Fish are very important for a Cambodian. This situation is not new. Several reliefs on the temples of Angkor Wat and the Bayon attest to this. Because of abundant supplies freshwater fish are affordable even to the poorest of the poor in Cambodia. Together with rice fish are a pillar of Cambodian food security.

Of course, it is therefore of vital importance to maintain these fisheries and, if possible, to increase their output. With a well developed native fishery technology already in place, this can only be achieved through informed management and this is precisely where the MAC fisheries project in Cambodia is assisting the Department of Fisheries (DOF).

Staff training and Databases Needed

The objectives of the project include: (1) strengthening the professional capacity of the DOF in fisheries management through training of its staff; (2) establishing databases on fish catches and socioeconomic conditions; and (3) planning a follow-up project for the continuation of these activities, including the setting up of an Inland Fisheries Research Institute.

Annual Floods Give High Fish Catches

The geographical area where the project is working is presently concentrating on the provinces around the Tonle Sap Great Lake (Battambang, Pursat, Kampong Chhnang, Kampong Thom and Siern Reap) and in the Mekong flood plains around and to the south of Phnom Penh (Phnom Penh and Kandal).

The Tonle Sap Great Lake and River, situated in the heart of Cambodia, is a tributary of the Mekong River and represents about 10.7 per cent of its entire catchment area. Annual monsoon-driven flooding of the Mekong River causes the Tonle Sap River flow to change direction for about four months, resulting in the expansion of the Great Lake from about 2,500 sq. km in the dry season to about 16,000 sq. km, depending on the height of the floods. Many fish species utilise the inundated forest and wetland areas around the lake and river for spawning, nurseries and feeding, giving rise to an enormous productivity. When the floods recede, fisheries using a variety of filtering devices start capturing the fish migrating back to the lake, river and eventually to the Mekong proper.

The richness of these fisheries is derived from the regime of annual floods. Positive relationships exist between the level of the Mekong River flood, the size of the inundated area and the quantity of fish produced.

Therefore, a significant lowering of the level of the Mekong River floods through flow regulation and increased water usage, e.g., by hydro-electric power generating dams, irrigation and other water diversion schemes, could lead to a great decline in fish productivity and might even stop the annual reversal of the Tonle Sap River flow direction. In addition, dams in the Mekong mainstream would block major migration routes.

The economic importance of the fisheries in Cambodia was recognised as early as 1864 and state-controlled mechanisms for extraction of resource "rent" were put into place. So-called fishing lots (areas with exclusive exploitation rights) are auctioned once every two years. In addition, there are extensive (licensed) middle- and (unlicensed) small-scale or family fisheries throughout the country.

Hardworking Staff Promise Bright Future

Because education has suffered in Cambodia since 1975 and is still inadequate, human resources development has not been given a lot of attention. Although many of the project's junior counterparts have B.Sc. degrees in fisheries from local universities, it...
has been found that additional training is needed. Fortunately, the project is dealing with bright and hardworking young people: a promise for proper future fisheries management.

The project has organised or has facilitated participation in many training opportunities and workshops in Cambodia and regionally, particularly in social science research, fish stock assessment, fish biology, data collection and survey methods, but also in the English language and computer skills.

Selected counterparts have participated at international conferences through making presentations on Cambodian fisheries, such as the Asian Fisheries Forum in Beijing and World Aquaculture Conference in Australia, etc. Six of them are or soon will be taking up studies abroad for higher degrees. It is hoped that this advanced training will prepare them for functions in the planned Inland Fisheries Research Institute.

Data Collected on Fish and Folk

Data on fisheries is scarce, as there has been very little information gathering in the past. The project set up a catch assessment system using a stratified random sampling approach and has carried out socio-economic house-hold surveys in the project areas.

The household surveys have recently been completed and the collected data entered in an Access type data-base. Analysis is ongoing. The project hopes to learn about house-hold composition, assess to fishery and other resources, income generation, consumption, the role of women in fisheries, etc.

The catch assessment system is a more permanent set-up. Data on catches by species, gear and district are generated each month. The approach involves stratified random sampling of the catch by gear on the basis of frequently updated frame surveys of operational fishing gears. Sampling within the project area is carried out by a network of enumerators in close cooperation with provincial DDF staff. ARTFISH and ARTSER (developed by FAD) are used as estimation and database programmes. Data can be exported to spreadsheets such as Lotus and Excell for further analysis.

Data Essential for Water Development Project

Results are exciting and show that the production of freshwater fish is much higher than was currently thought by the DOF. In fact, the project's estimates (106-124,000 tonnes for the project area) are about twice as high, but are in line with rough estimates produced in the past. Nevertheless, it is believed that this may still be an underestimate, as the family fisheries are not covered adequately. This is something to be tackled in the next phase of the project!

The data gathered will be essential during the discussion about the economic viability of dam building and other water diversion plans, as they present a more accurate picture of the importance of these fisheries.

The catch assessment work not only provides information on the size of the catches, but also on the species composition of the catch, the fishing gears involved, the prices received by the fishermen, as well as on length-frequencies and other biological information: all essential ingredients for fisheries management.

Fish Guide Now Ready

Identification of fish species of the Mekong River system is difficult, as there is a great number of species and comprehensive identification material does not exist. Therefore, the project took the initiative to produce a guide book for the Cambodian fish species in cooperation with FAG. The guide contains black and white pictures of more than 500 species and 216 colour photographs. It has just been printed.

The data show, when compared with information from past surveys carried out by French researchers in 1940 and 1965, that especially very large fish species such as the Giant Mekong catfish (Pangasianodon gigas) and the Giant Mekong barb (Catlocarpio siamensis), have been hit hard. Some medium sized species have strongly declined (e.g., croakers, Boesemania microlepis), although other species have not (e.g., snakeheads, Channa spp.). Small species (e.g., riel, Henicorhynchus siamensis, a cyprinid) are not overfished and dominate the catches.

It appears that the catch and effort of the large-scale fisheries (the fishing lots) have been quite stable since the early 1960s, but that the catches of the middle-scale and small-scale fisheries have nearly doubled.

The "open"-access nature of the latter two fisheries plus low starting and operational costs, in addition to job, scarcity elsewhere have induced many people to take up fishing in Cambodia.

Expansion of the middle-scale fisheries has also led to pressure on the fishing lots. These lots occupy prime wetlands areas, but fisherfolk communities situated in or near these areas have no right to fish there. Poaching and violence are some of the results. Moreover, there are problems of flood forest removal for mong-bean and rice cultivation in the wetlands.
Board of Danida visits Mekong

In November 1996 the Board of Danida visited Viet Nam and Cambodia in order to get a first hand impression of the use of the Danish Development Funds. The nine Board members were accompanied by the Head of Danida, Ambassador Ms. Ellen Margrethe Loej, and on the visit to Cambodia, by the Danish Counsellor of Development, Mr Erik Laursen.

Cambodia fisheries project praised

On 16 November 1996 the Danish delegation visited the project offices of the Cambodia Capture Fisheries Project. HE May Sam Oeun, Under- Secretary of State of the Ministry of Agriculture, and the MAC Fisheries Unit Chief, Mr Jorgen G. Jensen, welcomed the delegation. The National Project Director, Mr Touch Saeng Tana and the CTA, Mr Nick Van Zalinge, briefed them on the fisheries in Cambodia and the project's achievements. Many questions were asked by the delegation, mainly focusing on the importance of the socioeconomic component of the project and the need to involve women in development activities. This led to a lively discussion in the brief time set aside for the visit, and the delegation expressed its general satisfaction with the project and its activities when it finally left after about an hour.

JGJ