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Social and Economic Framework Review

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1. Introduction

1.1. Background

Based on the biological productivity of the large seasonal flood plains, the freshwater capture fishery sector plays an important role in the economic and social life of the rural population in Cambodia. This fishery is a very important source of employment and income generation, as well as a pillar of rural food security and livelihood for Cambodian rural people. Statistical figure shows that more than 9 millions of the population in the fisheries provinces and more than 3 million people are living in the fishing communes who directly and indirectly drive benefit from the fisheries resources (fish and common property resource).

In fact the important of fisheries sector was declared since long time ago as it is sited in the Ankor Wat and Bayon temple. The important of the fisheries is also reflected in the Cambodian proverb that “where there is water, there is fish”. Recently, the figure of fish catch assessment shows that Cambodia’s freshwater fish product is ranked number 4 among the top world’s freshwater captures fish production (Degen at al., 2000).

Fishery in Cambodia belongs to the state. The government manages and regulates access to and utilization of the fishery through an extensive regulatory regime that uses control and enforcement as its major instruments. In the real practice the implementation of the rule and regulation is low, for example the use of small mesh side by all most all type of fishing gears. The management of the fisheries is in fact the management of the people who fish (Degen, 1999), because it is impossible without their participation in the implementation of the rule and regulation. Therefore it is important to know and understand the fish-folk, their current status of socioeconomic, and their rational for fishing.

Assessing the socioeconomic status of the fishing communities as well as the fishing households is the key element of the management of fisheries in Cambodia. Therefore, this review of the socioeconomic of fisheries is very important as it provides good indicators for a documentation and information to help the improvement of the management of fisheries through the appropriate rule and regulation which will be placed on the real practice in the near future.

1.2. Objective of the study

The general objective of this review is to provide an important background and reference document to support the formulation of socioeconomic framework, especially the review aims to:

- Identify the background of the national socioeconomic status of Cambodia;
- Assess the socioeconomic status of the people in the fishing commune in relation to income generation, employment, food and livelihood;
- Identify the role of fishing and related activities for the people living in fishing commune ;
- Identify the problem and the stakeholders in relation to their economic activities;
- Draw out the conclusion and recommendation for the improvement of the management of the fisheries sector.

2. Methodology

The data use in this report derives basically from different official sources and publication report. These include (1) the information from fisheries department, (2) the information form the project for the management of the freshwater capture fisheries of Cambodia, (4) the information from the ministry of agriculture forestry and fisheries, (5) the information form the ministry of planning and other publications available.

The descriptive statistic, such as percentage and average use to evaluate and compare the socioeconomic variable of different group.

3. General Socioeconomic

3.1. Demographic and Socioeconomic Condition in Cambodia

In 1995 the population in Cambodia was only 10.5 million with the annual growth rate around 2 percent from 1995 to 1997. The population shapely increased to 11,437,656 from 1997 to 1998 with the annual growth rate 4.6 percent (Table 1).

The projected population shown that the population will reach 13 millions in year 2001, 14.7 millions in year 2006, 16.6 millions in year 2011, 18.5 millions in year 2016, and 20.3 millions in year 2021.

Table 1. Population by year in Cambodia.

Year	Population (person)	Annual growth rate (%)
1995	10500000	1.90
1996	10700000	2.19
1997	10934334	4.60
1998	11437656	

Source: Department of Planning and Statistics, Ministry of Agriculture forestry and Fisheries, 1995-98.

In 1998 there are 2,188,663 households with the average size of about 5.2. Of the 11,437,656 population about 84.3 % are in the rural area. The sex ratio is not ideal balance. The female ration is more than 51 % in both rural and urban area. This probably due to the civil war that causes the motility of men are higher than women.

The total area of Cambodia is 181,035 Km², which include the area of the Great Lake. The updated data shows that the density of population in the country as a whole is 64 per Km². The population density in difference regions are quite different: Tone Sap region is 52; Mekong data is 183; Coastal region is 49; Plateau and Mountain region is 17. The densest region is the plain area (general population census of Cambodia, 1998)

In general, the male literacy rates are higher than those of females. This implies that male have more chance to go to school than women. The literacy rates are higher in urban than those in the rural areas.

Majority of the population aged 25 years have not completed the primary level: 70.5% for the rural population and 39.5 % for the urban area. Only a small percentage has completed beyond

secondary: 0.2 % for the rural and 2.9 % for the urban. Female in general have higher percentage than those male at the low level of education, but when it comes to higher level the percentage of male are high than those female. This reflects the Cambodian culture that parent do not want daughter to continue her education higher.

The number of economically active persons in Cambodia is 5,117,879 of which 2,641,579 or 51.6 % are females. While the participation rate are higher for males and the unemployment rates are higher for females. The participation rate are higher in rural than in urban areas. This is due to lesser participation in agriculture and higher proportion of school attendance in urban areas.

The highest monthly average income per head is in financial intermediation (378,800 R). The lowest average monthly income per head is in agriculture and fishing (104,600 R). However, the employment rate in the agriculture and fisheries are about 78 % (Socioeconomic survey of Cambodia, 1996)

3.2. Socioeconomic condition in the fishing commune

The biggest survey of the socioeconomic characteristic of the fishing dependent commune in Cambodia was conducted by the project for the management of the freshwater capture fisheries of Cambodia in 1995-96. The results of the survey give good indicators about the overall of characteristic of households living in the fishing dependent commune.

3.2.1. Population in the fishing dependent commune

There are 14 fishing province in Cambodia with the total population of more than 9 millions. Of these, about 35 % are living in the fishing dependent commune, the commune who population have access to water bodies and engaged in fishing and fishing related activities (Table 2).

Table 2. Fishing dependent commune and their population, 1998

Name of Fishing Province	Total Population (person) ^a	Total Population in fishing commune (person) ^b
Phnom Penh	999,804	226,686
Kandal	1,075,125	807,705
Kg. Chhnang	417,693	237,893
Pursat	360,445	199,370
Battambang	793,129	270,451
Banteay Meanchey	577,772	38,779
Siem Reap	696,164	224,240
Kampong Thom	569,060	202,773
Takeo	790,168	193,669
Prey Veng	946,042	208,081
Kg. Cham	1,608,914	594,942
Kratie	263,175	98,541
Stueng Treng	81,074	15,935
Svey Reang	478,252	60,315

Total	9,656,817	3,379,380
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^a General Population Census of Cambodia, 1998

^b Frank Van Acker, 2000

3.2.2. Households Profile

Household heads and Average family size

Household head refers to those who lead the family by taking the position of making the majority of decision in the family. A socioeconomic survey done by the project for the management of the freshwater capture fisheries of Cambodia revealed that 19% of the family in the fishing commune are headed by women, while national socioeconomic shows that 26% of the family in the whole nation are headed by women.

The average family size of the fishing dependent commune provided by the Ahmed, 1998 is about 6. This similar to the nationwide that the average family size is about 5.7.

Age group

Many socioeconomic survey showed the majority of the population in the fishing commune belong to the age group of dependency, although they could help the family in economic activities but these activities just the very light and manor only. As mentioned by Ahmed, 1998 that food, few working members provide education and other basic needs for the family.

Educational Level

The educational status of the population in fishing dependent commune is represented by the educational status of the population in the 8-selected fishing province as in the table 3 below. The percentage of no education female is higher than the percentage of male. At the low level of education (primary), female household members are higher percentage than those male, but when it starts from secondary and higher level of education, the proportion are reversed. This result is similar to the result of the National census, 1998.

Table 3. Educational status of household members (7 years and above) in 8 selected provinces of Cambodia, 1995-96.

Educational Level	Male		Female		All	
	No.	%	No.	%	No.	%
No education	1,659	19.6	3,211	26.4	4,870	23.6
Can read only	798	9.4	2,683	22.1	3,481	16.9
Primary	4,119	48.6	4,772	39.2	8,891	43.0
Secondary	1,559	18.4	1,338	11.0	2,897	14.0
Higher secondary	308	3.6	150	1.2	458	2.2
Bachelor and above	41	0.5	13	0.1	54	0.3
Total	8,484	100.0	12,167	100.0	20,651	100.0

source : Ahmed et al. 1998.

3.2.3. Occupation and Income

The data from the household survey shows that the households in the fishing commune involved in a various occupations (Table 4). Farming activities (76.71%) is still predominant to fishing (38%),

although the households are in the fishing dependent commune. This because most of the households are land-based.

Household income in the fishing dependent commune is derived from various economic activities. The result of the socioeconomic survey done by the project for the management of the freshwater capture fisheries reveals that household income is derived from various sources such as agriculture, non-agriculture activities, and other source of income such as business and remittances. Agriculture income is mainly derived from rice production, crop, vegetable, livestock and poultry rising, and aquaculture.

The average annual gross income per household of both fishing household and non-fishing household is about (6,312,000 R). This income is mostly derived from homestead land and water (60.70%). Non-fishing households obtain the average annual gross income per household about 7,261,000 Riel which much higher than the fishing household amounting to 4,557,000 Riel. The income obtained from agricultural land is 18.77%, and only (6.37%) is obtain from common property resource. However, this figure does not reflect the real income of the household, because this just the cash income that the household reported. In fact non-cash income such as vegetable, firewood, animal, and fish were collected from the common property resource did not count in this figure.

A case study about land-less and water resource used in fishing dependent commune in Battambang province conducted by Oxfam provide a good information about the income of fishing households who employ themselves as a full time in fishing activity. The study focuses three type of fishing households. The first is the households with land-based and animal, the second is the households with land-based but has no animal, and the third is the households without land-based. The figure shown that the fishing household with land based could earn more income from fishing than the household without land-based does. The average income of the fishing household from fishing per day is ranged from 2.2 to \$5.7 US depending on the fishing season (Table 5). In general, fishing household without land-based go to fish 25 days a month, while fishing families with land-based go to fish 15 days a month.

Table 4. Percentage involvement in various production and income generating activities, 1995-96.

Occupation	% responses of household heads	% responses of household members	% responses of all household members
Fishing	35.88	24.60	38.79
Fish selling	4.24	12.16	13.15
Fish culture	2.50	2.31	2.91
Fish processing	1.60	8.74	9.01
Fishing gear making	0.43	0.38	0.86
Farming	75.96	73.38	76.71
Daily labor	17.31	11.45	20.71
House keeping	14.36	74.13	76.67
Cloth handicraft	2.44	3.50	3.87
Petty trading/shopkeeping	17.12	21.07	23.47
Business	3.36	1.97	3.99
Government service	6.92	3.69	8.99

Ciclo/rowing boat service	0.20	0.14	0.27
Moto taxi/boat driving	3.07	0.88	3.40
Private/NGO service	0.38	0.27	0.55
Money lending	0.16	0.14	0.25
Others (firewood collection)	12.04	5.18	12.92

Source: Ahmed et al. 1998.

Table 5. Average annual cross income (riel) per household in 13 fishing provinces by source, 1995-96.

Source of income	Fishing households	Non-fishing households	All households
Homestead land and water	2,006,000 (44.02%)	4,880,000 (67.21%)	3,833,000 (60.73%)
Agricultural land	830,000 (18.21%)	1,325,000 (18.25%)	1,185,000 (18.77%)
Common property resources	918,000 (20.15%)	113,000 (1.56%)	402,000 (6.37%)
Other sources of income	803,000 (17.62%)	943,000 (12.98%)	892,000 (14.13%)
Total	4,557,000 (100%)	7,261,000 (100%)	6,312,000 (100%)

Source: Ahmed et al. 1998.

Table 6. Average income deriving from fishing and vegetable collecting of fishing dependent commune in Battombong province, 1999-2000.

Items	Fishing							
	Land-based with animal		Land-based without animal		Land-less		All	
	Good time	Worse time	Good time	Worse time	Good time	Worse time	Good time	Worse time
Average catch/day (kg.)	10.1	4.1	12.3	4.7	9.7	2.8	11	3.8
Average income/day (\$)	5.5	2	6.6	2.8	4.8	1.8	5.7	2.2
Items	Vegetable collection							
	Land-based with animal		Land-based without animal		Land-less		All	
	Average income/day (\$)	0.8	1.1	1	0.97			
	Maximum (\$)	1.1	2.3	1.5	2.3			
Minimum (\$)	0.52	0.2	0.7	0.2				

Source: Oxfam, case study in fishing commune, Battombong province, 2000

3.3. Asset Ownership

Table 7 shows the average value of durable assets and equipment of fishing households and non-fishing households of 13 fishing provinces. The value of fishing equipment of fishing households shared about 16.32 percent of the total value of assets and equipment, while the share value of

fishing equipment of non-fishing households have only 0.7 percent of the total value of assets and equipment.

Table 7. Average value of durable assets and equipment per households (riel) of fishing and non-fishing households in 13 fisheries provinces, 1995-96

Items	Fishing households	Non-fishing households	All households
Household durable assets	428,200 (63.55)	439,900 (72.20)	462,800 (70.17)
Furniture	34,100 (5.05)	54,600 (9.00)	47,100 (7.14)
Fishing equipment	110,000 (16.32)	4,200 (0.70)	42,200 (6.40)
Fish processing equipment	8,400 (1.25)	3,000 (0.50)	5,200 (0.78)
Farm equipment	92,800 (13.80)	105,300 (17.20)	100,800 (15.27)
Other professional	300 (0.04)	2,400 (0.40)	1,600 (0.24)
Total	673,800 (100)	609,300 (100)	659,500 (100)

Source: Ahmed et al. 1998.

4. Fishing and fishing related activities

4.1. Fishing Activity

The current exploitation of the freshwater capture fisheries is formally divided the fishing into three types: large-scale fishing referring to the fishing lot, middle scale fishing or licensed fishing and family fishing also called subsistence fishing (Fat-Law No. 33 KRO.CHO, 1997). Both commercial or large scale and middle scale fishing serve purpose of collecting the national revenue. Both types of fishing can operate only during open fishing season. Fishing lots are leased out to the private sector for every two years through public auction (Sub degree No. 26 OR. NO.CRO., 1989). The middle scale fishing has to be licensed and register by the fishermen or the group of fishermen every year. Whereas the family fishing can operate during the whole year and in everywhere, except inside the fishing lots during open season and inside the so-called “fish sanctuaries”.

Family fishing is found almost everywhere and every season even in some upland provinces such as Udor Meanchey, Kampong Speu and Preh Vihea. This fishing is actively practiced by many fishing households and non-fishing households. The household survey conducted by the project for the management of the freshwater capture fisheries of Cambodia, 1998 shows that the involvement of fishing household and non-fishing household in family fishing in open fishing season is about 87%. Only about 9 % are involved in middle, 1% in large-scale fishing, and 3 % involved in fishing lot workers (Table 8).

Table 8. Distribution of fishing households by type of fishing involvement in the open fishing season, 1995-96.

Type of involvement	Household heads		All household member	
	No. of households	% of total activities ^b	No. of households	% of responses ^c
Family fishing	1599	87	1971	99
Middle-scale fishing	172	9	283	14
Large-scale fishing	19	1	23	1
Fishing lot worker	45	3	53	3
Total ^a	1835	100	2330	117

Source : Ahmed et al. 1998.

^a The total may exceed the number of households engaged in fishing as members in some households are involved in more than one type of fishing.

^b Expressed as percentage of households in which the heads of the household are fishing (n=1835)

^c Expressed as percentage of total number of fishing households (n=1985)

4.2. Fish Catch Structure

The estimation of fish catch figure from the project for the management of the freshwater capture fisheries of Cambodia provided a very clear picture about the structure of the freshwater capture fish catch in Cambodia. As it shows in the table 9, the total annual fish catch for all types of fishing are estimated to about 300,000 to 400,000 tons. Of the amount, family and rice field fisheries share about 40 % of the total catch.

Table 9. Cambodia. Range of the annual inland water catch in the years from 1994 to 1997.

Type of fisheris	Annual catch range (tons)
1. Large scale fisheries	
- Fishing lots ¹	30,000 - 60,000
- Dais(bagnets) ²	15,000 - 20,000
2. Middle scale fisheries ³	85,000 - 100,000
3. Family fisheries ³	115,000 - 140,000
4. Rice field fisheries ⁴	45,000 - 110,000
Total	290,000 - 430,000

Source: Diep at al., 1998

¹ Range reflects uncertainty in actual catch levels.

² Range shows approximately minimum and maximum values in 1994-98.

³ Based on socioeconomic survey data extrapolated to entire country.

⁴ Approximate 1.8 million ha x likely range of fish yield: 25-62 kg/ha.

A research long-term self monitoring of small-scale fisheries in Kampong Tralach district, Kampong Chhnang province, conducted by the assessment project estimated that the average annual fish catch per household is about 1,302 kg which is almost consistent with the Ahmed (1998:62) estimate for average annually fish catch of the fishing household Kampong Chhnang province, 1,137 kg, for open and closed season combined.

4.3. Fish Marketing Situation

4.3.1. Main fish production area

The fresh fish production comes mainly from Great Lake, Tone Sap, Mekong and Basac system. Both capture and aquaculture fresh fish are marketed inside and out side the country from the large scale, middle scale and family scale fishing. The high fish production provinces are Kampong Chhnang, Kampong Thom, Siem Reap, Battombong, Pursat and Kandal, which supply majority of fresh fish product in the country and export.

4.3.2. Fish marketing system

Freshwater fish marketing system in Cambodia is poorly developed. There are a variety of different marketing channels, but we can group into three types:

- Fishermen carry their fish catch directly to the market
- Fishermen carry fish to the landing place
- Whole buyer, fish processor collect buying from the fishing ground

Table 10. Fish marketing system of 8 selected fisheries provinces of Cambodia, 1995-96.

Marketing System	No of households	%
Direct carry to the market and sell to consumer	1,065	74.9
Bring to the landing site and sell to vendors	94	6.6
Whole buyer collect from fishing ground	255	17.9
Others	8	0.6
Total	1,422	100

Source : Ahmed et al. 1998.

Carry their fish catch directly to the market

Mostly the small-scale fishermen practice this channel. This is a very simple making channel and usually done by the wife, when the husband and family members bring the fish home from fishing ground. It shows in the table 10 that there are about 75 % of the fishing households practiced this type of marketing channel.

Bring to the landing side and sell to the vendor or wholesale buyers

Mostly the middle scale and large-scale fishermen practice this channel. The middle scale fishermen bring their catch to the landing place. Mostly the fishermen did this channel from the province around the Great Lake and, Tonele Sap River, Mekong and Basac River. There is no landing place in some areas, so the fishermen who operate fishing in those areas must bring their catch very far to the landing side, which is about 20 to 30 km. There are four main fish landing places around the Great Lake. Those are Battambang town (Sanke River), Kampong Luang (Pursat province), Chnouk Tru (Kampong Chhnang province), and Chong Khneas(Siem Reap province). Fishing lot owners also practiced the same way as the middle scale of the fishermen. Some fishing lot owners keep fish in

cage about 3 to 4 months and bring to land in Kilometer 11, Phnom Penh during closed season for supplying to Phnom Penh local market.

Whole buyer, fish processor collect buying from the fishing ground

Either fish dealers or fish processors collect buying fish from the middle scale of fishermen at the fishing ground or from the fishing lot. This channel is practiced almost everywhere in the Great Lake, Tonele Sap, Mekong and Back system. The study conducted by the project for the management of the freshwater capture fisheries of Cambodia revealed that about 18 % of the fishermen living in the fishing dependent commune practiced this channel.

Most of fish processors are farmers, who mostly come from the upland areas. The main purpose of fish processing is to keep for consuming in the whole year round (food security). Every year, farms in Kampong Speu, Takeo, Prey Veng and some part of Kampong Chhnang and Kandal province come to the Tonele Sap River to buy the fish from the fishing lot. The barter system being practiced by the farmer and fishing lot owner. The farmer brings the rice and exchange for the fish. The existing of barter system provides a good chance for the poor farmer.

4.3.3. Pricing

Fish is special commodity because they come from the natural resources and go directly to consumer. Fish commodities in Cambodia are seasonal characteristic and non-uniform among the species. To understand clearly the fish price commodities, some questions need to be considered: what level of price? Where? In what season? And what species?

There are three fish price levels in Cambodia: farm gate price, lending price and consumer price. The different between farm gate and consumer price are very high. This is due to the transportation and transaction cost is very high.

Fish price varies from one area to another dependent on distend from the fishing ground to the market.

Fish price also varies from season to season. Fish price are low during the peak period of fishing and high during the lean period. During the peak fish price is about 2.5 to 3 time higher than during the lean period.

Different type of fish is different price. In general fishermen sell their catch to whole buyer by grade shorting rather than by fish species. Fish will be shorted by species when fishes were sold to consumer at market. The high price species are exported to foreign country mostly to Singapore and Thailand.

4.4. Fish processing and consumption

4.4.1. Fish processing

The method used for fresh fish processing in Cambodia is traditional method. Most of fish processed is server as the food security purpose. So far, there is no any new technology being used to process freshwater fish in Cambodia although, there some fish source factories but those factories are still at very level.

4.4.2. Fish consumption

As many authors agreed that Cambodia is a fish eating country. This may probably because of fish is abandon, available and cheaper than the other animals. Fishing households or people who in the rural area consume fish almost everyday either in fresh or in the process form. Ahmed, 1998 provided an estimation of the average per capita fresh fish consumption of the household living in the fishing commune is about 43.5 kg per annum and about 14 kg of processed fish per capita. However, there is no such information representing the whole nationwide. This is will be done by the project for the management of the freshwater capture fisheries of Cambodia in the near future.

5. Stakeholder analysis

One of the first steps in almost any intervention, which affects the use of natural resources, is the identification of those individuals and groups who hold some kind of “stake” or interest of the resource.

5.1. Identification of stakeholders and their interests

The concept of the stakeholder does not only refer to those who directly involved in the exploitation of a resource but refers to all those deriving some of benefit from the resource. The key stakeholders are divided into two categories. These include primary stakeholders and secondary stakeholders FAO (1998).

Primary stakeholders as those with a direct interest in the resource, either because they depend on it for there livelihoods or they are directly involved in the exploitation in some ways. Secondary stakeholders would be those with a more indirect interest, such as those involved in institutions or agencies concerned with managing the resource or those who depend at least partially on the business generated by the resources.

Main stakeholders and their interest in Cambodia is given in table 11 below.

Table 11. Main stakeholders and their interest in the freshwater capture fisheries in Cambodia, 1998-99

Level of Stakeholders	Main group of stakeholder	Function and activities	Purpose and Interest
Primary Stakeholders	Lot owner, lease/sub-leaseholders	<ul style="list-style-type: none"> ● Concessionaire, private fishing right holder ● Large scale fishing operation 	Maximum revenue : <ul style="list-style-type: none"> ● Fish exploitation ● Leasing out fishing fish ground ● Selling fishing right
	Middle fishers	<ul style="list-style-type: none"> ● License fishing right holders ● Middle scale fishing operation 	<ul style="list-style-type: none"> ● Revenue from fishing operation
	Small fishers	<ul style="list-style-type: none"> ● Employ themselves to fishing activity and CPR gathering ● Small scale fishing operation 	<ul style="list-style-type: none"> ● Food security Income generation and subsistence from: CPR (fishing, Firewood, vegetable, and animal) collecting
	Local authorities	<ul style="list-style-type: none"> ● Selling open access area outside the fishing lot 	<ul style="list-style-type: none"> ● Revenue from selling open access
	Military/ police	<ul style="list-style-type: none"> ● Protection service for the lot owner ● Control some part of open access 	<ul style="list-style-type: none"> ● Wage from lot owner ● Selling open access ● Collect money from post checking point
Secondary Stakeholders	Fisheries department	<ul style="list-style-type: none"> ● Manage and control the fisheries resource 	<ul style="list-style-type: none"> ● Sustain fisheries ● Ensure income, food security and employment for rural people ● Nation revenue
	Fishing lot workers	<ul style="list-style-type: none"> ● Work as full time or part time for fishing lot owner 	<ul style="list-style-type: none"> ● Wage from the lot owner
	Fish traders	<ul style="list-style-type: none"> ● Channel fish commodity from fishers to consumer 	<ul style="list-style-type: none"> ● Revenue from fish trading
	Money Lenders	<ul style="list-style-type: none"> ● Provide credit to lot owner and middle and small fishers 	<ul style="list-style-type: none"> ● Interest from credit
	Farmer inside and nearby the fishing lot	<ul style="list-style-type: none"> ● Do agriculture inside the fishing lot or inside the flooded forest. 	Income and food security from farming and CPR gathering

Source : Ly Vuthy et al. , 1999

Lot owner, middle scale fishermen, small scale fishermen, local authority, and police and military are classified as primary stakeholder since they involve and get benefit directly from fisheries exploitation. For example, the lot owner conduct fishing operation, selling fishing ground and fishing right.

Fisheries Department, fishing lot workers, fish traders, money lenders, and farmers inside and near by the fishing lot are classified as the secondary stakeholders since they did not have interest directly from the fisheries exploitation but they involve in fisheries management, and they are dependent on wealth or business generate by the resource.

All different groups of stakeholders mentioned above involve in different activities and have different interest but they have relationship and interact to each other's. The activity of one group may harm to other group or the benefit of one group may effect to other groups. For example, selling open access will heavily affect to the livelihood of the subsistence fisher groups.

5.2. Conflicts of the resource used among the stakeholders

The conflict of the resource used among the stakeholders arises when one group violated the rule and regulation or violated the right of other group. The main source of conflicts among the stakeholders is presented in the table 17 below.

Table 12. Main source of conflicts from the resource used among stakeholders, 1998-99

Source of conflicts	Violators	Benefit and effect among different groups	Effect to fisheries
Selling the open common access	Lot owner, military, police, local authority	<ul style="list-style-type: none"> ● Benefit for the violators ● Reduction of income for the community 	<ul style="list-style-type: none"> ● Intensive fishing activities are taking place ● More fishes were caught
Extending the fishing lot boundary	Lot owner	<ul style="list-style-type: none"> ● Benefit for the lot owner ● Reduction of the income for the community 	<ul style="list-style-type: none"> ● More flooded forest is protected ● More fishes were caught
Closing water way	Lot owner	<ul style="list-style-type: none"> ● Improve fishing operation of the lot owner ● Disturb the socioeconomic of community 	<ul style="list-style-type: none"> ● More fishes were caught
Poaching inside the fishing lot	Fishers	<ul style="list-style-type: none"> ● Short term benefit for the individual fishermen ● Reduction of catch of the lot owner 	<ul style="list-style-type: none"> ● Illegal fishing gears were used ● More fishes and habitats were destroyed
Agriculture activities inside the fishing lot	Villagers	<ul style="list-style-type: none"> ● Short term benefit of the community 	<ul style="list-style-type: none"> ● More flooded forest areas were converted to the agriculture land

Source : Ly Vuthy et al., 1999

Selling common access: This happens when the lot owner or the soldier took away the open access that set aside for the people and sell out to individual fishermen. The community loss their interest and affect their livelihood.

Extending of fishing lot boundary: The extending of the fishing lot boundary commonly occurs in the lot located around the Great Lake. This happened where the fishing boundary is not clearly mark. However, the extending fishing lot boundary brings more flooded forest into the protected area.

Closing waterway: This happen when the lot owner closes the river, canal, or stream for the fishing operation. The community reside inside the fishing lot are the most suffered when this happens.

Poaching inside the fishing lot: This happens almost everywhere in the riverine and lacustrine fishing lot, especially where there is small area of the open access or the open access area is taken away. Poaching inside the fishing lot causes heavy destruction of the aquatic resources since the violators use the most effective fishing gear to catch fish in a short time, for example use electro fishing.

Agriculture activities inside the fishing lot: This is the conflict between the different purposes of using water resource. The lot owner needs to drainage the water from the reservoir or from basin for the purpose of fishing operation. Whereas the villagers need to keep the water for the agriculture purposes.

5.3. Fishing Right

The government assigns fishing right in Cambodia. The accessibility right to the freshwater capture fisheries was assigned at two different type of fishing grounds or habitats: the first is the fishing ground assigned by group and the second is the fishing ground protected. The former includes three different types, namely the fishing lot, fishing conservation area, and flooded forest. Whereas, the later include the fishing area which is not included in the former.

The fishing lot that is the most productive fishing ground assigned for the large scale fishing operation. The exclusive fishing right to this fishing ground was offered to the private sector within two or four year time period to exploit the fisheries. It is the commercial fishing and normally, the higher class of people joint together obtains this type of property right. The conservation area known as fish sanctuary is assigned for the fish to spawn and for the fisheries research, fishing technical experiment. The fishing ground protected mostly cover in the area of Great Lake and major rivers; Mekong, Tonle Sap and Basac River is assigned for only the middle scale and small scale fishing. The open access area inside the fishing lot is set aside special for only subsistence fishing that is usually accessed by community residing inside and near by the fishing lot.

5.4. Role of Women in Fisheries

Besides being responsible taking care of the children and a housewife, women play important role in fishing and fishing related activities such as fish selling, fish processing, fish cage aquaculture.

Many studies showed that the fishing operation that involve heavy physical work are usually carried out by men, while most of the activities related to processing and marketing are taken care of by

women. Generally, the portion of male involved in fishing activities are relatively higher than female. These could be attributed to the fact that women are less efficient in catching fish because fishing is a tedious activity and is very risky. However, in the families where there is no son who can help fishing operation, the wife and the daughter accompany the husband or father to fish.

Table 13. Occupation of household member by sex, 965, Siem Reap, Battambang, Kampong, Chhnang and Pursalt province, Cambodia, 1997-98.

Type of occupation	Male		Female		Total
	Number	% of total	Number	% of total	
Fishing	227	67.2	111	32.8	338
Aquaculture	51	41.8	71	58.2	122
Farming	6	42.8	8	57.2	14
Business	-	-	12	100	12
Non	157	32.8	322	67.2	479
Total	441	45.7	524	54.3	965

Source: Ly Vuthy, 1999.

6. Summary

Freshwater capture fisheries are very important source of employment, income generation, and food security for Cambodian rural people. More than 9 million of population is in the fisheries provinces and about 3 million people are in the fishing communes obtained either directly or indirectly benefit from fisheries resource. This review aims to provide an important background and document to support the formulation of socioeconomic framework.

Only the secondary data were utilized in this review including official source and publication report.

The population in Cambodia in 1998 is 11,437,656 with the annual growth rate 4.6 percent. The projected population will be almost double in year 2021. About 84.3 % live in the rural. Average household size of the nationwide is about 5.2. The female ratio is more than 51 %. Average population density is 64 per Km² and the population density different area is quite different. The densest is the Mekong data and the lowest density population is the mountain region. There are only 0.2 % in the rural and 2.9 % in the urban completed beyond secondary school. The economically active rate are higher in rural than urban because of the higher proportion of school attendance in urban area. The average monthly income is lowest in agriculture, fishing and highest in financial intermediation.

The socioeconomic and demographic in fishing dependent commune provided a clear picture that can compare with the socioeconomic and demographic of the country. The level of education of the people in fishing communes has similar trend as in the whole nation that is the highest percentage in primary school and the lowest percentage is in bachelor.

The involvement in economic activities are found the highest in farming activity and followed by the fishing activity although the communes are classified as the fishing commune.

The average annual income per household of both household and non-fishing household in 1997 is about 6,312,000 Riel. This provide the average annual income per head is about 1,052,000 Riel is equivalent to about US 300 \$. Comparing average annual income per head of fishing household is much lower than those of non-fishing household. The asset ownership structure show that the value of fishing equipment of fishing households shared about 16.32 percent of the total value of assets and equipment. It is very high comparing to the share value of fishing equipment of non-fishing households which amount to only 0.7 percent of the total value of assets and equipment.

Family fishing activities practiced by the fishing household and non-fishing household are very high (87 %) comparing to middle scale fishing 9 % and 1 % of large scale. The estimation of fish catch structure also shows that the percentage of total family fish catch is the highest as compared to middle scale and large-scale fishing.

Fish marketing channel in Cambodia is poorly developed. The majority of the marketing channel have been practiced by the fisher is the direct carry to the market (74.9%) and have been practiced by the small-scale fishermen. Fish price varies from season to season from species to species. Fishing processing in Cambodia is in the traditional form and most of fish processing are served as the food security. Per capita fish consumption per annum of the household living in the fishing commune is about 43.5 kg. And fish processing is about 14 kg. This attribute to the fact that fish is abandon, available and cheap comparing to the other animals.

Two types of stakeholders were defined: primary stakeholder and secondary stakeholder. Each group of stakeholder has different activities and different interest, but they have relation to each other and react to each other. The benefit of one group may harm to the other group. This raises the conflict among the different group of stakeholders. The main source of conflict is selling common access, extending fishing lot boundary, poaching inside the fishing lot and agriculture activities inside the fishing lot.

7. Conclusion and recommendation

This review of socioeconomic provides a useful document a bout socioeconomic condition of fishing and non-fishing household in major fisheries provinces. The review draws out some conclusions and recommendations as follows:

- Fishery is one of the most important sectors of the country as it provides food security, employment, income generation, and national revenues. Since fisheries are common property resource there fore many people reflecting in converting the flooded forest into agriculture land ignore its important role.
- A recommendation was made by the study in the village located in fishing lot number 14 Kampong Chhnang province that the flooded forest need to be preserved rather than it is converted into rice field. This recommendation is very meaning full since the fisheries are higher productive than the rice field.
- With the projected population in Cambodia, by the 2010 the population will reach about 20 million. This double increase of population will have more pressure to the fisheries sector. In

response to this matter, there is no any single individual or group could achieve this great task without cooperation and contribution an effort for all level of society including government, NGOs, local authority, fishermen, and non-fisher.

- To reduce the conflict among the stakeholders, some tasks need to be included; - fisheries co-management need to be developed based on the real situation in the field; - family fishing gear need to be redefined based the specific location; - information and documents relating to fishing lot management and fisheries community management need to be public informed.
- With the low of conscience of the society, the awareness building need to be strengthens for all level including policies makers, fish folk.
- Improve the capacity of the research and extension work on the fisheries. The research results need to be updated and taken into considerations and actions.

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The Agriculture Productivity Improvement Project (APIP)

The Fisheries Component

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