

National Workshop on Strategy for Great Lake Management

19 December 2000

Cambodiana Hotel, Phnom Penh

Organized by Ministry of Environment

Sponsored by UNESCO



**CAMBODIA'S FRESHWATER FISHERIES
MANAGEMENT- CURRENT STATUS, MAJOR ISSUES
AND RECOMMENDATIONS**

By: Nao Thuok and So Nam

Department of Fisheries

Phnom Penh, December 2000

Table of Contents

<u>1. Introduction</u>	1
<u>2. The Significance of Fish and Fish Products and Rural Livelihoods of Cambodia</u>	2
<u>3. Freshwater Fisheries Legislation, Policy and Plannings</u>	3
<u>4. Freshwater Fisheries Manasement System</u>	4
<u>5. Current Status of Fishing Lot Manasement</u>	5
<u>6. Major Freshwater Fisheries Manasement Issues</u>	5
<u>1. Recommendations for Fisheries Manasement</u>	6
<u>8. References</u>	8

CAMBODIA'S FRESHWATER FISHERIES MANAGEMENT- CURRENT STATUS, MAJOR ISSUES AND RECOMMENDATIONS

By. Nao Thuok and So Nam
Department of Fisheries, Phnom Penh, Cambodia

1. Introduction

Cambodian freshwater capture fisheries probably contribute more to national food security and the economy than such fisheries do in any other country in the world. The annual catch ranges between 290,000t - 430,000t (Deap et al., 1998; Ahmed et al. 1998; Thuok et al., 2000, Jensen, 2000) (Table 1.1), which is the fourth largest in the world (Table 1.1). Fish provides some 75% of the total animal protein intake for the population, a well managed fisheries sector is essential for the Royal Government of Cambodia (RGC) to meet its key goals of food security and poverty alleviation in the country. The monetary value of the total freshwater catches at the landing site ranges from US\$150-200 million, increasing in the market chain to US\$250-500 million, which the freshwater fisheries contribution ranges from 5-7% to 9-18% (So Nam, 2000b) of the total national GDP of US\$ 2, 800 million (MEF, 1999). In Cambodia nearly 10 million people live in rural areas; 4.3 million live on less than US\$113 per year. Through family fisheries and foraging in rice fields they catch between 160,000t - 250,000t of aquatic resources.

Table 1.1: Freshwater Fish catches

Cambodia. Range of the annual inland water	Catch in the years from 1994-1998 Annual catch range. (tons)
• Large scale fisheries	
- Fishing lots ¹	30,000-60,000
-Dai(bagnets) ²	15,000-20,000
• Middle scale fisheries ³	85,000-100,000
• Family fisheries ³	115,00-140,000
• Rice field fisheries ⁴	45,000-110,000
Total Freshwater Fish Catch	290,000 - 430,000

Source: DoF (1999); Deap et al.(1998); and Ahmed et al. (1998)

¹Range reflects uncertainty in actual catch levels.

²Range shows approx. minimum and maximum value in 1994-1998.

³Based on socio-economic survey data extrapolated to entire country.

⁴Approx. 1.8 million ha (rice fields) x likely range of fish yields: 25-62 kg/ha.

The fisheries sector, encompassing extensive freshwater fisheries within floodplains, river and lakes, marine fisheries, rice field fishery and some aquaculture, is managed by the Department of Fisheries (DoF) within the Ministry of Agriculture, Forestry and Fisheries. The DoF has jurisdiction over marine fisheries and over all bodies of water in the country up to the average high water levels during the period of annual inundation, i.e., floodplains. Consequently, the DoF is

responsible for management of hundreds of thousand of hectares of seasonally flooded lands and extensive coastal mangrove forests. There are 2,500 - 13,000 km² and has 4,800 km² of these floodplains and most of the flood forests are in the lots.

The objectives given in the draft Fisheries Law are:

1. Protect and improve the fisheries resources of the Kingdom of Cambodia through comprehensive conservation, management and development measures;
2. Promote compliance with the law, involvement of the people and the prevention of illegal fishing activities;
3. Encourage new developments for food security and economic well-being, including aquaculture, fish processing and research;
4. Encourage cooperation and avoid conflict of uses in the Fishery and Aquaculture Domain;
5. Provide a framework for future developments in the management and administration of fisheries, fishing technologies, fishing patterns and monitoring, control and surveillance.

The objectives are good, however, in practice they fall far short as some fishing communities are being marginalized due to expansion of some fishing lots (Concession) by powerful fishing lot operators, and as most of the revenue generated does not go to government coffers (ADB/FAO/WGNRM, 2000). The current status of freshwater fisheries management, major issues and recommendations are the subjects of this report.

2. The Significance of Fish and Fish Products and Rural Livelihoods of Cambodia

Cambodia is a country of forests, rivers and rice fields. Rice farming, fishing and extracting forest products have been the major means of generating food, materials, energy and additional income for subsistence since immemorial.

The significance of fish and fish products in national economic development and in generating employment is well discussed documented above and by lots of authors. Besides this, fish and fish products play a very important role in food security as source of nutrition, family income generation and livelihood support to rural Cambodia.

Estimates of relative nutritional importance of fish in the Cambodian diet varies. For the bulk of the population the protein balance comes from the consumption of small animals, principally poultry and pigs, that most rural households keep both for food and when sold, as a source of additional income.

Fish consumption has traditionally been high in Cambodia, with the level of 20-25 kg per capita in 1970 (Lagler, 1976). So Nam and Nao Thuok (1999) and DoF (2000) reported that the national rate of per capita of fish consumption is 20-30 kg per annum. However, fish consumption per capita for Cambodian was estimated by many other experts (Table 2.1) as 25 kg (Tana, 1993) in the South-Eastern Cambodia, 13.5 kg (Csavas, 1994), 40 kg (CIAP unpublished) in the South and

Nao Thuok and So Nam. Presentation given at National Workshop on Strategy for Great Lake Management, 19 December 2000 at Cambodiana Hotel, Phnom Penh.

38-kg (APHEDA, 1997) in the South-west Cambodian. FAO Participatory Natural Resource Management in the Tonle Sap Region estimate 71 kg/capita in the floating villages and 32 kg/capita in the up-land areas of Siem Reap province (Hy, 1995). While MRC/DOF/DANIDA Freshwater Capture Fisheries Management Project (1995) in fishing dependent communes where 83 communes were sampled (5,117 interviews) representing more than 2.4 million people in total, shows that the average fish consumption is 86.8 kg/capita. Based on the weekly consumption, per capita fish consumption in both fresh (43.5 kg/year) and processed form (27.5 kg/capita/year, excluding fish sauce) amounts to 71 kg per annum (Ahmed et al., 1998). If the fish sauce is included, per capita consumption offish (fresh and fresh equivalent of processed fish) will reach as high as 75.6 kg. For the fishing households, per capita fish consumption is about 80 kg per annum compared about 67 kg for non-fishing households. Gregory et al. (1997) in an 8 months study in 3 villages in Svay Rieng, one of the province poor in fishery resources, reported that fish consumption of 21.5 kg/caput/year, 33.8 kg/caput/year and 39.5 kg/caput/year in Samakee, Thanal Keng and Thluk Pring village respectively. A lot of national and international organizational agencies have put their strong efforts and fund to get the reliable information offish consumption in most regions of Cambodia. This indicates that the value of fish and other aquatic products are primary source of animal protein and nutrition for Cambodia's rural people and its importance in national food security and economy is great.

Table 2.1: Distribution of Per Capita Fish Consumption, by region, Cambodia

Region	Per capita fish consumption (kg/capita/year)	Author
Cambodia	20-25	Lagler, 1976
Cambodia	20-30	DoF, 2000; So Nam and NaoThuok, 1999
Great Lake (only Siem Reap)	32	Hy, 1995
Great Lake (6 provinces)	71	FAO/PNRM, 1995
Tonle Sap Great Lake and Mekong/Bassac (8 provinces)	86.8	DoF/FCFMC, 1995
Tonle Sap Great Lake and Mekong/Bassac (including Kandal/Phnom Penh and Kampong Cham)	76	Ahmed et al., 1998
Southeastern (Svay Rieng)	25	Tana, 1993
Southeastern (Svay Rieng)	21.5-39.5	Gregory, 1997
Southwestern (Kompot)	38	APHEDA, 1997
South (Kandal and Takeo)	40	CIAP, unpublished

Source: So Nam (2000b)

3. Freshwater Fisheries Legislation, Policy and Planning

The 1987 Fisheries Law seems to be out-of-date and considered inadequate and unenforceable as it was adapted from the 1950s' Fisheries Law. A new Fisheries Conservation, Management and Development fcaw was drafted in English with WB/APIP assistance in August -1999: -It was translated into Khmer language in December 1999. It contains a clause on co-management involving local communities. The DoF is finalizing this draft. Extensive consultative process with stakeholders must be held tentatively early 2001.

Currently the Government's fisheries policies are not so clear, esp. with regard to community participation in management of fisheries resources, food security enhancement and poverty alleviation. The World Bank APIP project produced a first draft of a 10-year Master Plan for the fisheries sector, which will be the foundation for future development, management and conservation of the fisheries resources.

4. Freshwater Fisheries Management System

By law, the fisheries domain is divided into areas assigned by group, and the protected fisheries domain. The designation of each category and the actual boundaries of these areas are the responsibilities of the MAFF.

The areas assigned by group include:

- Areas defined as fishing lots (concession) for commercial exploitation;
- Areas defined as fish sanctuaries. These areas are reserved for fish refuge and reproduction in both wet and dry season, which are deeper than other areas in the fisheries domain, and for scientific research. There are 13 fish sanctuaries (8 situated in the Great Lake) throughout the country.
- Areas defined as inundated forest areas. These areas include those flooded seasonally by monsoon and are very important habitats for fish spawning and feeding (Fisheries-Fiat Law, 1987). It is estimated that 85% of the remaining freshwater inundated forests is found around the Great Lake. This mostly includes inundated forest areas located inside fishing lots.

The protected fisheries domain comprises fishing areas outside of the areas assigned by group. Fishing is regulated by classification of permitted fishing gears into family or small scale and middle scale.

The fisheries management tools are based on open and closed seasons, licensing and fish sanctuaries. The open seasons of fishing are as follows:

- From 1st October to 31st of May for areas to the North of the Quatre Bras parallel (Chaktomuk River)
- From 1st November to 30th of June for areas to the South of the Quatre Bras parallel (Chaktomuk River)

The fisheries management system is based on the categorization of fishing into family-scale, middle-scale and large/commercial-scale determined by Proclamation. The criteria for classification of each fishing gear are based on the size of the gear, the method of fishing and the catch capacity of the gear.

Large or commercial scale fishery: these areas are exclusive geographic areas (lots/dais) for large scale fishing. Access is usually regulated by the Government through an auction-like process.

The middle-scale fishery requires fishing fee and licenses by the DoF.

The family-scale fishery is not licensed and these family gears can be used throughout the year and throughout the fisheries domain, except in fish sanctuaries. These family gears can be used inside

Nao Thuok and So Nam. Presentation given at National Workshop on Strategy for Great Lake Management, 19 December 2000 at Cambodiana Hotel, Phnom Penh.

- Weak in fisheries law enforcement, control of widespread illegal and destructive fishing practices, and prevention or resolve of fishing conflict.
- The central and provincial DoFs have some 1,500 employees, most of whom work in law enforcement. They are underpaid and many need to rely on the use of the power of law for their own personal benefit. This resulted in the people having little trust or confidence in DoF staff.
- Much of these deficiencies relate to the institutional capacity of DoF staff and management of available staffs capacity to implement the DoF mandate.
- Weak in coordination among the DoF, Provincial-municipal Fisheries Office (P-MFO), NGO/IO and donor community. The information has never flown through among these levels. Moreover, the P-MFO has got two bosses, DoF and DAFF (Department of Agriculture, Forestry and Fisheries at provincial and municipal level). Most of provincial DAFF Directors are agronomist by training. This has had important implications for the conservation and management of the fisheries resources.
- At the local level, the effectiveness of the DoF staff is also hindered by interference from other local authorities and agencies.
- At the macro-level, the satisfactory management of fisheries resources is hindered by a general under-appreciation of the value of these resources by the RGC and donor community, both in terms of economic and livelihood values.
- Lack of adequate statistics to estimate trends in fisheries, there is growing evidence of over-fishing, use of stock damaging fishing practices and widespread fisheries habitat destruction (loss or degradation of inundated forests and critical fish spawning grounds).
- Pressure on Cambodia's inland fisheries resources is expected to increase as a consequence of a rapidly rising population and a limited availability of rural job opportunities.
- However, the most alarming aspect of the current fisheries issue is a widespread trend of conflicts between local communities and fishing lot owners characterized by armed violence and an absence of formal mechanisms to address confrontation of this nature. This has resulted in exclusion of local fishers to these resources.
- Development issues: Certain development plans threaten the viability of fisheries and thereby food security, as well as the future of a thriving industry and a rich source of government revenues. (1) Tonle Sap Great Lake development projects, such as the building of harbors, roads, navigation channels, etc. will have a negative effect on the existing ecology, as they will increase the accessibility to and the employment in the area. This would increase the population pressures on the environment through the destruction of critical wetlands, due to the increased needs for farmlands, fuelwood, fishing, etc. Instead of creation of employment in the areas directly outside the wetlands could relieve these pressures; and (2) Dams on the Mekong (e.g. Sambor) or the major tributaries (e.g. Sesan) will disrupt the connectivity of the spawning areas in northeast Cambodia and the nursery and feeding areas in the floodplains (Tonle Sap Great Lake, Mekong Deltas, etc.) Apart from creating a number of other problems, this will directly reduce yields of migratory fish (food security) and indirectly yields of other fish species (exports). Fish ladders appropriate for Mekong species have not been developed yet.

7. Recommendations for Fisheries Management

The DoF recommend as follows:

- A clear fisheries policy should be developed through a consultative process;
- Prior to finalizing the Fisheries Law and 10-year Fisheries Master Plan, a widespread and extensive consultative process must be undertaken with all stakeholders (on-going), and the new legislation and the master plan must ensure local fishers' rights of access, management and control over fisheries resources;
- A more integrated approach to fisheries management involving the development of partnerships among various stakeholders from grassroots level to the national level, as well as the regional and basin wide level. The concept of this process is the enhanced transparency of legal and environmental information through improved communication links between various stakeholders;
- Community fisheries co-management arrangement supported by cross-sectoral linkages as a central management strategy. The concept of this process is described as the involvement of all stakeholders in fisheries sector from the local to national level, including representatives from other sectors that are potentially destructive to fisheries habitats. These stakeholders would cooperate to develop a management regime for the resources. The DoF also consider on fisheries co-management partnerships, which rely on the cooperation of all parties and therefore perceived benefits or incentives for their involvement must be assured; and
- Fishing lot system is a good system and must be maintained for managing, protecting and conserving fisheries resources, but this must be watched out carefully and managed by local community (after they receive knowledge or education) and this must be made sure that no any corruption appears. Moreover, auction process must be transparent, and burden book must be reviewed and revised to ensure proper fisheries resources management and local fishers involvement where applicable;
- Awareness among lot operators and fishers communities for the need for environmental and habitat protection and conservation should be strengthened, and
- Organization structure of the DoF needs to be reviewed and revised and responsibilities clarified (on-going). Salaries of the staff need to be increased and no corruption practices should be permitted.

The DoF recommends further research including all stakeholders, by gender, ethnicity, and all levels of authorities. Research topics include:

- Dynamics of inland fisheries;
- Building up the DoF capacity in the use of GIS and GPS and redefining lot boundaries to exclude village land, etc. in order to make clear lot and public access boundaries, with consultation with all stakeholders in the area;
- Effect of agriculture on fisheries resources;
- Rural development strategies to alleviate user pressure on fisheries resources;
- Protection of critical habitat,
- Improvement of the valuation of inland fisheries resources;
- Improve the capacity of the DoF staff in collection of appropriate fisheries statistics, livelihood analysis, reformulation of fisheries-law, formulate fisheries master plan, development, management and conservation of fisheries and MCS process;
- Assessment of the potential for aquaculture
- Assessment the impact of the establishment of the proposed Biosphere Reserve in Great Lake;

- Assessment of socio-economic and environment situations of fishing lots operation and small-scale fishing;
- Assessment of the scale of deforestation of inundated forests and what local perceptions regarding the management of these forests;
- Assessment of the scope of illegal fishing and what are their impacts on the fishery;
- Assessment of the extent of siltation of ponds/lakes within lots and the effect on fisheries resources;
- Research into the role of local authorities in fisheries management;
- Research into family fishing gears;
- Celebrate ceremony on "Importance of Fish to Livelihoods and Declaration of National Fish Day"; and
- Coordinate and collaborate with concerned ministries and institutions that involve in water resources development activities;

8. References

ADB/FAO-WGNRM, 2000. Draft Issue Paper on Fisheries. Working Group on Natural Resources Management. ADB/FAO, Phnom Penh, November 2000.

Ahmed M., Hap Navy, Ly Vuthy and Marites Tiongco. 1998. Socio-economic Assessment of Freshwater capture Fisheries of Cambodia. Report on a Household Survey. 185 pages. MRC/DOF/DANIDA.

Deap. L 1998. Catch Statistic of Cambodian Freshwater Fisheries. DOF/MRC/DANIDA- Capture Fisheries Management project.

Degen Peter, Frank van Aker, Nicolaas van Zalinge, Nao Thuok and Deap Loeung (2000). Taken for granted. Conflicts over Cambodia's freshwater fish resources. Draft paper presented at the IASCP common property conference, Indiana, USA, 31 May-4 June 2000.

DoF 1980-2000. Fisheries Statistics and Data. Statistic Bureau, DoF, Phnom Penh.

DoF 1999a. Draft Fisheries Conservation, Management and Development Law. WB/APIP project, DoF, Phnom Penh

DoF 1999b. Draft Fisheries Master Plan. WB/APIP project, DoF, Phnom Penh.

Gregory R 1997. Rice Field Fisheries Handbook, Cambodia IRRI Australia Project, Cambodia.

Hy H. 1995. Fish Production and Consumption in Siem Reap province. Participatory Natural Resources in the Tonle Sap Region, Siem Reap, Cambodia.

Jensen J , 2000a. Mekong Countries take the lead in fisheries management. Mekong Fish Catch and Culture, Fisheries Network Newsletter, Vol. 6, No. 1, September 2000.

Jensen J, 2000b. Save the Fish or lose the food security. MRCS in Mekong Fish Catch and Culture, Vol. 6, p 1-2, September 2000.

Lagler K.F. 1976. Fisheries and Integrated Mekong River Basin Development. Terminal report of the Mekong Basinwide fisheries studies, University of Michigan. Ann Arbor. Appendix 1. 367p.

MEF- Ministry of Economic and Finance. 1999. Cambodia Economics and Finance, Phnom Penh, Cambodia.

Sam Nuov 2000. Fisheries Management. Report on the current fisheries situation in Cambodia to the Inter-Agency Working Group on Fisheries, 9 October 2000.

So Nam 2000a. Research and Development Activities/projects. Cambodia's Department of Fisheries, Phnom Penh, 15 October 2000.

So Nam 2000b. Geographic Analysis of Poverty Status and Aquatic Resources Use - focusing especially on the Livelihoods of the Poor- in Cambodia. Consultancy Report for DFID-UK. Phnom Penh, 30 October 2000.

So Nam and Nao Thuok 1999. Aquaculture Sector Review (1984-1999) and Aquaculture Development Plan (2000-2020). Phnom Penh, Cambodia.

So Nam, Sam Nuov and Nao Thuok 2000. Current Status of Cambodia's Fisheries Status and Recommendations for Fisheries Resources Management. Department of Fisheries, Phnom Penh. Accepted by the DoF, September 2000.

Tana T.S. 1990. Compiled Theme of Fisheries Law, Translated by Touch Seng Tana, Department of Fisheries Phnom Penh.

Tana T.S. 1993. Fish Supply and Demand in Rural Svay Rieng Province, Cambodia. Asian Institute of Technology, Bangkok, Thailand.

Thuok Nao, Thay Somony and Srun Lim Song 2000. Fisheries Environment Study in the Mekong Delta (Cambodia). Project of Flood Control for Development of the Mekong Delta, Phnom Penh, May 2000.

Van Zalinge 2000. Status of Cambodian Inland Capture Fisheries Sector. MRC- Freshwater Capture Fisheries Management. Phnom Penh.

Van Zalinge N.P, Nao Thuok and Deap Loeung (1999). Present status of Cambodia's freshwater capture fisheries and management. Nine presentations given at the Annual Meeting of the Department of Fisheries, Phnom Penh, 19-21 January 1999. 149p.

Van Zalinge N.P, Nao Thuok and Lieng Sopha (in print). Management aspects of Cambodia's freshwater capture fisheries. Twelve presentation given at the Annual Meeting of the Department of Fisheries, Phnom Penh, 27-28 January 2000.

Van Zalinge N.P., T. Nao, T.S. Touch and L. Deap (in print). Where there is water, there is fish? Cambodia fisheries issues in a Mekong Rive Basin perspective, p. 109-139. In Ahmed and P.

Nao Thuok and So Nam. Presentation given at National Workshop on Strategy for Great Lake Management, 19 December 2000 at Cambodiana Hotel, Phnom Penh.

Hirsh (Ed.), common property in the Mekong: issues of sustainability and subsistence. ICLARM Studies and Rivers and Review #..., 160p. (Seventh Common Property Conference Vancouver 1998).