under the MWBP and been shown to hold many advantages. In societies that rely more on story telling than formal assessment it provides the flexibility for people to present their ideas in their own words, rather than through an alien structure imposed on them by the project. The method encourages people to discuss project activities openly, in a way that allows the participants to learn from each other and leaves room for adaptation and change of activities.

In Attapeu the approach was taken a step further through the use of participatory video. Local partners were trained in the use of video cameras so that they were able to interview each other on camera, documenting each other's impressions and editing the final interviews. 50 villagers were trained in participatory video and narrative-based monitoring and evaluation, and more than 120 stories produced. Video has proven to be a powerful communication tool, as it is relatively easy to play back the final films in front of a village audience. This innovation also holds potential for the whole Mekong region. As Lao language is used and understood in three of the demonstration sites (Attapeu, Songkhram and Stung Treng) it is possible to share the films between these sites.

Participatory Action Research was conducted on health, nutrition and fisheries in Attapeu's Ban Kasom and Ban Phone Sa-At. This exercise focused on shared learning, enabling 20 village researchers in each village to better assess and diagnose human disease and gain a detailed understanding of the status of their fisheries. The understanding and knowledge this activity created have improved confidence and self esteem. By monitoring their own health villagers are in a better position to manage family nutrition and diets and plan the use of the natural resources which provide food. In essence, communities have been empowered to take control of their own health and natural resources. This was made evident through discussions at community level and with government staff and is clearly expressed in the participatory video that villagers recorded.

The fish conservation zones in Songkhram have shown an increase in productivity according to local people. The *Tai Baan* researchers who managed and monitored the FCZ for two years have recorded an increase fish in the buffer zone. This has resulted in increased dry season catch in both numbers and size of fish caught. In Ban Yang Ngoi villagers' income has gone up through the sale of big fish such as *Pla Nu* and *Nang* in the Sri Songkhram market. In Laos, Ban Kasom and Ban Phone Sa-At villagers have also reported an increase in the number and size of fish both inside and outside the special management zones. Indications are that the larger fish are being sold to traders from Phone Sa-At and other local markets. Better prices are earned for big fish, which thus increase income.

The perceived increases in fish productivity have not been verified, and indeed this is a significant research challenge. However, there are important indicators that these strategies do lead to increases in productivity. Local people involved in managing their fish conservation zones are putting greater effort into this management as they believe it is working. People from neighbouring villages also believe the strategy to be working. Many of these are looking to implement similar initiatives in their villages, and have requested advice and support from established community fisheries.

Including Local Initiatives in Decision and Policy Making

Across the Mekong Basin there is a widespread commitment to greater public participation in development decision making and natural resources management, and a decentralisation trend that is empowering villages, sub-districts and communes. The MWBP has sought to strengthen these processes. One of the major achievements has been to strengthen local initiatives that had begun before the programme and to ensure that these initiatives were closely linked to the state-led decentralisation initiatives.

In Songkhram the Province of Nakhon Phanom has established a Provincial Wetlands Committee, which was formed in early 2006 under the chairmanship of the Provincial Governor. The committee includes a wide range of provincial government agencies, NGOs, local civil society, academic and grassroots organisation representatives, including the chairman of the *Tai Baan* Network. With Songkhram's newly-acquired high profile and recognised importance as an internationally important wetland (it now stands a good chance of being declared a Ramsar Site), the Lower Songkhram River Basin has become the driving force behind this Provincial Wetlands Committee. This multi-stakeholder committee provides a forum and outlet for local voices to be heard in future decision-making at provincial level. The committee has already endorsed the findings of the *Tai Baan* research.

The Lao demonstration site has also won provincial political approval and some influence in local decision making. In 2005, village representatives presented their annual village activity plans to the Attapeu Provincial Management Board for recognition, endorsement and support. This led to the synchronisation of these plans with the poverty alleviation priorities of the province. The Governor of Attapeu recognises the intricate links between wetland resources, health, nutrition and poverty. He has encouraged the project to pursue integrated initiatives to help the province in its poverty alleviation programme and expressed support for the MWBP activities.

Influence on Local Management

In Attapeu EIA work over the past two years has resulted in increased capacity among provincial line agencies to assess, plan, review and monitor the environmental impacts of development projects. The trainees have now gained experience in all stages of the EIA project cycle. They have conducted four EIA case studies, representing the efforts of 25 local government staff over a nine-month period. These studies were published and have been widely distributed. They are to be used as a basis for future EIA-related activities promoted by the national Science, Technology and Environmental Agency.

The work on EIA and FCZ raised awareness among provincial agencies on the impact of one particular activity - gold dredging. In Ban Kasom villagers were concerned about the consequences of gold-dredging boats in and around their FCZs. Livelihood impacts reported by villagers included accidents caused by stabilising lines, damage to nets, and noise and habitat damage that was causing fish to leave the area. After villagers raised these concerns during the IPP process and with government officials, a high-level provincial group conducted a community consultation in Ban Kasom and promised that they would further investigate the matter. One of the EIA case studies was dedicated to the gold dredging and recommended mitigation measures including guidelines for responsible gold dredging. A short-term ban on gold dredging activities has been imposed by the Provincial Governor until such time as these issues have been resolved. In Cambodia meanwhile, the recommendations to emerge from the *Sala Phoum* research, and from the local participatory assessments on Sustainable Agriculture and Ecotourism, have been included in provincial and commune annual development plans.

Influence on National and Regional Development Debates

The MWBP was structured as a programme operating at three interlinked levels – regional, national and local. At regional level the aim was ensure that wetlands concerns – such as the work led by the MRC on Environmental Flows assessments of the Basin, known as Integrated Basin Flows Management - entered the regional assessment and decision making processes. At the national level, the programme encouraged a diverse array of stakeholders to review policies related to wetlands and wetland livelihoods. Local people and partners have become engaged in these reviews and recommendations have emerged that will strengthen wetlands management and policy,.

Experience from the demonstration sites played an important role in this work at regional and national levels. Much of the information generated from the sites has been included in the various assessments. There have been numerous opportunities for local people to represent their interests in regional fora. Villagers involved in *Tai Baan* and *Sala Phoum* research have presented their experience and research findings at workshops supported by regional NGOs, and also at a technical workshop supported by the MRC Fisheries Programme. The Mekong Regional Waters Dialogue held in Vientiane in July 2006 brought together a range of diverse stakeholders – from government, development banks, the commercial sector, NGOs and academics – to discuss the future of water resource development in the Mekong. Again information and partners from the MWBP played an active role in these debates.

Generating Interest in Participatory Approaches

At the level of Cambodian NGOs and international NGOs based in Cambodia, the findings generated by *Sala Phoum* research have resulted in higher awareness and acceptance of the use of local people's capacity to undertake their own research. The *Sala Phoum* approaches have generated interest among Cambodian NGOs concerned about the environmental impacts of hydropower development along the three rivers in northern Cambodia – the Sekong, Sesan & Srepok. These organisations are now looking to the *Sala Phoum* villagers from Stung Treng to train villagers to carry out similar research in these areas. It has become evident that across the demonstration sites, state officials at the provincial level are now more supportive of fish conservation activities (such as FCZs), and are more likely to be more sympathetic to public participation in the decision-making process than they were before the project began. In Thailand the guidelines and findings of the *Tai Baan* research have been used by the local educational authorities to develop educational curricula for schools in the Songkhram area. A draft curriculum has been endorsed by the Provincial Governor and is already being used in five pilot schools.

Key Lessons

- Improving institutions and decision-making processes requires the strengthening of local people's capacity as well as institutional capacity.
- When local people are able to represent their interests and concerns they are better able to make claims on state decision-making processes. This in turn, is most likely to make these institutions more responsive to local needs.
- Facilitating informed dialogue between stakeholders – resources users, government agencies, NGOs, academics – can lead to better understanding and improved collaboration.
- Better involvement of resource users in decision-making processes, presenting a well-argued and well-documented case based on their own experience - allows wetland issues to be addressed.

Part 4 – Reflections, Lessons Learned and Recommendations

Building on local capacities provides considerable opportunities for lasting change. There has often been an assumption that the pressures facing wetlands – their continued degradation, conversion and neglect in policy circles – has been as a result of a lack of awareness. This may indeed be true to some degree but there is nevertheless a wealth of knowledge and experience about managing wetland resources – even when they are referred to by terms other than 'wetlands'. The main challenges have not been about a lack of awareness but have rather lain in the difficulties of demonstrating an integrated approach to managing the diversity of wetlands issues, and involving a range of stakeholders, often with different objectives, in finding lasting solutions to wetland resource management.

The experience of the MWBP has demonstrated that such lasting solutions most easily come from practical experience. It is not always possible to predict the outcomes of the experiments of programmes such as the MWBP. By facilitating active participation, dialogue and exchange among local people, government agencies, NGOs, academics and others, the programme has begun a process that takes on a life of its own beyond the span of the project.

Wetlands and Poverty

The relationships between wetland resources and poverty are complex. Addressing poverty through wise use of wetlands requires a long-term commitment – beyond the limitations of what was essentially a two-year project. While a foundation for future stability has been established in the demonstration sites under the MWBP, the achievements of this approach will only be revealed in the next few years. Ensuring its success will require continued commitment from all project partners. Major challenges remain: human and financial resources are extremely limited, and while moves towards decentralisation and greater public participation have begun, these are just initial steps.

Taking a holistic understanding on poverty and vulnerability reveals that the relationship between poverty and natural resources is not always as clear as might be expected. For example, the case of Ban Xaisii in Attapeu provides an important insight into agricultural productivity and poverty. Of the four main target villages, Ban Xaisii has the largest and most productive agricultural lands of the target villages, and also enjoys the benefits of an irrigation system that allows for production of a second rice crop. This has had an important impact on the village: it now produces a surplus of rice whereas only five years ago there was a deficit. Such irrigation is still rare in Attapeu and in terms of agricultural productivity alone, Ban Xaisii is perhaps the wealthiest of the four project villages. In addition to agricultural land, the villagers of Ban Xaisii have access to a rich river fishery and are heavily involved in fishing throughout the year. However, when livelihoods are assessed through the perspective of health and nutrition some surprises are revealed. Despite its increased rice productivity, the village still has a high incidence of malnutrition. Perhaps even more surprisingly malnutrition does not only affect the poorer households. Some of the wealthier households, including that of the village headman show evidence of malnutrition. This confirms that nutritional well-being is not merely a matter of food availability, but is also related to other factors, including food behaviour. This insight clearly has significance for designing policy interventions, showing the need for integrated approaches to addressing productivity and also for ensuring that productivity is translated into tangible benefits in terms of nutrition, food security and income.

The Songkhram demonstration site also provides an important insight into vulnerability and social exclusion, and how people themselves understand notions of poverty. It is important to consider the special context of the Songkhram. Access to health care, education, government support (including compensation for emergencies) is all relatively strong. Community institutions are also reasonably strong with recognised roles and responsibilities, financial resources and management structures. There are also a number of active grassroots organizations that have been established in the last few years. As well as the more formal institutions particularly the *Tambon* Administration Organisations, village groups (housewives groups, savings groups) all function reasonably well, providing some opportunities for improving livelihoods and coping with vulnerabilities. Songkhram is also closely connected to markets: villagers are able to buy agricultural inputs and food and to sell their produce and their labour. Income levels also compare favourably with the other three countries.

Lack of voice is an important dimension of poverty. During the PPA process, several local stakeholders were concerned about the planned assessment of 'poverty'. For them, assessing poverty and identifying poor people was associated with state-led efforts to legitimise infrastructure development interventions. During the process of assessments it became clear that many local people did not consider themselves poor, but rather that their livelihoods were vulnerable to the impacts of state-led development as they were not able to influence the course of this development. In the language of the Sustainable Livelihoods approaches, poverty for these people was defined in terms of lack of voice in the political decision-making process. As a result, the starting point for interventions in Songkhram focused more on the capacity building efforts and building partnerships and networks between different groups of resource users, NGOs and the state.

Access to resources and decision-making processes has been an important feature of people's own perceptions of poverty in all the demonstration sites. For example, a major concern for people in Stung Treng has been the degradation of key fishery resources, such as the deep pools of the Mekong, the closing of the forest frontier as a result of commercial land concessions, and also the impacts of environmental change as a result of upstream water resource development. Their ability to influence these processes through greater support from the state has been limited. Additionally people in Stung Treng face many other more familiar impacts of poverty – poor health, lack of access to basic health care services, to safe drinking water, and to state extension services, low agricultural productivity, weak links to markets, poor communications and low income-generating opportunities. Again, ensuring that these issues are addressed requires strengthening people's capacity to manage their resources and make claims on state services.

The Values of Wetlands

Wetland resources provide a variety of benefits and there are different ways of considering their roles and values in local livelihoods.

Coping with Adversity

Wetland resources may provide the main livelihood support in periods when the agricultural harvest fails. Many people in the Lower Mekong Basin - even those with access to land - commonly experience food deficits at some point during the year. If the paddy crop is insufficient due to the size or quality of the land, or the crop fails altogether through disease or natural disaster, poor people rely on collecting aquatic species such as fish, mollusks, shrimp, snakes and aquatic plants, either for consumption, or to sell in order to buy rice.

Coping with rice shortages and other shocks is an important long-standing feature of many livelihood strategies. Significantly, while aquatic resources provide the basis for well-established coping strategies during periods of rice shortage, there are no such coping strategies for periods of aquatic resource shortage (Meusch et al, 2003). Any degradation of aquatic resources is therefore likely to have dramatic impacts on local livelihoods, particularly for the poor and vulnerable. Equally, securing the productivity of wild aquatic resources represents an important opportunity for sustaining these livelihoods. Economic stratification and landlessness - often as a result of distress sale and debt– can lead to growing reliance on common property resources. However, these common property resources are themselves very much under threat from land conversion and encroachment, particularly from large-scale commercial agriculture and land concessions.

The Moral Economy of Mekong Wetlands

Wetland livelihoods are deeply grounded in cultural traditions and represent local people's cultural values and aspirations. The nature of wetlands – covering wide areas with seasonal changes and resources - has helped develop a 'moral economy' of exchange and mutual support within and between villages. For example, along the Mekong in Thailand, Laos and Cambodia, the notion of a special friendship or *sieow* links people from predominantly rice-producing villages with people from predominantly fishing villages, so that people can exchange rice with fish.

In Koh Langor village in Stung Treng, for instance, most villagers fish rather than farm as they have limited land for growing rice. As a result, they follow an old cultural practice of exchange with close friends (*sieow*) or relatives living in villages with rice surpluses. The Koh Langor villagers take dried and processed fish on journeys up and down river to other villages and exchange it for rice, thus redistributing protein resources between areas of surplus and deficit. This non-monetary trade also fulfils a deeper cultural purpose, strengthening the *sieow* bonds between communities and renewing old ties and friendships. These ancient relationships, sometimes cross-border between Laos and Cambodia, are not generally recognised.

Wetland resources continue to play important welfare roles. Historically the rich natural wetland resources of the Mekong, particularly the fisheries, have attracted settlers. Despite

growing links to outside markets and a trend towards labour migration, the Mekong wetlands still draw people back from the cities to continue a lifestyle that is fulfilling, and that allows people to maintain cultural traditions and links to their birthplaces, family and ancestors. With no public welfare services, the productive natural resources of the Mekong wetlands provide an important safety net. Many villagers who have lost their jobs in Bangkok return to Songkhram where their communities and nature provide a good traditional life. For example, an older *Tai Baan* researcher spent several years fishing and harvesting wetlands products, then migrated to Saudi Arabia to work as a foreman at construction sites, earning a high wage by Thai standards. After several trips abroad he had saved money, and decided to return home to Ban Tha Bor to build a house and become a fisherman and rice farmer. He later became a key member of the *Tai Baan* Research Network and a strong local advocate for protecting and conserving the Songkhram River and flooded forest.

In Stung Treng there are many instances of young people who have migrated to Bangkok for wage labour. They enter Thailand as illegal immigrants and as such have limited rights. Often they are not paid their full salaries, and some may be arrested or harassed by the authorities. After several years in Thailand, whether they manage to save money or not, the majority come home to their villages by the Mekong to pursue traditional wetland livelihoods of fishing, livestock raising and small-scale agriculture. This offers an improved quality of life even if the cash earning opportunities are limited. If people are able to save some cash in order to establish themselves – by building a house, getting married, buying land – they are able to live their lives in their own villages and with their families. The opportunities that urban labour markets provide for saving do not necessarily replace the productivity of the natural wetlands systems. While pursuing a traditional wetland livelihood may offer limited opportunities to generate cash income and savings, the fisheries and natural resources of the Mekong wetlands are able to support a livelihood that is valued and to which many aspire.

Livelihood Alternatives

As important as aquatic resources are in local livelihoods, these resources alone cannot provide meet all the needs of rural people. Assessments undertaken by the MWBP and partners have provided further indications of the need for improved agricultural techniques and for better market opportunities. This development combination can increase productivity while also ensuring sustainability of the resource base. Improving agricultural production through irrigation is a priority – particularly in Stung Treng and Attapeu. Surveys undertaken by the MWBP and partners indicate that irrigation can be designed and implemented in such a way as to increase productivity, ensure livelihood benefits accrue to poorer households, and also guarantee the continued productivity of the natural wetland resources.

Alternative livelihood activities are particularly important at times of the year when the natural productivity of fisheries is low and off-farm employment opportunities are limited. Seasonal migration to urban labour markets is already an established livelihood strategy in the Songkhram area, and appears to be increasingly common in the other demonstration sites. Management of wetlands resources requires management of alternative livelihoods strategies that complement traditional wetland livelihoods and fit with the needs and assets of poorer households.

Programme Implementation

In practical terms, working in partnerships in an integrated manner is a major challenge for organisations with different interests, experience and ways of working, and with uncertain sources of funding. The MWBP experience has generated a broader understanding of the connections between conservation and livelihoods that is much more central to the approaches of the key partners in the programme. The programme has also provided some working examples of what can be done by developing a wetlands livelihoods approach that reacts to the links between public participation, empowerment, income generation, food security, nutrition and health.

The strategic approach of the MWBP was endorsed by provincial partners in each of the demonstration sites, and much of the work begun under the programme is being followed up by the partnerships established through its inception. The loose networks of local resource users within and between the demonstration sites are beginning to establish themselves independently. This indicates the strength of the networks and bodes well for the long term. The programme has also managed to develop a considerable amount of information that is being used by project partners and being disseminated more widely.

The experience of MWBP has also demonstrated the importance of adopting an ecosystems approach to addressing livelihoods issues. Ensuring the viability of wetland livelihoods requires addressing the broader landscapes that maintain the ecosystem functions and values of local wetland resources. The threats to wetland resources exist at both the local level and the regional level – across the

whole Mekong Basin. While many of the management interventions need to be first undertaken at the local level – such as in the village or between villages – ultimately these need to be scaled up. Many of the management challenges are at the regional level. Traditional management regimes can be revitalised and adapted, but the challenges they face are on a new scale. Stakeholders across wetland systems and across river basins need to identify mechanisms that can meet these newer threats. The MWBP has provided some models for how this can be done and has managed to facilitate linkages and networks between resources users who might not previously have worked together. This built on what local people, grassroots organisations, government agencies, NGOs and academics had begun – providing new opportunities and new partnerships. With continued support for these approaches, there is every reason to be optimistic that the challenges facing the people of the Lower Mekong Basin can indeed be addressed.

Wetland resources are fundamental to Mekong livelihoods, cultures and economies, and to the productivity of the whole Basin. The history and the future of the Mekong are tied to the productivity of its rich wetland resources. While degradation of wetland resources will have profound impacts on local people – particularly poorer people, wise use of wetlands resources will provide opportunities to generate tangible livelihoods improvements for poor people, and wholesale benefits for national economies.

Notes

1 All reports and publications produced under MWBP are available for download on the programme website – www.mekongwetlands.org

2 See Rondinelli, 1993

3 Ramsar sites are those on the List of Wetlands of International Importance, as governed by the Convention on Wetlands of International Importance, adopted in Ramsar, Iran, in 1971.

4 The Songkhram River Basin as a whole covers four provinces – Nong Khai, Udon Thani, Nakhon Phanom and Sakorn Nakhon

5 This partnership was funded by a global IUCN project – the Water and Nature Initiative and Oxfam US.

6 Among these livelihoods approaches are Amartya Sen's 'entitlements' approach, the Sustainable Livelihoods Framework (see Carney, 1998) and the Resource Profiles Framework (see McGregor, 2006).

7 Full reports of these assessments are available from the MWBP website – www.mekongwetlands.org

8 *Tai Baan* reports from other parts of Thailand are available from the SEARIN website – www.searin.org

9 This area of work was funded by the Australian Embassy (Bangkok) Discretionary Fund

10 Summary taken from TRAFFIC (2007)

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Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme

The Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme (MWBP) is a joint programme of the four riparian governments of the Lower Mekong Basin – Cambodia, Lao PDR, Thailand and Viet Nam – managed by the United Nations Development Programme (UNDP), the World Conservation Union (IUCN) and the Mekong River Commission (MRC), in collaboration with other key stakeholders. With funding from the Global Environment Facility (GEF), UNDP, the Royal Netherlands Government, MRCS, the Water and Nature Initiative (WANI) and other donors, the programme addresses the most critical issues for the conservation and sustainable use of natural resources in the Mekong wetlands. MWBP aims to strengthen the capacity of organisations and people to develop sustainable livelihoods and manage wetland biodiversity resources wisely. It is a five-year (2004-2009) intervention at three levels – regional, national and local – with demonstration wetland areas in each of the four countries: in the Songkhram river basin, Thailand; in Attapeu province in southern Lao PDR; in Stung Treng, Cambodia; and in the Plain of Reeds in the Mekong Delta, Viet Nam. The programme aims to:

- Improve coordination for wetland planning from regional to local levels
- Strengthen policy and economic environments for wetland conservation
- Generate and share information
- Train and build capacity for the wise use of wetlands
- Create alternative options for sustainable natural resource use and improve livelihoods

MWBP is a partnership between governments, aid agencies and NGOs, and provides a framework for complementary work for wetland conservation and sustainable livelihoods in the Lower Mekong Basin.

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A JOINT UNDP - IUCN - MRC GEF-FUNDED PROGRAMME

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