

Fisheries Research and Development in the Mekong Region

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- Gender and fisheries network faces new challenge
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Contributions to *Catch and Culture* should be sent to peterstarr@mac.com and copied to mrcc@mrcmekong.org.

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Editorial panel:

So Nam, Fisheries Programme Coordinator

Peter Degen, Chief Technical Advisor

Souvanny Phommakone, Fisheries Programme Officer

Buoy Roitana, Fisheries Programme Officer

Theerawat Samphawamana, Fisheries Programme Officer

Nguyen Hai Son, Fisheries Programme Officer

Malasri Khumsri, Fisheries Management and Governance Specialist

Ngor Peng Bun, Capture Fisheries Specialist

Kong Sovanara, Aquaculture Specialist

Editor: Peter Starr

Designer: Chhut Chheana

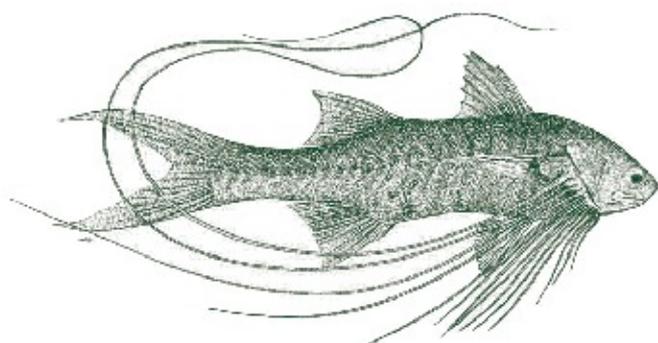
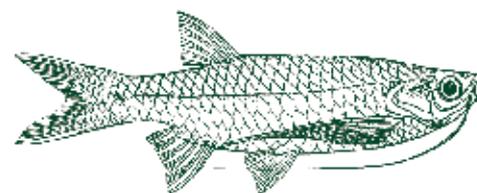
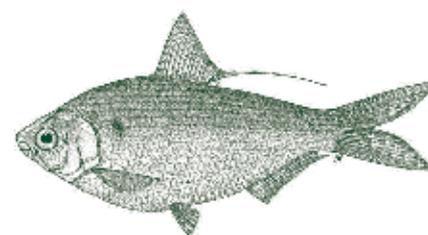
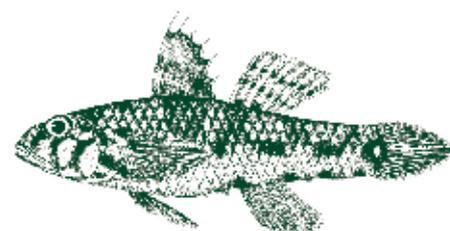
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Cover photo and photo above by Ngor Peng Bun

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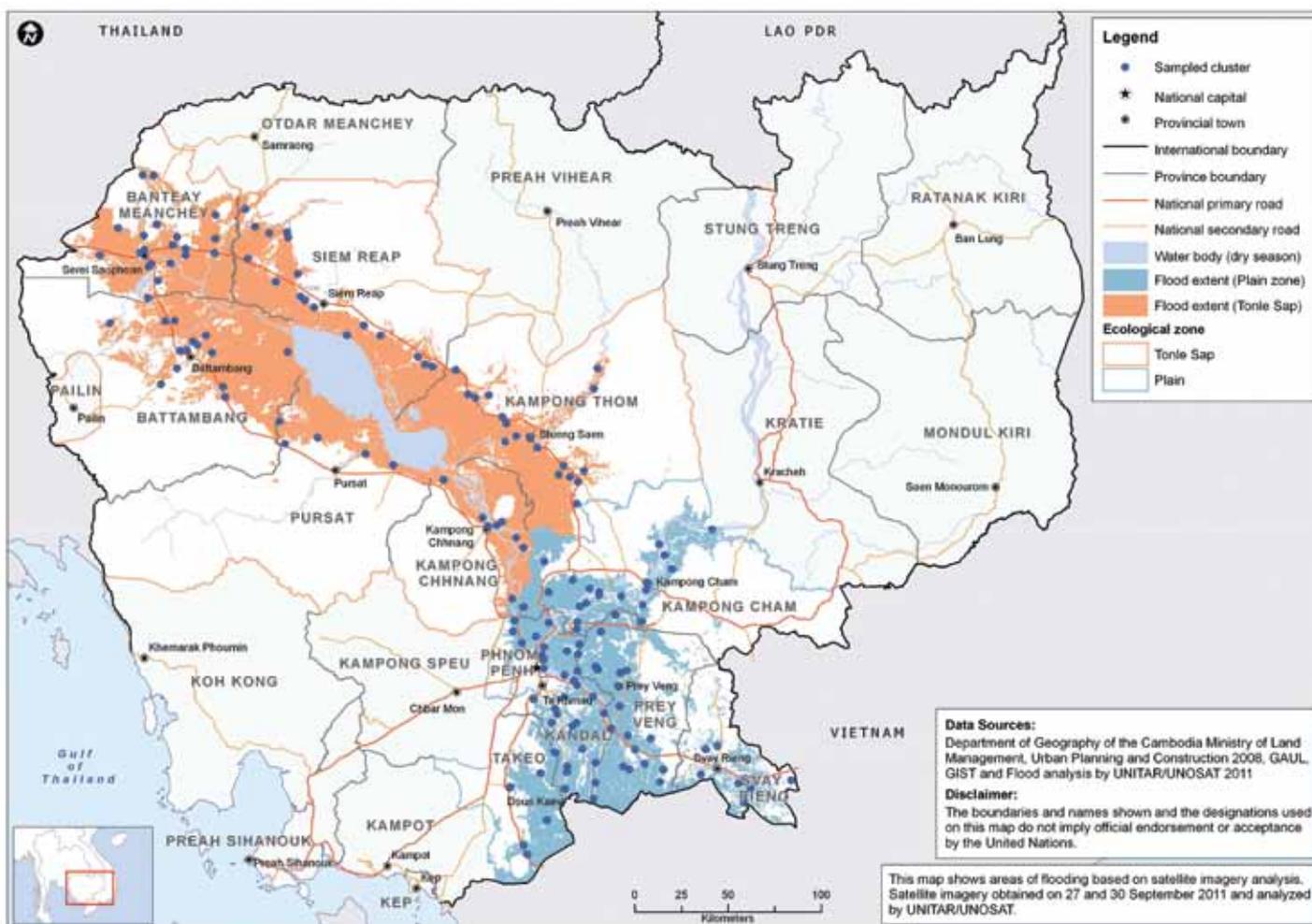
Fishing nets and boats most common assets damaged by floods in Cambodia

Four months after the floodwaters started to recede, almost a third of households with damaged nets and boats in 11 provinces said they could not afford repairs

Cambodia's severe flooding in September last year affected 18 of the country's 24 provinces and was the worst in more than a decade. In some areas outside of Phnom Penh, floodwaters were even higher than those seen in 2000, the most severe flooding on record. According to the National Committee for Disaster Management (NCDM), the flooding affected 350,000 households of which about 50,000 were displaced. The Ministry of Agriculture, Forestry and Fisheries

meanwhile reported that the severe flooding affected more than 400,000 hectares of cultivated land of which 270,000 hectares were destroyed.

As relief efforts gave way to longer-term recovery issues, a post-flood relief and recovery survey was carried out in January to assess the disaster's impact on food security and nutrition, water and sanitation, household assets and the economic situation. Undertaken by the World Food Programme (WFP) and various partners, the study covered 2,397 households within 250 metres of the peak flood boundary. The households were located in the six provinces around the Tonle Sap Lake and five provinces on the floodplain in



Map showing villages surveyed around the Tonle Sap Lake and on the floodplain in January. The survey covered 17 villages in Siem Reap, 5 in Pursat, 18 in Kampong Thom, 8 in Kampong Chhnang, 14 in Battambang and 20 in Banteay Meanchey. On the floodplain, it covered 20 villages in Kampong Cham, 29 in Kandal, 20 in Prey Veng, 7 in Svay Rieng and 6 in Takeo.

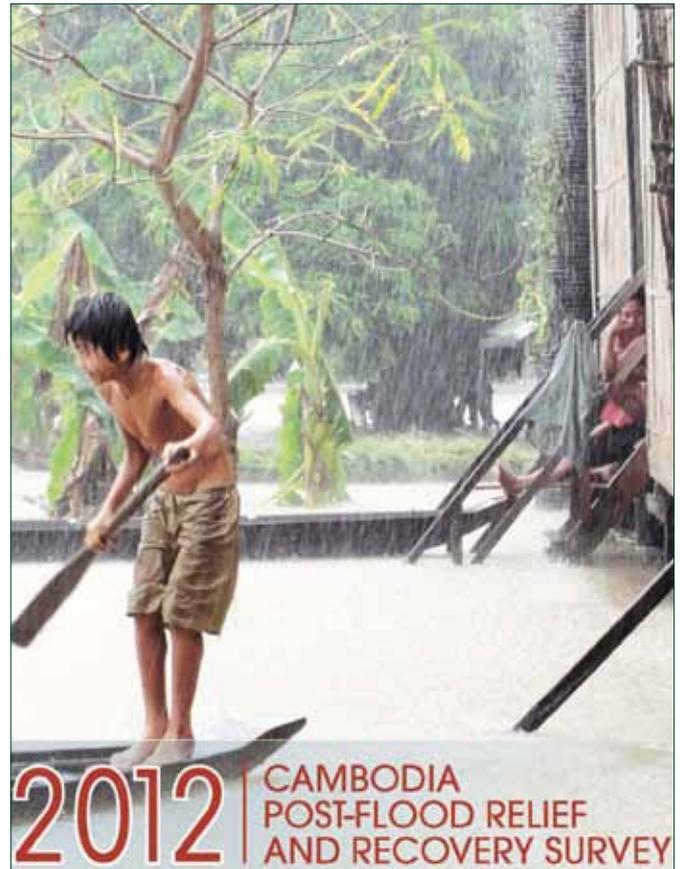
southeastern Cambodia (see map).

“Twenty-eight percent could not afford to repair their damaged fishing nets”

Released by the NCDM and WFP in early July, the survey report* showed that fishing nets and boats were the two most commonly damaged assets during the flooding. Thirty-three percent of households reported damaged fishing nets. Of these households, only 31 percent had already repaired the nets in January. Among the remaining 69 percent of households with damaged nets, 12 percent said repairs would take up to three months and 29 percent said they would take longer. Twenty-eight percent could not afford to repair their damaged fishing nets. Almost 21 percent of the households had boats damaged during the flood. Forty-four percent of these households had already repaired their boats. Among the other 56 percent of households with damaged boats, seven percent said the boat repairs would take up to three months, 20 percent said they would take longer and 29 percent said they could not afford repairs. After fishing nets and boats, the most commonly damaged household assets were rice mills (19 percent), bicycles (19 percent) and water pumps (14 percent).

The conventional wisdom last year was that the severe flooding had an adverse impact on aquaculture in Thailand (see *Catch and Culture* Vol 17, No 1) but would benefit wild fish catches in Cambodia. Yet the survey indicated otherwise. “Counter to anecdotal evidence, half of the households fishing for wild fish reported the current catch was less than that from a year ago,” the report said. The proportions of households reporting catches less than usual in January were almost identical in both the Tonle Sap and floodplain zones. The impact on aquaculture was more modest. Four percent of all households were farming fish in January compared with 5.5 percent before the flood. On the floodplains, 5.3 percent of households were cultivating fish, down from 7.2 percent before the flood. In the provinces around the Tonle Sap Lake, 1.7 percent were involved in aquaculture, down from 2.7 percent.

The survey found that 60 percent of the households were in debt. Among these



households, 66 percent had borrowed money because of the flooding. The main reasons for seeking credit were to purchase food (44 percent), buy agricultural inputs (35 percent) and develop business (31 percent). When the survey was carried out in January, fish was the main item in household food spending (27 percent) followed by rice (23 percent).

While most households had coped with the flood burden, the report concluded that many were now in a “more tenuous financial position.” Their ability to escape, it said, largely depends on whether they get the external support needed along with government and development partners scaling up emergency preparations and tailoring responses to match specific needs. For the greatest marginal benefits from the poorest households, the report recommended recovery programs that improve household investment with financial assistance to agricultural and other productive activities such as self-employment and small businesses.

* *Cambodia Post-Flood Relief and Recovery Survey 2012* by ActionAid, Asian Development Bank, DanChurchAid/ACT Alliance, Danish Red Cross, Save the Children, UNICEF and World Food Programme in collaboration with the National Committee for Disaster Management

A tale of two districts

Neighbouring districts in Prey Veng province in Cambodia and Dong Thap province in Viet Nam agree to extend their existing cross-border cooperation to the fisheries sector

In 2008, Cambodian villagers in Prey Veng province set up a community fishery on the site of a former fishing lot in Koh Sampouv, a remote commune in Peam Chor district on the border with Dong Thap province in Viet Nam (see *Catch and Culture*, Vol 15, No 2). Established with assistance from the Cambodian Fisheries Administration and the MRC Fisheries Programme, the Phum Ksach Community Fishery is located on the left bank of the Tonle Touch River, a distributary of the Mekong that originates in a neighbouring province further upstream in Cambodia before rejoining the Mekong in Viet Nam (see map on page 8).

On the right bank of the Tonle Touch, known as the Sa Thuong River in Vietnamese, lies Hong Ngu district in Dong Thap province in Viet Nam (see map on page 9). The district includes two communes that share the river with Cambodia before it flows out of the country to form the boundary between Hong Ngu district and the district-level town of Hong Ngu. Both the district and the town are also located directly on the the Mekong River immediately downstream from Cambodia, the town being the site of a joint fish release by Vietnamese and Cambodian authorities in 2010 (see *Catch and Culture*, Vol 16, No 3).

“Stakeholders from Cambodia and Viet Nam agreed that the development of community fisheries and alternative livelihoods was a common priority”

In 2009, stakeholders from Cambodia and Viet Nam agreed that the development of community fisheries and alternative livelihoods was a common priority along with the possible expansion of fisheries co-management in border areas. To help develop the livelihoods of people dependent on the aquatic resources on both sides

of the border, the MRC Fisheries Programme subsequently agreed to fund a pilot project for trans-boundary fisheries management in Prey Veng and Dong Thap provinces.

As part of the project, participatory rural appraisals were carried out in two villages in Kok Sampouv commune in Peam Chor district in Prey Veng and four villages in Thoi Thuong Hau B and Thuong Phuoc 1 communes in Hong Ngu district in Dong Thap. Given their remote location, Cambodians from across the border frequently visit the two Vietnamese communes for their daily needs as



Vietnamese fishermen report steep declines in catches over past decade

Vietnamese fishermen interviewed for the participatory rural assessment said that dry-season fish catches had plunged by about 60 percent over the past decade while the bigger catches during the flood season had been halved. In the dry season from December to April, each fisherman now catches an average of 15 kg of fish and 200 grams of prawns a day. According to those interviewed, average dry-season fish catches were 35 kg a day in 2001. During the flood season from May to November, the average fish catch for each fisherman is about 30 kg a day, twice as much as the dry-season catch but down from about 60 kg in 2001.

Cambodian fishing households reported similar fish catches of about 30 kg a day during the flood season. But their dry-season catches were reported to average about 25 kg a day, about two thirds higher than those on the Vietnamese side of the border. Comparisons with fish catches in previous years weren't available. Prawn catches were reported to be about 300 grams a day throughout the year.

Both Vietnamese and Cambodian fishermen reported a diverse range of fish species from 10 different families in the border area. Several species of bagrid catfishes

(Bagridae), carps (Cyprinidae) and swamp eels (Synbranchidae) were mentioned. Other families represented were climbing perches (Anabantidae), snakeheads (Channidae), gobies (Gobiidae), featherbacks (Notopteridae), gouramies (Osphronemidae), giant catfishes (Pangasiidae) and sheatfishes (Siluridae). Other aquatic animals included the highly-prized giant river prawn (*Macrobrachium rosenbergii*) and the common frog (*Rana temporaria*). Turtles, snakes and crabs were also reported.

In Cambodia, drift gill nets were the most common type of fishing gear. Some 250 households from the two villages and another 80 households from outside used such nets. Fifty households used hook and line sets, 20 used set pole hook and line sets and 10 used cast nets. Other types of gear included prawn, crab, frog and eel traps, plunge baskets, seine nets and scoop nets for eels.

In the four villages in the two communes in Viet Nam, long-fence trap nets were the most common type of gear and were used by 101 households. Sixty-five households used trawl nets and 21 used hook long line with fixed poles. Smaller numbers of households used brush, cast and scoops nets as well as horizontal cylindrical traps.

Fish species commonly found in the border area between Peam Chor and Hong Ngu districts

Scientific name	English	Khmer	Vietnamese
<i>Anabas testudineus</i>	Climbing perch	Trey kranh (ត្រីក្រាញ់)	Ca Ro dong
<i>Barbonymus gonionotus</i>	Silver barb	Trey chhpin (ត្រីត្រីន)	Ca Me vinh
<i>Channa striata</i>	Striped snakehead	Trey ros (ត្រីរស់)	Ca Loc
<i>Hemibagrus filamentous</i>	Yellow catfish	Trey tronel (ត្រីទ្រនេល)	Ca Lang vang
<i>Hemibagrus spilopterus</i>	Black-spotted catfish	Trey chhlang (ត្រីឆ្លាំង)	Ca Lang xam
<i>Henicorhynchus spp</i>	Mud carps	Trey riel (ត្រីរៀល)	Ca Linh
<i>Labeo chrysophekadion</i>	Black shark minnow	Trey kaek (ត្រីកែក)	Ca Et moi
<i>Mastacembelus favus</i>	Tire track eel	Trey kchoeung (ត្រីខ្លាំង)	Ca Chac lau
<i>Kryptopterus spp</i>	Sheatfish	Trey kes (ត្រីកែស)	Ca Tren
<i>Monopterus albus</i>	Swamp eel	Trey antong (ត្រីអង្គង់)	Ca Luon
<i>Mystus spp</i>	Mystus catfish	Trey kanhchos (ត្រីកញ្ចុះ)	Ca Chot
<i>Notopterus notopterus</i>	Bronze featherback	Trey slat (ត្រីស្លាត)	Ca That lat
<i>Oxyeleotris marmorata</i>	Siamese goby	Trey damrey (ត្រីដំរី)	Ca Bong
<i>Pangasianodon hypophthalmus</i>	Sutchi river catfish	Trey pra (ត្រីប្រា)	Ca Tra
<i>Trichogaster microlepis</i>	Moonlight gourami	Trey kawmpleang phluk (ត្រីកំភ្លាញភ្លុក)	Ca Sac diep

Peam Chor district, Cambodia

The pressure on natural resources in Koh Sampouv commune along the border with Viet Nam has intensified over the past 15 years following an influx of Khmer migrants into Ksach village. During the first half of the 1980s, the village had about 150 Vietnamese households and less than 10 Khmer households, according to a participatory rural appraisal conducted for the pilot project last year. The Khmer population increased to 70 households during the second half of the decade with the establishment of an agricultural collective and a commercial fishing lot. It was during this period that the Fisheries Department built an office in the village.

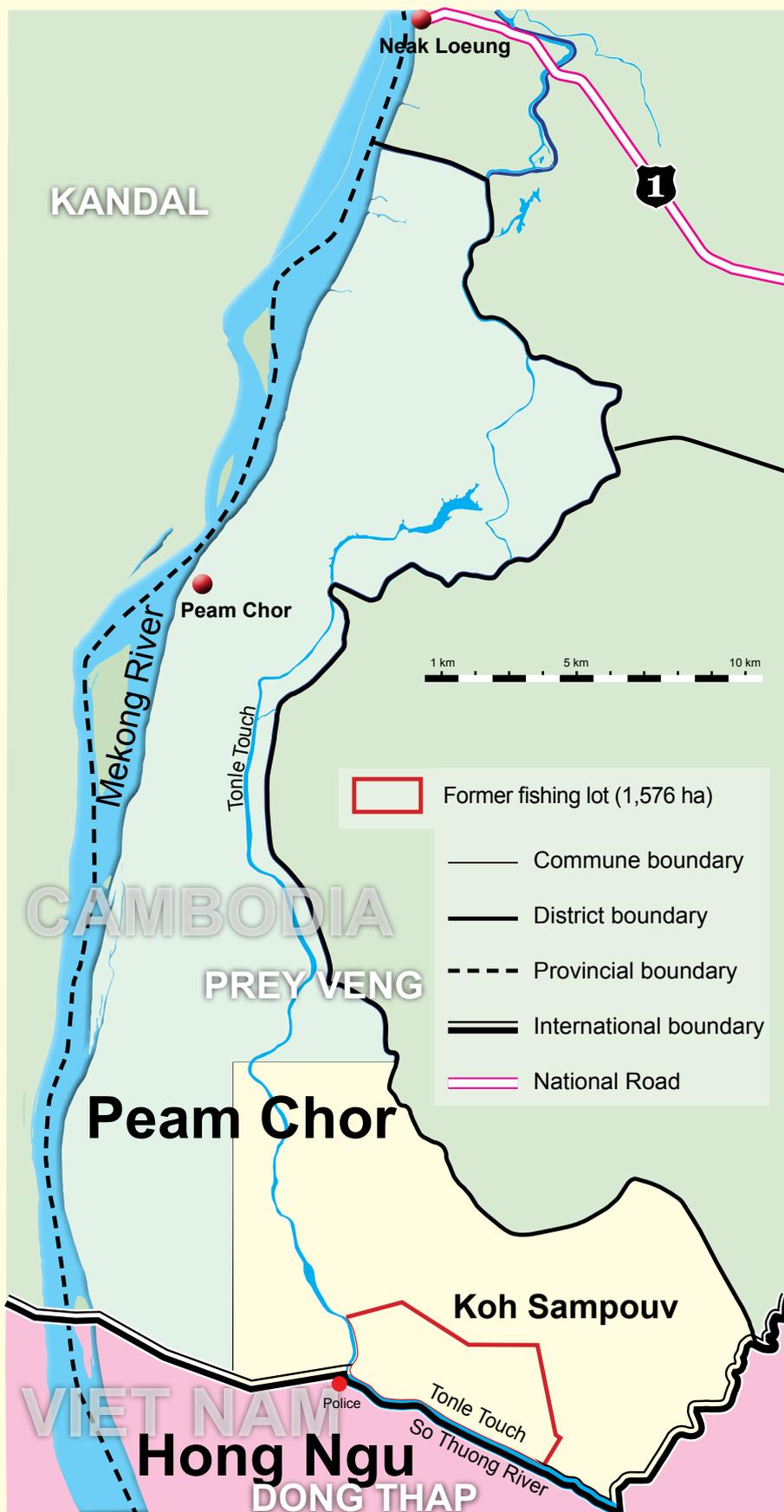
Following the establishment of border development zones, authorities allocated land to Cambodian citizens during the first half of the 1990s and some Vietnamese left the village. More Khmer people arrived in the second half of the decade, the period when natural resources started to decline. By this stage, the village populations had swelled to about 300 Khmer households and 100 Vietnamese households. Notwithstanding the conversion of the commercial fishing lot into a public fishing ground, the decline in natural resources continued into the early 21st century. Following the establishment of the Phum Ksach Community Fishery in 2008, the former fishing lot came under community management and conservation zones were set up. By 2011, the abundance of natural resources, especially fish, had remarkably increased.

Ksach Village

Area: 1,924 ha **Farmland:** 1,889 ha
Pop: 2,229 (409 households) **Poverty** (income less than \$375 a year): 45%
Livelihoods: rice farming (100%), fishing (85%), seasonal labour (20%) **Education:** 1 kindergarten, 1 primary school

Toul Sang Village

Area: 266 ha **Farmland:** 262 ha
Pop: 714 (154 households) **Poverty** (income less than \$375 a year): 45%
Livelihoods: rice farming (100%), fishing (85%), seasonal labour (20%) **Education:** 1 primary school





Hong Ngu district, Viet Nam

Unlike Peam Chor district in Cambodia, the neighbouring district of Hong Ngu in the Vietnamese province of Dong Thap has a well developed network of paved roads and canals. The two communes selected for the pilot projects both border Cambodia and have significantly higher population densities. For example, Thuong Thoi Hau B Commune, located on the right bank of the So Thuong River, known as the Tonle Touch in Khmer, is smaller than the neighbouring Ksach village in Cambodia but has almost four times the number of people. In this commune, fishermen fish from July to November. In Thuong Phuoc 1 Commune, people tend to fish all year round. Fish farmers raise several species in ponds and cages in both communes.

THUONG THOI HAU B COMMUNE
Area: 1,442 ha **Farmland:** 1,165 ha **Pop:** 8,673 (2,272 households)

Hamlet 1
Livelihoods: fisheries (90%), agriculture (70%), daily paid labour (30%)
Aquaculture: 11 ponds, (shark catfish, air-breathing catfish) and 25 cages (tilapia)
Poverty: 75% (average income less than \$50 a month) **Education:** 1 primary school

Binh Hoa Ha Hamlet
Livelihoods: agriculture (79%), fisheries (11%), other (10%) **Aquaculture:** 11 ponds (shark catfish), 37 cages (snakehead, tilapia) **Poverty:** 35% (average income \$85 a month) **Education:** 3 primary schools, 1 secondary school

THUONG PHUOC 1 COMMUNE
Area: 3,442 ha **Farmland:** 2,146 ha **Pop:** 22,014 (4,917 households)

Hamlet 1
Livelihoods: agriculture (70%), fisheries (25%), other (15%) **Aquaculture:** 5-10% of households have ponds and cages (shark catfish, snakehead) **Poverty:** 20% (average income below \$500 a month) **Education:** 3 primary schools

Hamlet 2
Livelihoods: agriculture (90%), fisheries (14%) **Aquaculture:** N/A **Poverty:** 26 % (average income less than \$100 a month) **Education:** 1 primary school, 1 secondary school



Vietnamese fisherman casting net amid floating fish cages on the So Thuong (Tonle Touch) River in Thuong Thoi Hau B commune in Hong Ngu district in Viet Nam's Dong Thap province in June

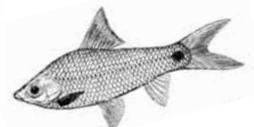
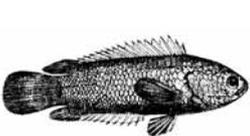
PHOTO: LEM CHAMNAP

well as health care. Thuong Phuc 1 commune alone has three markets including one on the border that sells groceries and provides services such as welding and electrical repairs. Both Vietnamese communes have medical centres. Vietnamese can fish in Cambodian waters provided they have authorisation letters from Cambodian authorities, and abide by the fishing area management rules and regulations of the community fishery, especially on fishing gear.

The appraisal in Viet Nam completed earlier this year found that the main challenge facing fishing households in the two communes along the Cambodian border in Hong Ngu district was a decline in fisheries resources, especially

since 2005. In addition to fewer species, fish are smaller and production is lower. Small fish are now estimated to account for 70 percent of the catch. The appraisal noted that about a third of the people in the two communes were poor and depended on agriculture, fisheries and day labour for their livelihoods. Landless households are particularly reliant on fisheries and illegal fishing gear, including electro-fishing devices and small-sized nets, is being used.

The second biggest challenge is a limited understanding of Cambodian fishing regulations among Vietnamese fishermen including those who lease fishing grounds across the border. These include Vietnamese who lease inundated

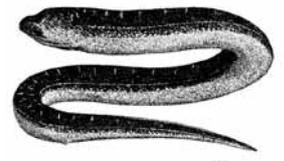


ricefields during the flood season to catch fish with cast nets or horizontal cylindrical fish traps. Other challenges in Viet Nam included a lack of boats and staff for fisheries management and a lack of awareness of the need to protect fisheries resources.

“One of the main challenges facing the Phum Ksach Community Fishery was that people from the two villages in Koh Sampouv commune still didn’t know or understand its objectives”

The appraisal in Cambodia, completed late last year, found that one of the main challenges facing

the Phum Ksach Community Fishery was that people from the two villages in Koh Sampouv commune still didn’t know or understand its objectives. The lack of a health centre and livelihoods activities was of equal concern followed by the perception that there were too many people fishing in local fishing grounds. The Cambodian respondents also highlighted the need to develop more efficient fish farming techniques.



For people found using illegal fishing gear in Cambodian waters, a hybrid system exists for dealing with Cambodians and Vietnamese. Cambodian fishermen found using illegal gear



Fisherman on the Tonle Touch (So Thuong) River in Peam Chor district in Cambodia’s Prey Veng province in June

PHOTO: LEM CHAMNAP

are given two warnings. If the use of electro-fishing equipment, mosquito nets or gill nets persists, however, community patrols can confiscate the gear and report the offender to authorities. Under an agreement between Prey Veng and Dong Thap provinces, the use of illegal fishing gear by Vietnamese fishermen has to be reported to the Vietnamese side. The community fishery is meanwhile responsible for informing Vietnamese fishermen about its internal statutes and Cambodian government fisheries regulations including the closed fishing season between July and October.

National, provincial and district authorities from both sides were given an opportunity to discuss these and other issues with commune officials and local fishermen on both sides of the border over four days in June. Organised by the MRC Fisheries Programme in collaboration with the Cambodia National Mekong Committee and the Vietnam National Mekong Committee, participants spent a full-day visiting the two

Vietnamese border communes in Hong Ngu district including a local fish farm raising tilapia. The group later travelled by boat to the remote Cambodian border commune in Peam Chor district and ultimately the provincial capital of Prey Veng for a meeting to discuss concrete steps to boost fisheries cooperation. A recurring topic among the Cambodian fishermen was the desire to learn more about aquaculture techniques in Viet Nam. Among the Vietnamese participants, a common request was for more information about Cambodian fisheries regulations.

As a first step, the Cambodian and Vietnamese participants agreed that regular meetings between the Peam Chor and Hong Ngu district governors should include fisheries issues on the agenda. The district governors usually meet twice a year to discuss cross-border issues, with the first meeting this year taking place in March. The agreement for closer cooperation in sharing natural resources appears to have found resonance with local communities in Cambodia and Viet Nam. By



Vietnam National Mekong Committee Fisheries Coordinator Nguyen Van Bang, explain the geography of Thuong Thoi Hau B commune to Cambodians during an exchange visit to Dong Thap province on June 11

PHOTO: LEM CHAMNAP



Cambodians met with Vietnamese during an exchanged visit to Koh Sampouv commune in Prey Veng province on June 12

PHOTO: LEM CHAMNAP

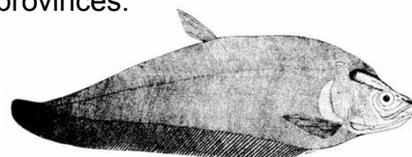
August, fisheries issues were also on the agenda of monthly meetings between commune officials on both sides of the border.

“A recurring topic among the Cambodian fishermen was the desire to learn more about aquaculture techniques in Viet Nam. Among the Vietnamese participants, a common request was for more information about Cambodian fisheries regulations”

Dr Malasri Khumsri, the fisheries governance and management specialist at the MRC Fisheries Programme in Phnom Penh, says the experience gained and lessons learnt from the project will be used to develop a roadmap for trans-boundary fisheries cooperation between Cambodia and Viet Nam starting next year. Cambodian and Vietnamese stakeholders are scheduled to

discuss the roadmap at a meeting in Siem Reap in October.

Since late last year, the MRC Fisheries Programme has also been facilitating the development of a new project for trans-boundary fisheries management between neighbouring Lao and Thai provinces. The new project is taking place in the uppermost stretch of the Lower Mekong Basin in the northern Lao province of Bokeo and the northern Thai province of Chiang Rai. A third consultation meeting to finalise the terms of reference for the project took place in Chiang Khong district in Chiang Rai province in August. To develop trans-boundary management mechanisms and plans, the meeting was also expected to discuss the design and framework of studies to identify gaps in fisheries information in the two provinces.

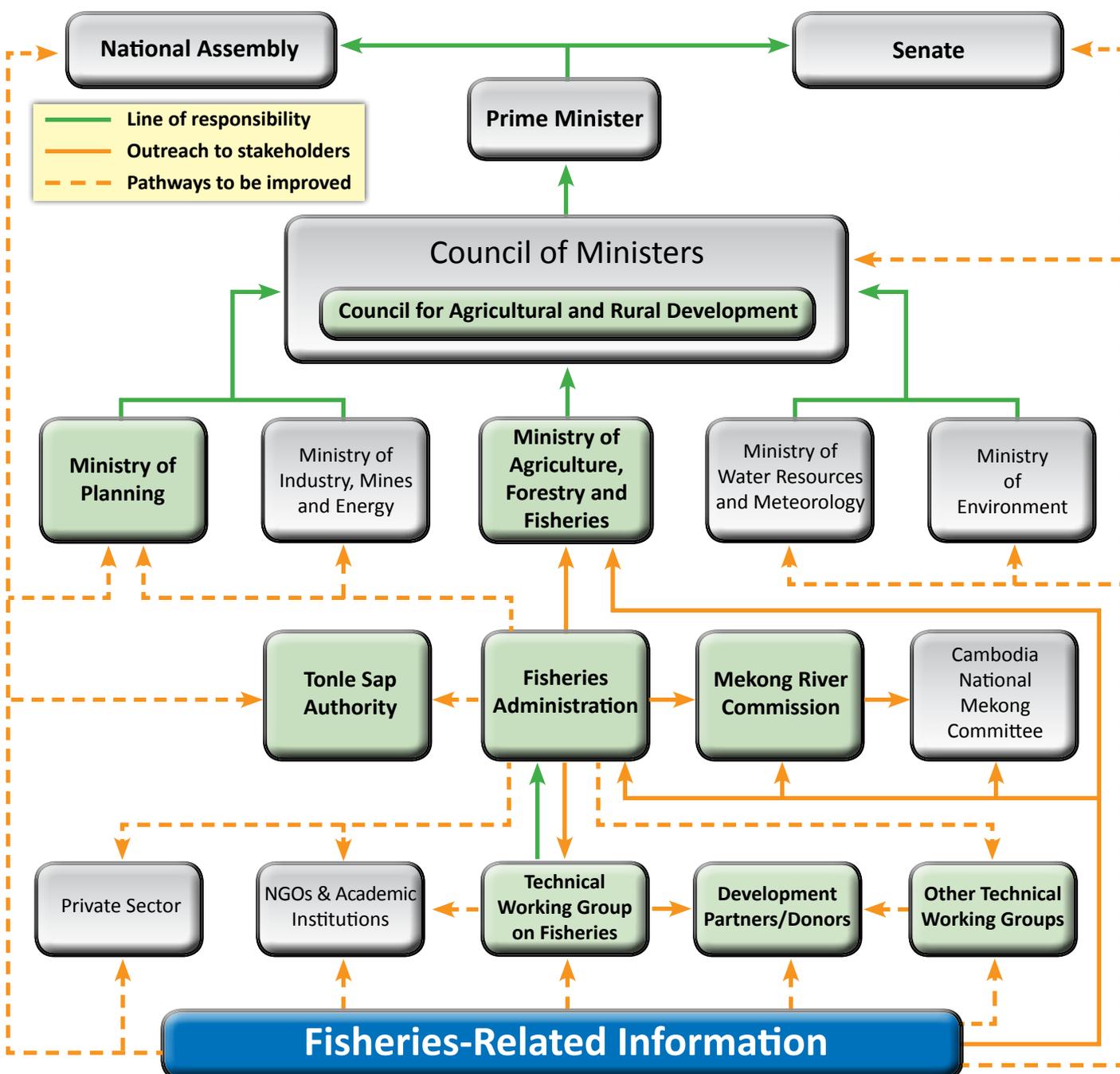


Pathways for fisheries-related information in Cambodia

A new study identifies the Fisheries Administration and the MRC Fisheries Programme as the two key institutional producers of fisheries-related information

questions are the topic of a fascinating new study* by Un Borin, a policy science research intern at the WorldFish Center's regional office in Phnom Penh. Presented to the inception workshop for a four-year Australian-funded research project in Phnom Penh in June (see box on opposite page), the study identified the Fisheries Administration of the Ministry of Agriculture, Forestry and Fisheries

Who produces fisheries related-information in Cambodia? Moreover, who uses it, how does it flow and what are the effective pathways? These



Four-year project launched to assess value of Cambodia's freshwater fisheries

Local and international fisheries scientists and economists gathered in Phnom Penh on June 21 for the inception of a major four-year research project to assess the value of freshwater capture fisheries in Cambodia. The project aims to address the underestimation of the freshwater fish catch in Cambodia.

The annual catch of up to 400,000 tonnes used to be valued at as little as \$200 million, based on fish prices of about 2,000 riel a kilogram. Higher price estimates of up to 10,000 riel a kilogram would value the annual catch as high as \$1,000 million. Funded by the Australian Centre for International Agricultural Research (ACIAR), the \$1.2 million project is being implemented by the WorldFish Center in Phnom Penh.

“More accurate valuations would allow freshwater fisheries resources to be better integrated into national plans and development strategies”

“More accurate valuations would allow freshwater fisheries resources to be better integrated into national plans and development strategies,” said Chris Barlow, the Canberra-based manager of the ACIAR Fisheries Programme. Dr Barlow, a former manager of the Mekong River Commission Fisheries Program in Phnom Penh and Vientiane, said research addressing constraints in value chains was among ACIAR's priorities, especially in Cambodia. “Cambodia itself is one of the ACIAR's focus countries in the Mekong and it constitutes a particularly relevant case study

for a valuation project since this is the country where fisheries contribute most to GDP and livelihoods,” he said.

Alan Brooks, director of the regional office of the WorldFish Center in Phnom Penh, added: “Assessments of the value of capture fisheries remains a neglected issue, as the Mekong River Commission acknowledged as recently as 2010.” According to Mr Brooks, “in addition to important economic value, fisheries play an important role in terms of food security and employment. Our project will also quantify these different values.”

The project plans surveys of fish prices and the relative value of fish in three ecological areas — the Tonle Sap in Pursat, the lowland floodplains in Takeo and the Mekong mainstream in Stung Treng. As well as improving national fisheries statistics, the project is developing a coordinated fisheries monitoring network between four universities in the lower basin.

The main partners are the Cambodian Agricultural Research and Development Institute (CARDI), under the Council of Ministers, and the Inland Fisheries Research and Development Institute (IFReDI), under the Fisheries Administration of the Ministry of Agriculture, Forestry and Fisheries. Other partners are the Royal University of Phnom Penh, the National University of Laos, Ubon Ratchatani University in Thailand and Can Tho University in Viet Nam.

The inception meeting for the project was co-chaired Thursday by Fisheries Administration Director-General Nao Thuok, CARDI Director Ouk Makara, Dr Barlow and Mr Brooks.



Royal University of Phnom Penh



National University of Laos



Ubon Ratchatani University



Can Tho University

(MAFF) and the Mekong River Commission Fisheries Programme as the two key institutional producers of fisheries-related information.

The Fisheries Administration, including the Inland Fisheries Research and Development Institute (IFReDI), produces statistics by province and on market trends as well scientific research and surveys. The study found that the administration's technical working group plays an "important role" in facilitating exchanges of information among government institutions, donors and non-governmental organisations. As for MRC, the Fisheries Programme has produced more than two dozen technical papers on Mekong fisheries over the past decade as well as three issues of *Catch and Culture* in English and one in Khmer every year for more generalised audiences.

“The administration’s technical working group plays an ‘important role’ in facilitating exchanges of information among government institutions”

Other institutional producers identified were the National Institute of Statistics (NIS) under the Ministry of Planning, which produces the national accounts and the monthly consumer price index, and the Rome-based United Nations Food and Agricultural Organization (FAO), which compiles fisheries statistics once a year and produces a report on world fisheries and aquaculture every two years. Other organisations were WordFish, based in Malaysia as part of a global research consortium, along with conservation groups such as Conservation International (CI), the Wildlife Conservation Society (WCS) and the World Wildlife Fund (WWF). There were also NGO alliances such as the Fisheries Action Coalition Team (FACT) based in Phnom Penh with branches in Siem Reap and Sihanoukville.

“Among development partners, bilateral donors from Australia, Denmark, the European Union, Japan and the United States were seen as primary users of the information”

Apart from MAFF, the study identified other government institutions as primary users of

fisheries-related information as being the Cambodian National Mekong Committee (CNMC) under the Council of Ministers and the Tonle Sap Authority which reports directly to the prime minister. Secondary users identified among government institutions were the Council for Agricultural Rural Development, also under the Council of Ministers, as well as the Ministry of Environment, the Ministry of Industry, Mines and Energy and the Ministry of Water Resources and Meteorology (whose minister represents Cambodia on the four-member Mekong River Commission Council).

Among development partners, bilateral donors from Australia, Denmark, the European Union, Japan and the United States were seen as primary users of the information. The Asian Development Bank (ADB), the United Nations Development Program (UNDP) and the World Bank were identified as secondary users. The FAO, on the other hand, was identified as a primary user along with a USAID-funded initiative known as the Helping to Address Rural Vulnerabilities and Ecosystem Stabilities (HARVEST) programme.

“Fisheries-related information is not yet fully conveyed to all potential users”

The study concludes that fisheries-related information is not yet fully conveyed to all potential users. In terms of formal channels, one notably weak link is with Cambodian lawmakers in the National Assembly and Senate. Other weak links are with academic institutions and the private sector. With formal links between ministries also weak, the study found that the technical working groups on fisheries and others on water, agriculture, environment, food security and nutrition were the “most preferred” way to convey information to all players. At the same time, the National Institute of Statistics was seen as the “most possible vector” for conveying fisheries information since it produces not only monthly data on consumer prices but also annual estimates of the country's gross domestic product.

* Un Borin (2012), *Stakeholders, Information Flow and Impact Pathways for Fisheries-Related Information in Cambodia*

In for the long haul

BY MERYL WILLIAMS AND MALASRI KHUMSRI *

The gender and fisheries network in the Lower Mekong Basin has achieved much since focal points were formed in 2000. The current challenge is to ensure that renewed interest leads to more substantive action.

The world's longest running gender and fisheries network, the Mekong Network for Gender Promotion in Fisheries Development (NGF), held its 13th annual meeting and field visits to women's groups for fish processing and aquaculture in Nongkhai in northeast Thailand in June. Developed out of workshops in Cambodia in the 1990s, the NGF formed as a federation of government-led national women in fisheries networks in the four lower Mekong River basin countries (Cambodia, Lao PDR, Thailand and Viet Nam). The Network is independent, owned by the government fisheries line agencies of MRC member countries and is supported by them and by the Mekong River Commission's Fisheries Programme. The NGF is a member of the Mekong Technical Advisory Body on Fisheries Management (TAB).

The NGF invited the MRC Fisheries Programme's national focal points to attend the NGF meeting in order to further strengthen the links between mainstream fisheries matters and gender issues. For the first time, NGF also invited the Asian Fisheries Society (AFS), the Network of Aquaculture Centres in Asia Pacific (NACA) and the Southeast Asia Fisheries Development Center (SEAFDEC) to take part.

The annual meeting, chaired by outgoing regional NGF coordinator Dr Amonrat Sermwatanakul, ornamental fisheries expert at the Thailand Department of Fisheries, was presented with an overview of gender mainstreaming in the MRC and an update on how the Network is promoting gender equality in the fisheries sector through the NGF as an informal knowledge network.

Achievements include creating better information on gender roles through research, data collection and surveys, strengthening the roles of the



A Thai woman catching fish with a hand-held lift net along the Mekong River in Nongkhai in June. Known as *sa doong* in Thai and *ka dung* in Lao, this type of gear is mainly used by women and children in Thailand and Lao PDR. In Cambodia, where they are called *chnnuok sre*, such nets are also mainly used by women and children. However, in Viet Nam, where they are known as *vó* nets, they are mainly used by men.

PHOTO: INTHIRA POMPATTANAPONG



Fish paste made by women's group in Nongkhai

PHOTO: INTHIRA POMPATTANAPONG

national gender focal points and women's roles in the generally male-dominated fisheries departments and providing space for cross-scale gender dialogue down to community and local groups. Each of the four national NGF focal points then provided a status report on national structures for promoting gender equality, sex-disaggregated data, activities in 2011-2012, plans for 2012-2013 and self-assessment of progress.

Some of the points that stood out from the four national presentations:

- Within countries, the gender and fisheries focal point and their activities are linked with the central units of the government responsible for delivery of national and international women/gender policies.
- The national units are operating with only small resources and have made progress through the commitment of the people running the units and support from mainstream managers and

programmes. Clearly, much more progress could be made with more resources.

- A high priority regional activity is to improve methods for collecting and analysing sex-disaggregated data, and then conduct basic data gathering and reporting work.
- Gender equity is a complex and sometime controversial subject, and gender mainstreaming is going to take a long time to achieve. Despite this, leaders in fisheries agencies generally recognise its importance but do not really understand the concept well enough to know what can be done in practice.
- The Network is enthusiastic to continue to work to secure more progress.

Established in 1997, the Cambodian network has been the longest running. Cambodian Fisheries Administration Deputy Director General Kaing Khim reflected on the lessons learned in gender

mainstreaming policies and strategies. Since 2008, the gender plans and strategies have been integrated with annual, mid-term (three to five year) and long term (10 year) plans, as well as with CamCode, the national adaptation of the Code of Conduct for Responsible Fisheries. Good progress has been made, she said, through solid policy and strategies and attention from senior leaders. But it is wrong to assume that real change is going to happen suddenly. Due to the sensitivity and complexity of the issues, unlimited time is needed to disseminate, coordinate, monitor and follow up regularly with agencies and projects/ programmes, Ms Kaing Khim said.

The Lao network was set up in 1999 at the Department of Livestock and Fisheries and the Living Aquatic Resources Research Centre (LARReC) under the Ministry of Agriculture and Forestry. Good progress has been made in areas such as developing a strategic plan for the Commission for the Advancement of Women (CAW) in 2011-2015 and capacity building for management on gender mainstreaming. Sex-disaggregated data has been updated in government agencies and the network has been

expanded with focal points at provincial, district and commune levels with notable success at the Nam Ngum fishing community.

In Viet Nam, the network was established in 1999. Most activities under the Committee for Advancement of Women in Fisheries of Viet Nam (CAWF) have been coordinated with other organisations and projects such as the Viet Nam Institute of Fisheries Economics and Planning (VIFEP) and Denmark's Fisheries Sector Programme Support (FSPS).

In Thailand, the director general of the Department of Fisheries has the role of chief gender equality officer while the gender focal point is responsible for the department's personnel division. The network has progressed considerably with the integration of three and five-year gender strategy and action plans into short and long-term national fisheries development plans. With budgets allocated for gender promotion activities, there has been wide dissemination of sex-disaggregated data, research, capacity building and support to women's economic activities. While women are well represented in government agencies,



Fish-flavoured rice crackers made by women's group in Nongkhai

PHOTO: INTHIRA POMPATTANAPONG

their role is not well defined at the community level where fisheries is still largely seen as a male domain, highlighting the need for women to participate more at the community level.

We should not expect that the current interest in gender in the fisheries sector will automatically translate into long term substantive action as the interest has waxed and waned in the recent past. A timeline of gender activities going back to the 1979 Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and its impacts in sectoral bodies and in countries showed examples of the ups and downs of interest. To date, we still know too little about what to do to make the sector more gender equitable. The current challenge is to ensure that the renewed interest leads to more substantive action.

* Dr Williams is the initiator of the Asia Pacific Fish Watch project at the Asian Fisheries Society and Dr Masari is the fisheries and governance specialist at the MRC Fisheries Programme

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Participants at the 13th annual meeting of the Mekong Network for Gender Promotion in Fisheries Development

PHOTO: INTHIRA POMPATTANAPONG

Catch and Culture



Deep pools in the Mekong: valuable and vulnerable fish habitats?

By ASHLEY HALLS *

Deep pools: value and vulnerability

Deep pools are common features of the Mekong mainstream and its tributaries in both alluvial and bedrock reaches. Already, more than 450 deep pools have been identified and mapped¹. Most deep pools have depths of between 15-20 m and areas of 10-15 ha. The deepest pools are between 80-90 m deep and found in the narrow bedrock reach between Mukdahan and Pakse; upstream of Luang Prabang; 50-100 km upstream of Vientiane and in the reach between the Khone Falls and just upstream of Kratie (see Figure 2 overleaf).

Whilst information concerning their ecological functioning remains sparse, deep pools are believed to be fundamental for sustaining the fisheries of the Lower Mekong basin (LMB), providing critical spawning and in particular refuge habitats for nearly 200 species.

Basin development activities, particularly mainstream dam construction, are viewed as a major threat to this reputed critical habitat. Proposed mainstream dams (see Figure 1 overleaf) could potentially deny fish access to deep pools and also alter flows and sediment transport causing deepening or filling of deep pools, ultimately affecting both the quality and

quantity of these habitats.

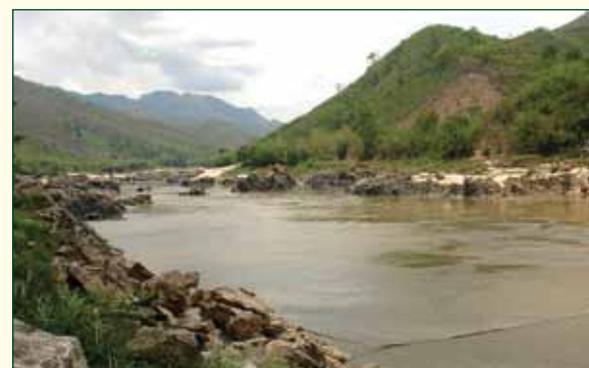
Over-exploitation and the use of illegal gear, particularly explosives, have also been identified as potential threats to these habitats. Deep pools have therefore become the focus of community or co-management efforts forming harvest reserves or fish conservation zones (FCZs)¹.

Fishers believe that pool depth is the most important factor affecting the quality of deep pool habitat for fish. Depth therefore forms the key selection criteria for establishing such reserves.

This policy brief reports the findings of a recent study that aimed to identify important characteristics of deep pools affecting their quality as refuge habitat for fish. These findings are examined in the context of basin development planning, conservation and fisheries management.

Recent study findings appear to challenge many of the prevailing beliefs concerning the value and vulnerability of deep pools as dry season refuge habitat for fish in the Mekong River.

This policy brief reports these findings and discusses their implications for management and basin development planning.



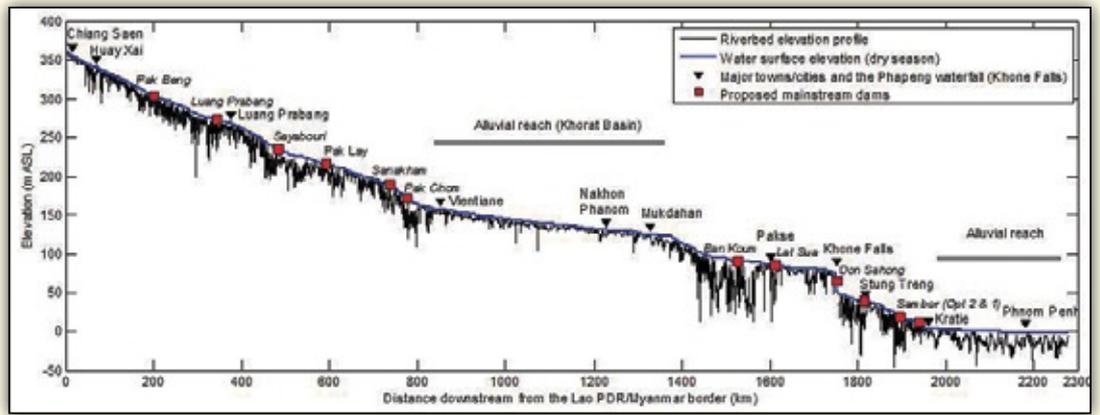


Figure 1 The location of proposed hydropower dams in relation to existing deep pools in the Lower Mekong riverbed

Identifying important pool characteristics

Attempts to identify important characteristics of deep pools for fish began with hydro-acoustic surveys in a sample of 30 deep pools in Cambodia and Lao PDR². A complex (non-linear) response between fish abundance and pool depth was identified although “operational problems” with the survey method, including the inability to discriminate between species of fish, were also reported. Other important deep pool characteristics or “attributes” that may be impacted by basin development activities—such as their size (area), substrate type, current velocity and pool geometry—were not examined.

Using more quantitative survey techniques, a recent study³ re-examined whether depth and other potentially important characteristics affect the quality of deep pools as dry-season refuge habitats for fish. The quality of deep pool habitats for fish was indicated by species richness, numerical and biomass density, and mean fish size (weight and length).

The fish fauna present in deep pools are likely to comprise two components: (i) a mobile component of species of fish that migrate through pools (from one pool to the next for feeding or reproductive purposes) and are therefore only temporarily present in the pool, and (ii) a static component which remains effectively stationary in a pool during the dry season but which may include species that undertake brief (diel) and short-distance (foraging)

migrations from the pool to adjacent areas, returning to the same pool.

Species belonging to the static component may need to shelter from the flow to conserve energy because of sub-optimal water quality, including high temperatures and low dissolved oxygen concentrations, or predatory species during the dry season.

The primary focus of the recent study was the identification of deep pool habitat characteristics important for the static component of the fish fauna termed deep pool species. However, habitat quality indicators for the two combined components were also examined. These two combined components were referred to as the fish fauna associated with deep pools.

Fishing Deep Pools

“Fishers exploit deep pools with up to 15 different gear types but commonly gillnets because of their cost, availability and efficiency. In Viet Nam, trawl nets are most commonly used but cast nets, hook and line and traps are also common. Catch rates from deep pools exhibit considerable monthly variation with peak catches occurring in December and April. These periods may correspond to refuge and spawning migrations of fish respectively”



Figure 2 The locations of the 30 deep pools included in the survey

Survey methods and results

In March 2008 and 2009, a total of 30 pools were surveyed for the study (Figure 2). March was selected for the survey because it is generally the month of the year when water levels are at their lowest and therefore when deep pools are most likely to be used as dry-season refuge habitats by the static component of the fish fauna. The selection of pools principally aimed to ensure wide geographical coverage of the basin but also aimed to include pools of different depths and substrate type.

Supervised by teams of enumerators, and with the permission of fisheries officers, local fishers were encouraged to fish each pool intensively. Using standard catch monitoring logbooks, the enumerators recorded daily the catches (number and weight) by species, maximum fish length, and fishing effort by gear type of every active fisher fishing within the deep pools (Figure 3). Variables describing the morphological, geometrical, hydrological and ecological characteristics of each pool were estimated (Figure 4).

The abundance (and biomass) of each fish species was estimated from the linear decline (depletion) in their catch rates with removals of fish from the pool. Species exhibiting significant declines in catch rates were judged to be deep pool species, the remaining species belonging to the mobile component.

The main findings

A static component was absent from six deep pools. Two of these six pools were located on the floodplain and therefore not strictly comparable to those in the mainstream. However, the remaining four pools were not atypical in terms of their characteristics.

In the remaining 24 pools, the static component comprised between one and 12 species of fish and shrimp (*Macrobrachium* species) representing between 3% and 30% of the species associated with deep pools.



Figure 3 Weighing and recording catches from a deep pool in Lao PDR

Overall, aggregations of fish of only 64, or less than 30%, of these 237 species reported in the survey exhibited significant depletion effects of fishing (removals), suggesting that only a relatively small proportion of fish present in deep pools remain stationary for any significant period of time (at least a month). The remaining species were judged to be mobile (non-resident) during the survey month.

The most common deep pool species were *Pangasius conchophilus*, *Mystus nemurus*, *Cyclocheilichthys enoplos*, *Henicorhynchus siamensis*, *Hypsibarbus malcolmi*, *Labeo chrysophekadion*, *Pangasius bocourti*, and *Rasbora tornieri*. One reputed deep pool species, *Boesemania microlepis*, was found to be resident in just one of the 13 deep pools where it was reported.

Pools in upstream locations (Lao PDR and Thailand) were found to contain fewer deep pool species than those downstream in Cambodia and Viet Nam. No other pool characteristics were found to be important in determining deep pool species diversity.

The biomass density of the static component of the fish fauna ranged less than 1 kg ha⁻¹ for a pool in Lao PDR to more than 130 kg ha⁻¹ for a pool in Viet Nam, but the observed variability could not be explained by the pool characteristics examined here including pool depth.



Figure 4 Measuring pool depth along transects using an echo-sounding device.

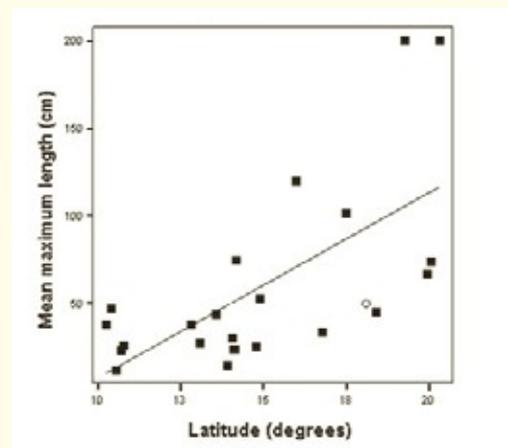
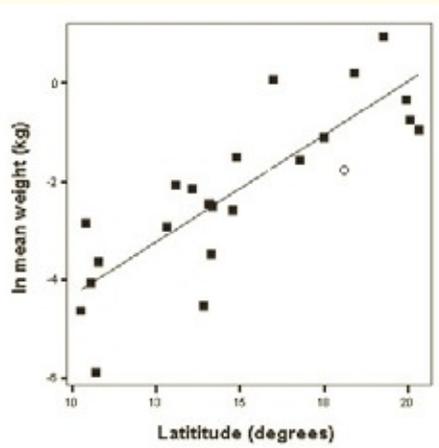


Figure 5 Log_e-transformed mean fish weight (left) and mean maximum fish length (right) plotted as a function of latitude with fitted regression model. Open circles are floodplain pools omitted from the regression.

Management

“Relatively few species appear to use deep pools as refuge habitat...”

“...there appears to be no simple criteria with which to select or prioritise pools for management”.



Numerical density ranged from 4 to more than 5,000 fish per hectare and was found to decline linearly with latitude but no other pool characteristics were found to be important including pool depth. Another important finding of the study was that the

mean size (weight and length) of deep pool species increases with latitude (i.e. distance upstream). Larger species of fish were also found to be more common further upstream (Figure 5).

Policy and management implications

These recent study findings appear to challenge many of the prevailing beliefs concerning the value and vulnerability of deep pools as dry-season refuge habitats for fish in the Mekong River. Relatively few species appear to use deep pools as refuge habitats for an extended period of time (at least one 1 month)—typically only 10 % of the species present at each location. This proportion is greater in downstream locations. Observed differences in the biomass density of fish seeking refuge in the pools could not be explained in terms of simple pool characteristics such as depth, substrate or pool geometry. However, pools in upstream locations were found to contain larger individuals and larger species of fish. Fish may progressively distribute themselves further upstream as they mature and grow, possibly to improve their spawning success and feeding opportunities. Large-bodied species have a greater capacity to migrate long distances compared to small-bodied species. No evidence was found to suggest that deep pools are overexploited. Community-based management efforts based around deep pools are therefore likely to benefit only a small proportion of species caught from deep pools. There appears to be no simple criteria with which to select or prioritise

pools for management.

Given the apparent insensitivity of the selected habitat quality indicators to the observed variation in deep pool characteristics, it is unlikely that potential changes to deep pool morphology and hydrology caused by dam construction would have a significant impact on this reputedly important refuge habitat. However, maintaining the availability of deep pools for the benefit of those species that do utilise these features for refuge should be sought by basin planners. Indeed, deep pools may also provide important habitats for more migratory species by providing temporary resting places from the river flow during long distance migrations. Management and conservation efforts aimed at protecting deep pool habitats downstream would appear to be a priority for protecting diversity in the basin. In addition, protecting access to deep pool habitats upstream is likely to be a priority for protecting and conserving large and therefore more fecund individuals that make a disproportionately greater contribution to the spawning stock of populations, as well as large, valuable migratory species.

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The challenge of sustaining a commitment

BY NGOR PENG BUN AND HENG KONG *

Illegal fishing and bamboo poaching threaten the viability of a community fishery in eastern Cambodia

Established in 2004, the “29 November Community Fishery” is in Peus I commune in Kroch Chhmar district in Kampong Cham province in eastern Cambodia. The commune comprises five villages and covers an area of 3,345 ha including 2,379 ha of cultivated land and 465 ha of flooded land. The rest is used for homes (362 ha), dry-season rice fields (129 ha) and gardens (10 ha).

About 25 percent of the commune’s population of 2,055 relies directly on fishing. The rest are engaged in farming-related activities, especially in the dry season when Mekong water levels recede. The most common crops are cassava, corn, tobacco and beans. The commune is still relatively rich in flooded forests and the annual flood creates

favourable conditions for fisheries. The commune has seven lakes covering about 110 ha.

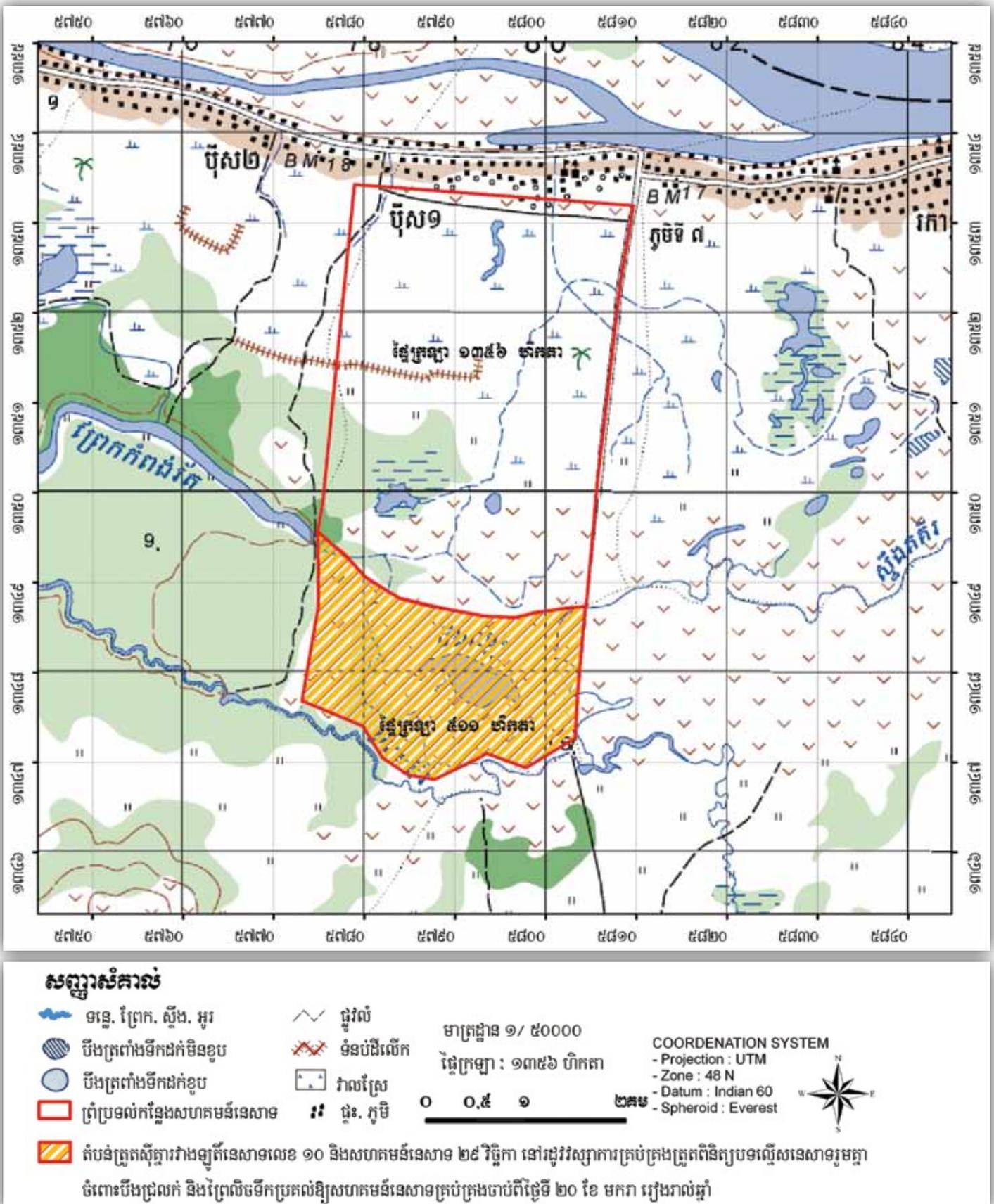
The community fishery was set up with technical assistance from the Fisheries Department, as it was then known, and financial support from Oxfam Great Britain through a local non-governmental organisation known as Human Rights Vigilance of Cambodia. In the late 1990s, serious conflicts occurred between villagers and the owner of Fishing Lot No 10 who gained control over almost all of the commune’s productive fishing grounds. After fisheries reforms in 2000, part of the fishing lot was released for common access, leading to the establishment of the community fishery.

Covering an area of 1,356 ha, the community fishery supports 397 households in the five villages. The main occupations of members are farming and fishing-related activities. About 25 percent of members rely entirely on fishing and fishing-related activities in the area, which is



Fisherman working on a boat on the shore of Boeung Chrolouk Lake in Peus I commune in Kroch Chmar in Kampong Cham province

PHOTO: NGOR PENG BUN



The boundary of the “29 November Community Fishery” is in red. The area shaded orange, overlapping with Fishing Lot No 10 and covering 511 ha, is used for joint patrols of the lake and flooded forest with management by the community fishery starting in January every year. The unshaded area inside the red boundary, covering 1,356 ha, became open access fishing grounds after fisheries reforms in 2000.

MAP: FISHERIES ADMINISTRATION

largely influenced by the Mekong flood regime. The community fishery has progressed well in terms of fisheries management, conservation and development as well as protecting the flooded forests which are mainly bamboo. Villagers, particularly community fishery members, now have free access to fishing grounds. They can fish without being intimidated or having to pay the fees that were imposed by the fishing lot. Villagers say they enjoy higher prices for their fish products.

To protect the resources, three patrol teams have been set up, each with at least seven persons. Equipped with a patrol boat provided by the NGO, teams, have been cracking down on illegal fishing in cooperation with fisheries officers and commune authorities. Illegal gear has included electro-fishing equipment, mosquito net fences and traps as well as brush parks. The patrols also play a critical role in protecting flooded forests, especially bamboo.

Two lakes within the bamboo forests now have conservation zones. Boeung Chrolouk has an area of about 50 ha and Boeung Chong Cheu Teal covers about 10 ha. With technical assistance from the Fisheries Administration and financial support from Danida, DFID and NZaid, 30 wooden poles were installed to demarcate the area in Boeung Chrolouk. Twenty concrete cylinders were also put in place to prevent illegal fishing and poaching.

In addition to the conservation zone, Boeung Chrolouk has 23 Muslim households who make their living from fishing and fish farming. Each household has at least one fish cage, farming catfish (*Pangasius* spp.) or the marbled sleeper (*Oxyeleotris marmorata*), a highly-prized species in the export market for live fish. The Muslim households are members of the community fishery. Their dwellings move back and forth in accordance with the seasonal floods. During the dry season, they live in the bamboo forests along the shore of the lake.

The NGO provided seed grants to community fishery members, helping them to set up a savings and credit group in 2006. Within four years, there were three sub-saving groups with about 20 members each. Micro-credit is essential to diversify livelihoods. The Fisheries Administration has meanwhile provided training to community fishery members in fields such as fisheries

laws and guidelines, community leadership, communication skills and problem-solving skills.

The community fishery established a mechanism to obtain monetary contributions from traders who buy fish and fish products from members. A levy of 100 riel (2.5 cents) is charged on each kilogram sold, with the money used to support daily patrols as well as meetings and other activities of the community fishery. The money is also used to support members of the community fishery committee, whose numbers fell from eight in 2006 to six in 2010.

The community fishery is now well known for its rich flooded forest resources, which were previously devastated. Saman Tort, the head of the community fishery, said some 500 ha of flooded forests are in relatively good condition following a recovery from heavy exploitation of bamboo shoots and trees as well as forest clearance to expand farmlands. He said every fishing household spent at least 200,000 riel (\$50) each season to buy bamboo to build fishing gear, rafts to support their floating houses and fish cages. Villagers can otherwise access bamboo resources for free.

According to the community fishery committee, people cared little about the long-term sustainability of fisheries resources after common access came to Fishing Lot No 10. Rich people had larger and more effective fishing gear, leaving the poor to derive little benefit from the larger fishing grounds. Under by-laws and regulations of the community fishery, access to the fishing grounds by subsistence fishers is now fairly equitable.

Moreover, Muslim members of the community fishery who fish full time recalled having to pay an access fee of \$100 each season to the owner of Fishing Lot No 10. Most had to borrow from local money lenders to pay the fee. Charged relatively high rates of interest, they ended up selling most of their catches to repay the loans, leaving little for home consumption. If people were unable to fish because of illness, broken fishing gear, poor weather or changes in the flood regime, households would be unable to harvest enough fish and fall deeper into debt, sometimes for years.

With the community fishery, access to fishing



Preparing harvested bamboo to make household products

PHOTO: NGOR PENG BUN

grounds is free. Catches are now used for home consumption with the surplus either sold fresh or processed into products such as fish paste (*prahoc*), fermented fish (*pa-ork*), salted fish (*trey pra lak*) and smoked fish (*trey cha'aor*). This has improved household nutrition. Sales of surplus fish by subsistence fishers can generate 12,000 riel (\$3) to 20,000 (\$5) a day. Depending on the size and number of fish cages, Muslim households can earn an additional 400,000 riel (\$100) a year from farming fish. Some have been able to accumulate savings to expand their cage farming, buy motorcycles and other household materials as well as send their children to school.

The community fishery savings system has also allowed members to borrow money at mutually-agreed interest rates to diversify their livelihoods. The affordable loans have been used to set up a grocery store, raise poultry, farm fish and buy fishing gear, fertiliser, seeds and pesticides.

The fee levied on fish purchases by traders generates about 500,000 (\$125) a year which helps to cover meals and gasoline costs for those doing the patrols.

The clearing of flooded forest is a major challenge. In recent years, the harvesting of bamboo shoots and trees has been increasing but is not as intense as in the period before the community fishery was formed. Such illegal practices seem to reflect external forces. Demand for crops such as cassava, tobacco, corn and beans are encouraging villagers to expand farmlands by clearing forests to increase crop yields.

Bamboo shoots are also in strong demand, not only among consumers in Kampong Cham province but also among people in Phnom Penh and elsewhere in Cambodia. Mr Sman Tort says poaching of bamboo shoots is a big concern for the community fishery. Traders, usually outsiders, typically come on a daily basis to buy bamboo

shoots in at least two trucks with capacities of 2-3 tonnes. The peak season for poaching is usually between late April and June with the onset of the wet season. In 2008, the community fishery banned the trucks from entering the villages. The traders, however, simply parked their trucks outside the villages and waited for poachers to approach them. Mr Sman Tort estimated that at least 15,000 bamboo shoots were being cut daily during the peak season. If they were allowed to grow into trees over two or three years, each tree would be worth about 3,000 riel (75 cents), meaning that the community fishery is losing 45 million riel or \$10,000 a day to poachers. Bamboo shoots are sold locally for 1,500 riel (37 cents) to 2,000 riel (50 cents) a kilogram. In the market, a kilogram can fetch 4,000 riel (\$1) to 6,000 riel (\$1.5).

Property and access rights governing the harvesting of bamboo products and clearing flooded forest seem to be weak. In some cases, regulations are not enforced, especially when such activities are on a small scale. Some villagers cut bamboo trees for personal use without informing the community fishery. Villagers from both within the commune and other communes in Kroch Chmar district cut down trees in flooded forests for fuel or other purposes. In addition difficulties in enforcing community fishery by-laws and internal rules, problems are compounded by the failure of commune police to crack down on poachers and other offenders. With the ending of NGO support, members of patrol teams have meanwhile become less committed. These factors, along with the commune's remote location, have made the area vulnerable to illegal fishing in the lakes.

Drought is another challenge. During the drought of 2010, Boeung Chrolouk became very shallow, as little as 20 cm in some areas. Daytime water temperatures became very hot, making it difficult for some aquatic animals to survive. Fish cage farmers along the shore of lake had to sell their fish early because of the poor water quality.

The flooded forest resources are still in relatively good condition including the bamboo. The shoots can be sold fresh or preserved while the trees can be used to make anything from fishing gear, furniture and construction materials to toothpicks and chopsticks. Huge incomes can be generated from bamboo forests. With the fading



Harvested bamboo and fish traps

PHOTO: NGOR PENG BUN

commitment of members of the community fishery committee and patrol teams, however, their future is uncertain. If access to the bamboo forests remains unregulated, they could fall victims to "the tragedy of the commons", a term to describe what happens when all resource users maximise short term profits without worrying about the long-term negative impacts on the environment or resources uses including themselves. To ensure long-term use of the resources, proper access rights should be applied and enforced. In addition, the community fishery should be given incentives for managing and conserving these resources in order to ensure its sustained benefits for all in the future.

** Mr Ngor Peng Bun is the capture fisheries specialist at the MRC Fisheries Programme and Mr Heng Kong is a member of the monitoring and evaluation team at the Cambodian Fisheries Administration*

Prime minister outlines cooperation measures to protect fisheries resources

Abolishing Cambodia's century-old fishing lot system increases importance of public cooperation

On March 8, Cambodia's Prime Minister Hun Sen announced that the fishing lot system established by the French in 1908 was being abolished to return the freshwater fisheries domain to the people (see *Catch and Culture* No 18, Vol 2). At the Tenth National Fish Day ceremony at Boeung Thom Reservoir in Krochmar district in Kampong Cham province on July 1, the prime minister reaffirmed his appeal in March for people to cooperate in seven specific areas to protect the nation's fisheries resources (see opposite page).

"No matter where they are, from now on, people all over the country, are true masters of the country's natural resources," he said. "While strengthening community fisheries, however, let me remind you that those appointed to be community heads must not misuse their appointments to allow private contractors to fish."

In a separate address, Agriculture, Forestry and

Fisheries Minister Chan Sarun said Cambodia's aquaculture production grew by about 20 percent in 2011. The volume of farmed freshwater fish and prawns was estimated at 72,000 tonnes last year, up from an estimated 60,000 tonnes in 2010. During the same period, hatchery production grew from 111 million fingerlings to 130 million fingerlings.

Dr Chan Sarun also noted that Cambodia now has 61,000 households engaged in farming freshwater species such as silver barb, common carp, catfish, snakeskin gourami, climbing perch and giant freshwater prawns. The country also has 280 hatcheries of which 267 are being run by villagers with technical support from the Fisheries Administration. In 2011, he said, 350 fisheries technicians and 15,000 farmers received training in growing techniques.

The minister also noted that Cambodia now has 516 community fisheries covering 156,000 households and 332,000 people. Of the total, he said, 447 community fisheries are in freshwater areas.



This year's National Fish Day was held in a Muslim majority area

PHOTO: CHHUT CHHEANA

1. Illegal fishing gear

"Forbidden fishing gear especially includes electro-fishing equipment and small-mesh nets," Prime Minister Hun Sen said in his July 1 address. "Electrocution is a very dangerous way of catching fish and will lead to the depletion of our aquatic animal resources. I am begging our people not to use this kind of gear to catch aquatic animals."

2. Fishing in the closed season

During the spawning period for many species, large and medium-scale fishing is banned from June to September upstream from Phnom Penh and from July to October downstream from the capital. "Small-scale fishing with hooks is allowed. Refraining from doing so, however, will allow fish populations to recover," the prime minister said. "We should wait until they are more fully grown to catch them when the cold breeze comes from the north. We may eat one fish full of eggs now but we will have tens of thousands of fish if we let populations recuperate."

3. Flooded forests

"Wherever we can, more flooded forest must be conserved and replanted. Destroying the flooded forest to replant it makes no sense."

4. Conservation areas

Samdech Hun Sen urged people, including members of community fisheries, to report "crooked officials and people whose actions destroy conservation areas" to the authorities. "These are your natural resources and they are for you who reside here and depend on for your livelihood," he said.



Some of the fish before their release

PHOTO: LEM CHAMNAP



Prime Minister Hun Sen and First Lady Bun Rany release fish and other aquatic animals into Boeung Thom Reservoir on July 1

PHOTO: LEM CHAMNAP

5. Fish habitats

People were also asked to stop growing lotuses in lakes and other water bodies while making sure earthworks and construction did not damage fish habitats. "In the district of Pearaing in Prey Veng province, there was recently a case where people planted lotuses in an entire lake," the prime minister said. "Once the lotus population grows, the fish population will decrease as fishes without scales cannot live in such habitats."

6. Conflict over water uses

"People from anywhere can fish. We must share the resources. They are for everyone. So far, conflicts of interests between dry-season rice farmers and fishermen have been resolved in some instances. Each village will have to come up with its own decision if they want to fish or to keep water for dry-season rice."

7. Aquaculture and conserving large species

In 2011, the prime minister noted that 61,000 households produced about 72,000 tonnes of fish and giant prawns, up 20 percent from a year earlier. The country now had 267 nurseries breeding an estimated 130 million fingerlings and juvenile prawns a year. It also had 738 fish sanctuaries in rice fields.

Foreign ministers endorse two-track approach for Mekong cooperation

Following an initiative by Japan in 2007, foreign ministers from Japan, the United States and South Korea are now all holding regular talks with their counterparts from the four MRC members and Myanmar. A broader group, which also includes ministers from Australia, the European Union and New Zealand, recently held its second meeting in Phnom Penh.

Foreign ministers from the Mekong region, its key development partners and the Asian Development Bank have endorsed a two-track approach to regional cooperation while agreeing in principle to a new study to strengthen the science and technical capacity of the Mekong River Commission.

The endorsement and agreement came during a meeting of ministers from the US-led Friends of the Lower Mekong group on the sidelines of the annual meeting of ASEAN foreign ministers in Phnom Penh on July 13. The group, which was inaugurated at the annual ASEAN meeting in Bali in 2011, initially comprised Australia, Japan, South Korea, New Zealand, the European Union, the United States and the ADB along with MRC members Cambodia, Lao PDR, Thailand and Viet Nam. At the Phnom Penh meeting, Myanmar joined as well.

In a joint statement, the ministers affirmed that the group was important for improving coordination and avoiding duplication of regional aid



US Secretary of State Hillary Clinton with Australian Foreign Minister Bob Carr at the Second Friends of the Lower Mekong Ministerial Meeting in Phnom Penh on July 13

PHOTO: US DEPARTMENT OF STATE



Cambodian Foreign Minister Hor Namhong during the annual ASEAN Ministerial Meeting and related meetings in Phnom Penh in July

PHOTO: THE CAMBODIA HERALD

programmes and said the new two-track structure would complement existing cooperation.

“The agenda could be expanded to include discussion of non-traditional security issues which are transnational in nature and affect the stability and resilience of the Lower Mekong countries”

“The first track is to be dialogue among partner countries development agencies, and the multilateral development institutions,” the statement said. This would “expand information sharing, support efforts to strengthen partner country ownership of regional assistance.” It would also “encourage emerging supporters of the Lower Mekong region to endorse shared principles and standards of results, accountability, and transparency.”

Track Two will be an annual policy dialogue between foreign ministers and senior officials, with donor agencies being party to the discussions where necessary. “The agenda could be expanded to include discussion of non-traditional security issues which are transnational in nature and affect the stability and resilience of the Lower Mekong countries,” the statement said. Such issues could be environmental degradation, climate change, health risks, infrastructure development, anti-trafficking efforts, and migration “as well as other issues which affect human security.”

The statement highlighted the need to “strengthen the science and technical capacity of the Mekong River Commission.” The ministers urged Mekong countries to “continue working together to jointly manage the shared water resources of the basin in an open and transparent manner for the benefit of the people.” They also pledged to “continue their close collaboration with MRC on these issues and to cooperate, in principle, in supporting the MRC study on the sustainable management and development of the Mekong River, pending satisfactory completion of the terms of reference.”

US announces \$50 million in new aid

As part of Lower Mekong Initiative launched in 2009 (see *Catch and Culture*, Vol 16 No 2), US Secretary of State Hillary Clinton announced the same day \$50 million in new funding for various Mekong programmes including fisheries. Clinton also announced that the United States was prepared to commit up to \$1 million “to support the commission studies on sustainable management and development of the Mekong River.”

“USAID assistance will promote an improved, science-based understanding of the status and trends in fisheries and aquaculture management”

To improve sustainable fisheries management, climate change adaptation, and rural livelihoods USAID will provide a grant to “strengthen the capacity of the MRC Secretariat, riparian



US Secretary of State Hillary Clinton addresses the Friends of the Lower Mekong Ministerial Meeting in Phnom Penh on July 13

PHOTO: US DEPARTMENT OF STATE

Mekong development increasingly seen as foreign policy issue

When Cambodia hosted the first summit of leaders from the Greater Mekong Subregion (GMS) with the president of the Asian Development Bank (ADB) in Phnom Penh in 2002, it was agreed that such meetings should take place every three years. The second GMS summit grouping Cambodia, China, Lao PDR, Myanmar, Thailand and Viet Nam duly took place in Kunming in 2005 while the third was held in Vientiane in 2008.

In between these triennial summits, the GMS programme launched in 1992 rolled on with subregional activities in various sectors of the six countries including agriculture and the environment. These are overseen by annual meetings of finance ministers from the ADB member countries in much the same way as Mekong River Commission programmes are overseen by annual meetings of environment and water resources ministers from Cambodia, Lao PDR, Thailand and Viet Nam. The MRC itself hosted the first summit of leaders from the member countries in Hua Hin in 2010.

“The first Mekong-Japan Summit followed the launch of the Japan Mekong Region Partnership in 2007 and an inaugural Mekong-Japan Foreign Ministers Meeting in 2008”

Yet the ADB and the MRC are not the only institutions through which Mekong leaders



First Mekong-Japan Summit in Tokyo on November 7, 2009

PHOTO: CABINET OFFICE, PRIME MINISTER OF JAPAN



Prime Minister Yukio Hatayama hosting the inaugural Mekong-Japan Summit in Tokyo in 2009

PHOTO: CABINET OFFICE, PRIME MINISTER OF JAPAN

meet. In 2009, designated as the Mekong-Japan Exchange Year Japanese Prime Minister Yukio Hatayama hosted the first summit with leaders from Cambodia, Lao PDR, Myanmar, Thailand and Viet Nam. The first Mekong-Japan Summit followed the launch of the Japan Mekong Region Partnership in 2007 and an inaugural Mekong-Japan Foreign Ministers Meeting in 2008. Several meetings of Mekong and Japanese leaders have since taken place with the Fourth Mekong-Japan Summit held in Tokyo in April this year.



Also in its fourth year is a separate initiative launched by United States Secretary of State Hillary Clinton at the annual meeting of ASEAN foreign ministers in Phuket in 2009. The Lower Mekong Initiative was initially limited to the foreign ministers of Cambodia, Lao PDR, Thailand and Viet Nam. At the latest meeting

on the sidelines of the annual gathering of ASEAN foreign ministers in Phnom Penh in July, Myanmar formally joined the initiative.



US Secretary of State Hillary Clinton arrives in Thailand in 2009. During the visit, she launched America's Lower Mekong Initiative at an inaugural meeting with foreign ministers from Cambodia, Lao PDR, Thailand and Viet Nam in Phuket on July 23.

PHOTO: DEPARTMENT OF STATE

Two things are clear. The first is that summits of Mekong leaders are now taking place much more frequently than was envisaged when the first GMS summit was held in Phnom Penh a decade ago. The second is that the development of the Mekong region is increasingly being seen as a foreign policy issue, not simply a matter of

economic policy, environment policy or water resource policy.

South Korea became the latest country to engage the region when it hosted the First Mekong-Korea Foreign Ministers Meeting in Seoul last year. The Americans have meanwhile launched its Friends of the Lower Mekong group with foreign ministers from the Mekong countries as well as Australia, the European Union, Japan, Korea and New Zealand along with the ADB. At the group's second meeting in Phnom Penh in July, selected non-governmental organizations were invited as well.



South Korean Foreign Minister King Sung-Hwan hosted the First Korea-Mekong Foreign Ministers Meeting on October 27-28 last year

PHOTO: YONHAP NEWS AGENCY

Year	Meeting	Location	Participants
2002	First Greater Mekong Sub-region Summit (ADB)	Phnom Penh	CN-KH-LA-MM-TH-VN
2005	Second Greater Mekong Sub-region Summit (ADB)	Kunming	CN-KH-LA-MM-TH-VN
2008	First Mekong-Japan Foreign Ministers Meeting	Tokyo	KH-LA-MM-TH-VN + JP
2008	Third Greater Mekong Sub-region Summit (ADB)	Vientiane	CN-KH-LA-MM-TH-VN
2009	First Lower Mekong Initiative Ministerial Meeting	Phuket	KH-LA-TH-VN + US
2009	Second Mekong-Japan Foreign Ministers Meeting	Phuket	KH-LA-MM-TH-VN + JP
2009	First Mekong-Japan Summit	Tokyo	KH-LA-MM-TH-VN + JP
2010	First Lower Mekong Basin Summit (MRC)	Hua Hin	KH-LA-TH-VN
2010	Second Lower Mekong Initiative Ministerial Meeting	Hanoi	KH-LA-TH-VN + US
2010	Third Mekong-Japan Foreign Ministers Meeting	Hanoi	KH-LA-MM-TH-VN + JP
2010	Second Mekong-Japan Summit	Hanoi	KH-LA-MM-TH-VN + JP
2011	Fourth Mekong-Japan Foreign Ministers Meeting	Bali	KH-LA-MM-TH-VN + JP
2011	Third Lower Mekong Initiative Ministerial Meeting	Bali	KH-LA-TH-VN + US
2011	First Friends of Lower Mekong Ministerial Meeting	Bali	KH-LA-TH-VN + AU-EU-KO- NZ-US + ADB
2011	First Mekong-Korea Foreign Ministers Meeting	Seoul	KH-LA-MM-TH-VN + KO
2011	Fourth Lower Mekong Initiative Ministerial Meeting	Bali	KH-LA-TH-VN + JP
2011	Third Mekong-Japan Summit	Bali	KH-LA-MM-TH-VN + JP
2012	Fourth Greater Mekong Sub-region Summit (ADB)	Naypyidaw	CN-KH-LA-MM-TH-VN
2012	Fourth-Mekong-Japan Summit	Tokyo	KH-LA-MM-TH-VN + JP
2012	Fifth Mekong-Japan Foreign Ministers Meeting	Phnom Penh	KH-LA-MM-TH-VN + JP
2012	Fifth Lower Mekong Initiative Ministerial Meeting	Phnom Penh	KH-LA-MM-TH-VN + US
2012	Second Mekong-Korea Foreign Ministers Meeting	Phnom Penh	KH-LA-MM-TH-VN + KO
2012	Second Friends of Lower Mekong Ministerial Meeting	Phnom Penh	KH-LA-MM-TH-VN + AU-EU- KO-NZ,-US + ADB + NGOs

US, Japan and South Korea jointly promote aid effectiveness in the Mekong region

The United States, Japan and South Korea have resolved to focus on the Mekong region as they work together to promote aid effectiveness. The agreement was reached during a meeting between US Secretary of State Hillary Clinton, Japanese Foreign Minister Koichiro Gemba and South

Korean Foreign Minister Kim Sung-hwan in Phnom Penh on July 12. “Ministers resolved to coordinate to promote the effectiveness of development assistance around the world, with a particular focus on the Mekong region via the Friends of the Lower Mekong framework,” a joint statement said.



US Secretary of State Hillary Clinton, South Korean Foreign Minister Kim Sung-hwan and Japanese Foreign Minister Koichiro Gemba in Phnom Penh on July 12

PHOTO: US DEPARTMENT OF STATE

government fisheries agencies and research institutes,” the State Department said.

“USAID assistance will promote an improved, science-based understanding of the status and trends in fisheries and aquaculture management, address fisheries and other trans-boundary impacts of major development projects, such as mainstream hydroelectric dams, and support regional and national dialogue on sustainable fisheries within a basin-wide Integrated Water

Resource Management framework.”

In her remarks to other ministers at the Friends of the Lower Mekong meeting, Clinton emphasised the importance of supporting the MRC. “The Mekong River Basin is one of the world’s most productive ecosystems. It’s really a miracle of the way it operates in this region. Millions—tens, hundreds of millions of people—depend directly or indirectly on it for their livelihoods.

“But it is also extremely vulnerable to the effects of climate change and infrastructure development. That’s why it’s important that national and regional strategies be based on sound scientific assessments of any impact that could be forthcoming. The United States believes that the Mekong River Commission is the best forum for facilitating these assessments,” she said.

Flourishing future with Japan

At a separate meeting on July 9, foreign ministers from five Mekong countries and Japan reaffirmed their resolve to boost cooperation and adopted an action plan to realise a vision outlined by leaders at the Fourth Mekong Japan Summit in Tokyo on April 21. A joint statement by Cambodia and Japan release in Phnom Penh said issues of common interest included “the progress and the future direction of the Mekong-Japan cooperation.”

“Concrete actions and measures are grouped under the three pillars of enhancing Mekong connectivity, developing together and ensuring human security and environmental sustainability”

Japan and the Mekong countries “reaffirmed their determination to further strengthen the Mekong-Japan cooperation,” the joint statement said, adding that ministers “also exchanged views on regional and global issues of common concern.”

In addition, the ministers adopted an action plan to realise the “Tokyo Strategy 2012” which leaders of the five countries adopted in April. Concrete actions and measures are grouped under the three pillars of enhancing Mekong connectivity, developing together and ensuring human security and environmental sustainability. Under the latter, Japan and the Mekong region countries agreed to “cooperate for a study on sustainable management and development of the Mekong river, including on the impact of mainstream hydropower projects.”

At the same time, Japan and the Mekong countries agreed to implement “steadily and expeditiously” their action plan for a “Decade Toward a Green Mekong” and revise the plan if necessary. Japan also vowed to “continue to support water resource

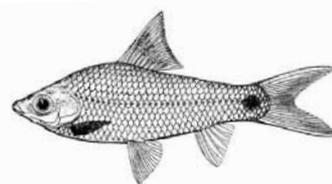
management” by dispatching experts to the Mekong River Commission.”

The joint statement said ministers recognised the overall action plan would contribute to a new partnership for a “common flourishing future” between the Mekong and Japan. They also “shared the view that the speedy and effective implementation of the action plan would bring about further development and prosperity in the Mekong Sub-region.”



Lao Prime Minister Thongsing Thammavong, Myanmar President Thein Sein, Cambodian Prime Minister Hun Sen, Japanese Prime Minister Yoshihiko Noda, Thai Prime Minister Yingluck Shinawatra and Vietnamese Prime Minister Nguyen Tan Dung feeding “koi” ornamental carp on the eve of their summit meeting in Tokyo on April 21

PHOTO: CABINET OFFICE, PRIME MINISTER OF JAPAN



Head of Cambodian research institute named Fisheries Programme coordinator

For the first time in its 17-year history, the Mekong River Commission has named a fisheries biologist from a member country to serve in a management position at the secretariat

The Mekong River Commission has appointed senior Cambodian fisheries biologist So Nam as Fisheries Programme coordinator at the office of the secretariat in Phnom Penh. He succeeds Xaypladeth Choulamany, a senior Lao agricultural economist who left the programme in January to return to Vientiane where he is now Director General of the Department of Planning, International Cooperation and Investment of the Ministry of Agriculture and Forestry (see *Catch and Culture* Vol 18, No 1).

Dr So Nam was previously the director of the Inland Fisheries Research and Development Institute (IFReDI) of the Fisheries Administration of the Cambodian Ministry of Agriculture, Forestry and Fisheries. Before that, he was co-founder and Director of Cambodia's Marine Aquaculture Research and Development Centre (MARDeC) and a deputy director of IFReDI. During this period, he also served as adjunct professor at the Royal University of Agriculture in Phnom Penh and contributed to the revision of Cambodia's fisheries law.

For almost 20 years, Dr So Nam has been working in the four countries of the Lower Mekong Basin and Europe. He joined the Cambodian Department of Fisheries as national fisheries and aquaculture extension coordinator after graduating from the Royal University of Agriculture with a B. Sc. in fisheries science in 1994. Two years later, he moved to Europe where he began research into the development of androgenetic catfish strains from Africa at University of Ghent in Belgium and Wageningen Agriculture University in the Netherlands.

After completing his M. Sc. in 1998, he returned to Cambodia where he was appointed chief of the aquaculture planning and coordination section of

the Department of Fisheries as well as coordinator of Cambodia's national aquaculture programme. In 2000, he was appointed deputy director of the department's fisheries domain and extension division. It was during this period that he started work on his doctoral thesis on fish biology, fish ecology, fish population genetics, conservation biology and genetics, completing a Ph. D. in biology at the Catholic University of Leuven in Belgium in 2005.



Dr So Nam

PHOTO: CHHUT CHHEANA

“For the past seven years, Dr So Nam has been closely involved with the MRC Fisheries Programme”

For the past seven years, Dr So Nam has been closely involved with the MRC Fisheries Programme. In 2005, he worked as research manager for an MRC project to assess the use of low-value or small-sized fish for aquaculture in the Cambodian part of the Lower Mekong Basin and as a food security specialist on another MRC project looking at changes in fisheries and other aquatic systems. Between 2007 and 2009, he worked as a national resource specialist on trans-boundary fisheries issues for learning events sponsored by the MRC Technical Advisory Body for Fisheries Management. He was also involved with the Fisheries, Ecology Valuation and Mitigation Component of the second phase of the Fisheries Programme which ended in 2010.

Dr So Nam has worked for other MRC programmes, notably the Environment Programme, the Basin

Development Plan Programme and the Mekong Integrated Water Resources Management Project, where he sits on the steering committee. He has also been involved with the Information and Knowledge Management Programme, the Initiative on Sustainable Hydropower and the Integrated Capacity Building Programme.

He has worked for other projects funded by multilateral donors such as the Asian Development Bank, the United Nations Food and Agriculture Organisation, the United Nations Environment Program and the World Bank as well as bilateral donors from Australia, Britain, Denmark, the European Union, Japan, Sweden and the United States. He has also worked for projects funded by the Network for Aquaculture Centres in Asia Pacific, Novib, Oxfam and the World Wildlife Fund along with the Agriculture Productivity Organization and the Nagao Natural Environment Foundation in Tokyo, the ASEAN Foundation, Belgian Technical Cooperation in Brussels, the Challenge Program for Water and Food and the International Foundation of Science in

Stockholm.

Over the past ten years, he has raised more than \$20 million to implement various research and development projects. Dr So Nam is also a prolific author, having published nearly 70 publications in the English language, including 18 peer reviewed journal articles and nearly 50 technical reports, and many other publications in the Khmer language.

Dr So Nam is a member of both the American Fisheries Society and the Asia Fisheries Society. In Cambodia, he chairs the Dam Sub-Group of the government's Technical Working Group on Fisheries. He is also a member of the Technical Working Group on Climate Change at the Ministry of Agriculture, Forestry and Fisheries and sits on the editorial board of the *Cambodia Journal of Agriculture*. In addition to working as an adjunct professor, he is closely involved with development of M. Sc. and Ph. D. curricula at the Royal University of Agriculture and the M. Sc. curriculum at the Asian Institute of Technology in Bangkok.



Dr So Nam (centre) with MRC Fisheries Programme team

PHOTO: CHHUT CHHEANA



Cambodian and Vietnamese officials nearing the end of a voyage of more than five hours along the Tonle Touch as part of exchange visits to border areas in June. Tonle Touch, which means “small river” in Khmer, is the first major distributary of the Mekong River. It originates on the left bank of the Mekong about 10 km downstream from the town of Kampong Cham in eastern Cambodia. The river flows southwards for more than 100 km through the floodplain before rejoining the Mekong in Viet Nam, where it is known as the So Thuong River (see page 6 inside).

PHOTO: LEM CHAMNAP



**Office of the Secretariat in Vientiane (OSV),
Office of the Chief Executive Officer**

184 Fa Ngoum Road,
PO Box 6101, Vientiane, Lao PDR
Tel: (856-21) 263 263 Fax: (856-21) 263 264

Office of the Secretariat in Phnom Penh (OSP)

576 National Road #2, Chak Angre Krom,
PO Box 623, Phnom Penh, Cambodia
Tel: (855-23) 425 353 Fax: (855-23) 425 363