VEUN SEAN VILLAGE, STUNG TRENG RAMSAR SITE, CAMBODIA: Rapid, participatory assessment for wetland valuation

What importance wetlands?

For the 12 000 people living in the Stung Treng Ramsar site, wetlands are a precious source of fish, aquatic animals, waterbirds and building materials. For many communities, the wetland is a vital source of water for consumption and washing and the waterways are an essential means of transportation. The deep pools and flooded forests also provide dry-season refuges and spawning habitats for many important species of fish which migrate throughout the Mekong system.

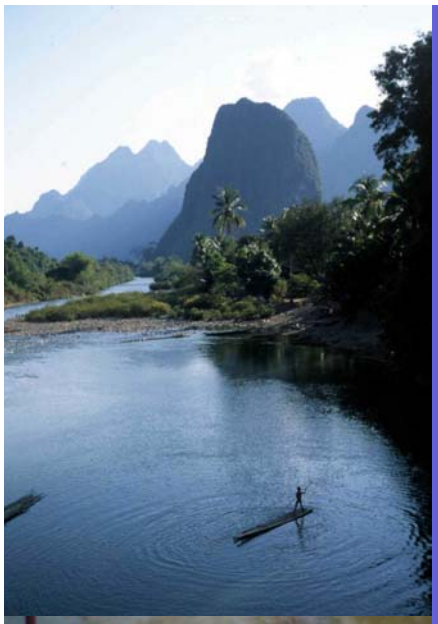
Economic assessments can help us manage wetland resources by improving our understanding of what drives people's resource use decisions – and why, and to what extent, wetlands are valuable to local communities.

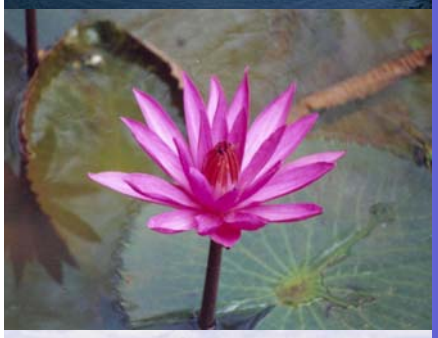
Some economic assessments, however, place emphasis on calculating the quantitative value of a resource. Although information about monetary values can have a powerful influence in promoting conservation of resources, a deeper understanding of the nature of wetland values is required for effective planning and management. In particular,

- How are wetlands important in terms of people's livelihoods, food security and health?
- How are wetlands essential in helping communitiess cope with external shocks and stresses?
- Who benefits most from the wetlands? Who is most vulnerable to the loss of wetland resources, and why?

Conventional techniques for gathering socio-economic data or assessing the value of wetland resources often rely on the household survey. There are a number of potential drawbacks with applying this instrument, some of which can be overcome by applying "participatory approaches" to economic assessment.

This brief describes a case study application of "participatory approaches" to assess the importance of wetland resources to people from Veun Sean, a small island village located in the Mekong River within the Ramsar site. The study goes beyond quantitative assessment to understand the context in which resource-use decisions are made - and the linkages between poverty and the importance of wetland resources.





IUCN Water and Nature Initiative

IUCN The World Conservation Union

Integrating Wetland Economic Values into River Basin Management

Background to the study

Wetlands in Cambodia are vital to the livelihoods of millions of Cambodians, and particularly the food security of many of the rural poor. There are many stakeholders in the management of these precious resources - including government agencies across different sectors and at different levels, private businesses, international and local non-governmental organisations, and the local communities whose livelihoods depend on wetland resources. In Cambodia, however, there are a number of barriers to effective wetlands management, including:

- Lack of co-ordination between different sectoral approaches
- Weak policy frameworks and unsupportive economic environments
- Inadequate information base on which to base wetland policy, planning and management decisions
- Inadequate human and technical resources
- Lack of options for resource use by local communities.

The Mekong Wetlands Biodiversity Conservation and Sustainable Use Program (MWBP) is a partnership between IUCN, the Mekong Rivers Commission (MRC), UNDP-GEF, and governments and communities in the four lower Mekong countries – Cambodia, Laos PDR, Thailand and Vietnam. The MWBP aims to overcome the barriers described above, by promoting an integrated, co-operative approach to wetlands management at regional, national and local levels.

The Ramsar site in Stung Treng province, Cambodia, is one of four demonstration sites of the MWBP. The Ramsar site is about 14 600 hectares in area and extends 37 km in length along the Mekong River, from 5 km north of Stung Treng town to the Laos border.

The Stung Treng Ramsar site is characterised by rocky streams, small islands, sandy inlets, deep pools, and seasonally inundated riverine forests. The wetlands contain important habitats for several globally threatened species, including many species of fish which migrate throughout the Lower Mekong system – such as the critically endangered Giant Catfish (*Pangasianodon Gigas*).

A key aspect of the MWBP is the application of economic tools and techniques to support wetlands management for poverty alleviation outcomes in the four demonstration sites. An essential first step is to understand the importance of wetland resources to local communities. This study employed participatory economic assessment methods to assess wetland values in Veun Sean, a small village in the Stung Treng Ramsar site.

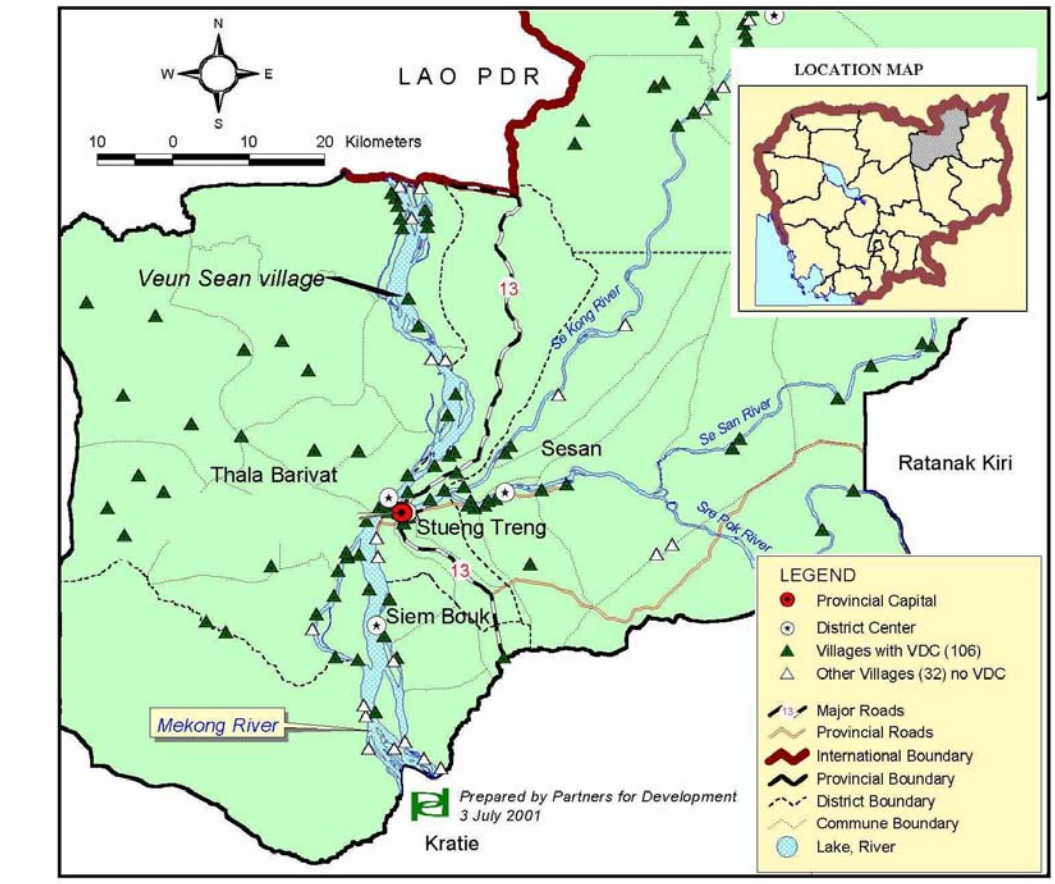
Veun Sean village is located in O'Svay commune, Thala Borivat district approximately 20 kilometres from the border with Lao PDR. With 36 households and a population of about 150 people, Veun Sean is the smallest village in the Ramsar site. The village households are situated on Khorn Hang island, although the location of land use practices such as cultivation, NTFP collection and wildlife hunting extends beyond the island to the mainland.

Veun Sean is relatively poor in built and human capital – there is only one well, no electricity, no latrines and poor access to health services. Almost three-quarters of people from Veun Sean cannot read or write.

Fisheries resources are particularly important for the largely agrarian, subsistence households in Veun Sean. However, there is evidence of declines in fisheries resources in the Stung Treng Ramsar site. Assessments conducted by Partners for Development (PfD) and Culture and Environment Preservation Association (CEPA) in 200 and 2002 respectively explored the trends and causes of natural resource declines in Veun Sean village. The declines in fisheries, forest and wildlife resources since 1975 reflect the general pressures on such resources in the region.

Near Veun Sean village, fisheries declines have been attributed to illegal practices from outsiders, increasing populations, and the unofficial endorsement of illegal practices by powerful individuals or organisations.

Pressures on forest resources include increased demand from villagers and markets, and from private concessionaires. It has also been noted that, due to hunting pressure, several species of wildlife have become locally extinct since 1970, including tiger and Kouprey.



Towards a participatory approach to wetland valuation

The household survey, commonly applied in economic assessments has a number of potential drawbacks:

- Surveys are often lengthy and complicated, causing interviewees to become fatigued,
- The concepts and questions often reflect the perceptions of the researchers rather than the reality of the respondents,
- The process by which a survey is administered may introduce inaccuracies due to intimidation by interviewers, biased answers from respondents, or translation misunderstandings.

One way to overcome some of these problems is to combine conventional economic research techniques with more flexible "participatory" rural appraisal methods. These methods evolved in response to the need for practical research and planning approaches that could support more decentralised planning and local-level participation in decision-making (IIED 1997 – *Valuing the Hidden Harvest*).

"Participatory" techniques vary in the extent to which they are truly participatory. Generally defined, *rapid rural appraisal* (RRA) methods focus on applying participatory methods to gain information, whilst minimising biases. *Participatory rural appraisals* (PRA) tend to have greater emphasis on sharing knowledge and processes at the local level, and tend to be much longer and open-ended processes. This case study did not emphasise the distinction between these techniques, but developed and applied various activities from both RRA and PRA theory and application.

These activities enabled villagers in Veun Sean to define and describe wetland values within the context of their own perceptions, needs and priorities rather than categories imposed by the researchers.

Applying the approach

Resource mapping

The resource mapping activity encouraged participants to draw and discuss their village and the location and use of resources.

The resource map is an effective tool for gaining an understanding of the spatial distribution of wetland resources. It is also an interactive activity which can be a good "ice-breaker" between communities and researchers.

The resource map of Veun Sean village identified deep pools as important fishing grounds, and areas of cultivation and hunting some distance from the village.

Web diagrams of social networks

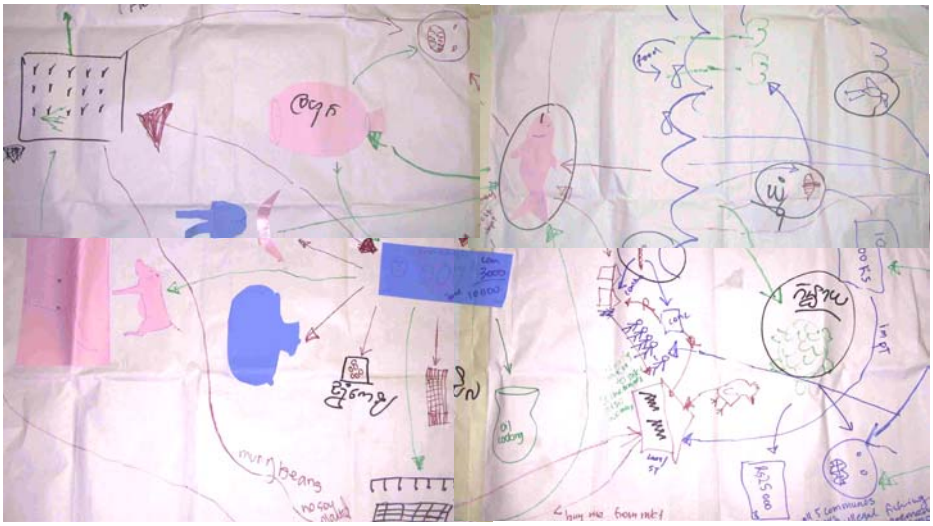
The *web diagram* was applied to identify the stakeholders in the wetland resource, and to explore social networks within the village, the relationships between villagers and external organisations, and the extent to which different individuals, institutions and organisations have an influence on their lives.

In this activity, separate groups of men and women were invited to identify institutions which were illustrated on paper circles. Institutions from within the village were placed inside a large circle, and external institutions were placed outside the circle. Lines were then drawn between different institutions, to describe the strength of influence between these organisations.

Flow diagram of wetland values

The *flow diagram* activity invited participants to describe the values derived from the wetland resource, and to discuss why these aspects of wetlands are valuable.

The wetland was represented by drawing the Mekong River with flooded forests in the centre of a sheet. An arrow was drawn from the wetland to a fish to illustrate a wetland use. The group then identified and described various benefit flows and market linkages, including: fishing, fish spawning, waterbird hunting, water for cooking and drinking, irrigating cash crops and transport. The group agreed that fish, a valuable source of nutrition and income, was the "most important" wetland resource.



Seasonal calendar of activities
The purpose of the seasonal calendar was to identify key activities conducted by men and women, and to broadly assess differences in time and effort spent between activities and across seasons.

Each group was invited to identify the main activities which they conducted. These were then rated across seasons – wet, dry cold, and dry hot – using piles of between one and ten beans.

It was evident that the key factor which influences the timing of activities across the seasons is rice growing, which is driven by seasonal differences in weather. The *wet season*, when most rice cultivation occurs, is thus the busiest time of year for both men and women.

Wealth ranking
Wealth ranking was conducted to gain an understanding of villagers' perceptions of wealth characteristics, and to provide information so that further activities could assess the linkages between wetland resources and poverty.

A group of six individuals (three men and three women) were selected with assistance from the village chief. The group discussed the different characteristics of different "wealth groups", and then categorised individual households.

A measure of wealth consistently identified by all members of the group was a household's ability to grow rice sufficient to meet the needs of the family throughout the year. Rich families were identified as growing sufficient or excess rice, medium families as facing "rice shortage" for six months, and poor and very poor families for nine or ten months. During this activity, the group noted that in response to rice shortages, poorer households generated income to purchase rice by selling fish and wildlife.

Relative ratings
The rating exercises were directly linked to demonstrating relative values of the wetlands and fisheries resources. The approach undertaken reflected the experiences drawn from previous activities. Ratings were conducted using piles of one to five beans.

1. *Wetland values* were first identified in the wetland resource flows diagram. A variety of wetland values were identified. Many of these values represented consumptive use of wetland resources – such as fishing, traditional medicines and wildlife. Other values related specifically to consumptive or non-consumptive uses of water – drinking, washing, irrigation and transportation.

The group unanimously rated fish as "five", representing the highest level of relative importance.

2. The aim of the *problem discussion* activity was to identify some of the key problems faced by households, the underlying causes of these problems, and ways in which households respond.

Lack of access to hospital services was described as a major factor contributing to health problems. The impact of recent droughts and the lack of buffalo to prepare

land were described as major underlying causes of rice shortage. Declining fish stocks were also identified as a significant problem.

3. The results from ratings of *food sources* suggest that, in Veun Sean, the types of food consumed are not strongly related to level of poverty. Most people, independent of level of wealth noted that rice was a staple and that fresh fish and prahoc (preserved fish) were also very important. One key difference, however, is that poorer households suggested that aquatic animals were an important source of food because they were readily available the entire year, whereas wealthier groups could choose not to consume aquatic animals.

4. Ratings of *sources of income* revealed that poorer households have fewer options for generating income – although it appears that they may be more dependent on generating income to purchase the staple food, rice. Fish (mostly sold to middlemen) and cash crops are relatively important income sources for all households.

Sources of income

Rating	Poor	Less poor
●●●●●	Fish	Fish, livestock
●●●●	Cash crops	Cash crops, turtles, lizards
●●●	Turtles, lizards, livestock	Cogon grass
●●	Wildlife	Wildlife, vegetables, rice, small shop
●	NTFP, work on other farms	Work outside village, rice, rice milling, bamboo, rattan

5. A key difference in *types of expenditure* between poorer and wealthier households is that poorer households spend a relatively greater proportion of their income on rice.

Types of expenditure

Rating	Poor	Less poor
●●●●●	Rice	Medicine
●●●●		Petrol, cooking ingredients
●●●	Medicine, clothes	Rice, hospital, school, fishing gear
●●	Hospital, fishing gear, agricultural tools, seeds, petrol, household goods, cooking ingredients, social contributions	Piglets, clothes, seeds, agricultural tools, household goods, wine and cigarettes
●	Fish, livestock meat, weddings, boat purchases, transport	Social contributions, transport, weddings

Wetland values – how much?

Targeted household surveys were also conducted to complement and verify the participatory activities. A key aim of the household survey was to provide additional quantitative information about the wetland values described in the participatory activities.

Responses to several household survey questions could be used to estimate the value of the fisheries resource. However, many of these responses could have been biased due to variability of activities and resource use across space and time. For example, inaccuracies arise from:

- Aggregating units – for example, how much fish caught in a year?
- Averaging quantities across periods of time.

To limit this bias, information about the quantitative value of fisheries was verified using different methods: responses from a variety of survey questions, group discussions and participatory activities. The quantitative assessment confirmed the fisheries resource is more valuable to poorer households, because of its importance as a source of income.

Fish value: Riel per household per year

Value	Average	Poor	Less poor
Fish consumed	500 000	600 000	500 000
Income from fish	1 200 000	2 000 000 *(77% total)*	600 000 *(56% total)*
Total	**1 700 000**	**2 600 000**	**1 100 000**

The value of other wetland uses was then estimated using the relative ratings of different wetland uses. Using this method, the average value of the wetland to a household in Veun Sean village was calculated as approximately US$3000 per year.

Wetland values: Riel per household per year

Rating	Value	Wetland uses
●●●●●	1 700 000	Fishing, washing, cooking/drinking
●●●●	1 360 000	Transportation
●●●	1 020 000	Construction material, firewood
●●	680 000	Aquatic animals, waterbirds, reptiles, irrigation, traditional medicines
●	340 000	Floodplain rice, recreation, dolphins
Total	**12 900 000**	4000 Riel = US$ 1

Summary of key assessment results

- The wetlands resources are integral to the livelihoods of Veun Sean villagers. Many households depend almost entirely on water from the Mekong River, which is the only means of transport from the village to services such as markets and medical centres.

  In Veun Sean, the value of wetlands is about 13 million Riel ($3200) per household per year.

- It appears that the poorer households are more dependent on wetland resources for providing food security and income. They are also likely to be more vulnerable to losses in fisheries and wetlands resources, particularly in terms of their capacity to deal with shocks and stresses such as poor health, drought, and livestock deaths.

  On average, the value of the fisheries resource is 1.7 million Riel ($425) per household per year.

  However for a poorer household, fisheries are worth about 2.6 million Riel ($650) per year. Much of this value is derived from income earned from selling fish, which is used mainly to purchase the food staple, rice.

- Except for the few most wealthy households, many households depend on wildlife caught with traditional methods for income. For the very poor, aquatic resources in paddy fields and small streams are a key source of nutrition.
- Deep pools are recognised as important conservation areas, but are traditional fishing grounds for Veun Sean villagers.
- Households with greater capacity to grow rice are perceived by other households as wealthy, appear to be less directly dependent on wetland resources for nutrition or income, and have greater capacity to cope with external shocks and stresses.
- Many internal and external institutions were identified. However, it appears that households rarely have contact with provincial government agencies. Many focal points and working committees within the village, established previously by NGOs, are currently inactive. Villagers identified CEPA, an NGO which is currently working on community fisheries and community forestry, as particularly influential.

Discovering the linkages between wetland resources and livelihoods

Both participatory activities and the quantitative assessments demonstrate that wetlands resources are essential to the livelihoods of the villages from Veun Sean. Fisheries, wildlife and aquatic resources are vital both in terms of nutritive value. These resources also ensure food security by providing a source of income for households.

In addition to providing day-to-day resources on a routine basis, wetlands are also vital in ensuring that households can cope with external stresses and shocks. If stresses affect productive activities, such as cultivating rice and raising livestock, these can to a certain extent be substituted with collection and capture of wild resources such as fish, wildlife and aquatic animals.

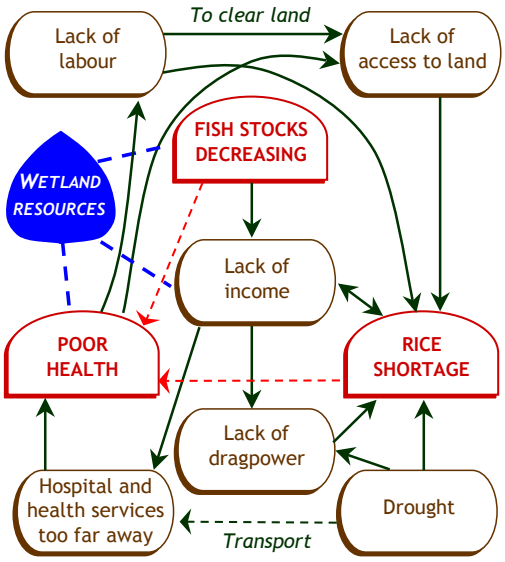
All households in Veun Sean, but particularly the very poor, are vulnerable to pressures which limit their capacity to cultivate land to grow rice and produce – such as the ongoing stress of limited access to land, or shocks such as drought, livestock death, or human illnesses.

Rice-growing, for example, is a key economic activity and "rice shortage" (the inability to be self-sufficient in rice production due to lack of access to labour or land) is a major pressure facing most households. For these households, access to wetland resources is vital on a year-to-year basis, and more so when faced with other stresses such as poor health and drought.

For many households in Veun Sean, the pressures of poor health, drought and rice shortages appear to reinforce each other. Poor health limits a households' capacity to work on the land, resulting in low rice yields – which are further lowered by drought. This emphasises the importance of owning buffalo to assist in rice-growing. However, during periods of drought, buffalo are more likely to suffer sicknesses or to die. Furthermore, when faced with rice shortages, households must spend their income on rice and may face difficulties purchasing buffalo or health services.

In this context of interrelated pressures of poor health, drought and rice shortages, both fish

and non-fish wetland resources are critical to villagers' livelihoods – for both nutrition and income. In terms of meeting day-o-day needs, as well as coping with periods of external stresses and shocks, the protection and maintenance of fish stocks is vital to all households of Veun Sean.



This document was produced under the project "Integrating Wetland Economic Values into River Basin Management", carried out with financial support from DFID, the UK Department for International Development, as part of the Water and Nature Initiative of IUCN - The World Conservation Union.

This project aims to develop, apply and demonstrate environmental economics techniques and measures for wetland, water resources and river basin management which will contribute to a more equitable, efficient and sustainable distribution of their economic benefits at the global level and in Africa, Asia and Latin America, especially for poorer and more vulnerable groups.

For more information, please contact:
Lucy Emerton. LAE@iucnsl.org Tel: +94 11 2694 094

For information about project activities in Africa, Asia and Latin America please contact:
Eastern Africa: Kelly West
KAW@iucnearo.org Tel: +254 20 890 605-12
Latin America: Rocío Córdoba.
rocio.cordoba@iucn.org Tel: +506 241 0101
Lower Mekong: Peter-John Meynell.
mekongwetlands@iucnlao.orgTel: +856 21 216401
South Asia: Shamen Vidanage.
SPV@iucnsl.org Tel: +94 112 694 094

IUCN Water and Nature Initiative

IUCN The World Conservation Union

However, it is equally critical to consider *access* to these fisheries and other wetland resources. The poorest households have limited access to land, labour, transport to markets, health care, or alternative sources to income. They are particularly dependent on fisheries resources on an "as-needs" basis to generate income to purchase rice.

In the Stung Treng Ramsar site, strategies to conserve and protect the fisheries resource must consider the biological importance of the habitats in the region as spawning and dy season refuges. However, it is critical that this information be considered in light of local-level dependencies on and access to the resources. In this context, participatory research methods for economic assessment should be a key tool used in the planning process – to gain an understanding in the importance of wetlands resource to local communities.

Further details of this case study will be available in a technical report to be published in 2005 by IUCN – The World Conservation Union Asia Regional Environmental Economics Programme and the IUCN/UNDP-GEF Mekong Wetlands Biodiversity Conservation and Sustainable Use Programme.

Please contact Jo Chong at jhc@iucnsl.org for further information.