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SOCIOECONOMIC ASSESSMENT OF FRESHWATER CAPTURE FISHERIES IN CAMBODIA

REPORT ON A HOUSEHOLD SURVEY

Mahfuzuddin Ahmed, Hap Navy, Ly Vuthy and Marites Tiongco

**Project for Management of Freshwater Capture Fisheries of Cambodia
Department of Fisheries, Cambodia; Danish International Development Assistance (DANIDA);
and Mekong River Commission (MRC)**

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The views and opinions expressed in this publication are not necessarily those of the Department of Fisheries, the Mekong River Commission or the organizations in which the authors are employed.

*Cover: Floating village in the Great Lake, Chhnouk Tru, Kampong Chhang Province
(photo by N. van Zalinge).*

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PREFACE

This report is about people who live in village communities along the waters of the Mekong River and depend on fishing and related activities for the whole or part of their livelihood (food, income and employment). The study is part of the creation of baseline information on social and economic aspects of freshwater capture fisheries under the project "Management of Freshwater Capture Fisheries of Cambodia" implemented by the Department of Fisheries, Cambodia and the Mekong River Commission (MRC) with funding from Danish International Development Assistance (DANIDA). It focuses on household level analysis through sample surveys in eight freshwater fishery provinces. The computerized database created from the survey information collected is expected to provide background information for the assessment of critical constraints, as well as options for the management of fisheries in Cambodia. It is also expected to serve as a general reference point to understand and compare specific local data within the wider context of the rural Cambodian economy. It should be mentioned that during more than 20 years of civil war in Cambodia nearly all public documents were destroyed. Hence, no previous reference documents are available to guide policy and development of the country, which gives the project database the status of a pioneer reference guide.

For information obtained on a recall basis, there is always a certain element of imperfection in the accuracy of the results. Since the data collectors were staff members of the provincial branches of the Department of Fisheries, some information, particularly that concerning the relationship with the communities they serve, may be biased. On the other hand, familiarity with the local conditions may have helped them to obtain information from the respondents rather easily.

The completion of a large survey like this would not have been possible without the assistance of various agencies and colleagues. We thank particularly the Department of Fisheries in Phnom Penh and fisheries authorities within the Department of Agriculture in the eight provinces for their cooperation in implementing this study. We gratefully acknowledge the support given by Mr. Nicolaas P. van Zalinge, Chief Technical Assistance (CTA) during the data collection and data analysis and in the course of the preparation of this report. We have benefited from his advice during the conduct of the survey, as well as during the preparation of the report. Finally, it was due to the hard work of the data collectors and supervisors that such a wide range of baseline information was collected. In particular, we acknowledge the following provincial supervisors who participated actively in the preparation of the survey instruments, data collection and data inputting. Mr. Ing Monirith (Kampong Cham), Mr. Chhoun Chamnan (Kandal), Mr. Pen Marandi (Siem Reap), Mr. Prak Leang Huor (Kampong Chhnang), Mr. Nou Sary (Pursat), Mr. Minh Bonich (Battambang) and Ms. Un Kanika (Kampong Thom).

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EXECUTIVE SUMMARY

Under the project entitled "Management of Freshwater Capture Fisheries of Cambodia" a baseline socioeconomic survey of households covering eight fishing provinces including Phnom Penh was undertaken during 1995-1996. The main aim of the study was to assess the socioeconomic conditions of the households living in fishing dependent communes in order to provide the necessary information and a proper perspective for the sustainable management of the freshwater capture fisheries of Cambodia.

A total of 5 117 sample households covering 83 sample communes in 51 fishing districts in eight provinces of Cambodia such as Siem Reap, Battambang, Pursat, Kampong Thom, Kampong Chhnang, Kandal, Kampong Cham and Phnom Penh were surveyed. About 4.19 million people (more than 40% of the total national population) live in the 51 fishing districts in the study provinces. Of these, an estimated 2.30 million people live in 328 fishing dependent communes located within the fishing districts. Both sample communes and sample households were randomly selected. Thus, the sample communes and households surveyed are representative of the communes and households in 328 fishing dependent communes. The study communes also covered the two major systems of freshwater capture fisheries environment: 1) the Great Lake and Tonle Sap River; and 2) the Mekong-Bassac Rivers and adjoining floodlands.

The average size of the households was six, while the ratio of male to female in the household was 49:51. Nineteen percent of the households were headed by women, majority (78%) of whom were widows. The literacy rate among household heads, including those who could read only, was high at 80%. Among the female heads of households, the rate of literacy was low at 57% compared to the male heads of households (85%). Only 43% of the household heads had the opportunity to attend formal school. For the household as a whole, 76% of the members above 6 years old could be considered literate although only 59% went to formal school. The age structure of the households indicated a very young population with 38% of the total household members below 10 years old. This implies that there will be a tremendous increase in the labor force in the near future, with consequent pressure on the existing natural resources such as fisheries.

Households were found to combine farming, fishing, fish selling, fish processing and various other activities for food, income and employment. Sixty-eight percent of the household heads reported farming as their principal activity, followed by 11% engaged in fishing and related activities. However, in as many as 39% of the households, either the household head or at least one of the members was actively engaged in fishing. These households were regarded as fishing dependent households.

The living conditions of the sample households in fishing dependent communes were generally poor. Houses made of bamboo, wood, or concrete which were built on land were owned mostly by non-fishing households. On the other hand, houses built on floating boats and over water with or without fish cages were usually owned by fishing households. Toilet facilities, good drinking water and access to electricity were in general very limited. The average land owned by the household was less than 1 ha. About 21% of the households own more than 1 ha of land. Appliances such as television, radio and clocks were owned by only a limited number of households (18, 16 and 38% respectively). Transport facilities like bicycle and boat were owned by 64 and 24% of the sample households, respectively. Non-fishing households owned more consumer durables (e.g., radio and television), furniture, and farm equipment than fishing households. In this regard, the living conditions of fishing households were poorer than those of non-fishing households.

Female-headed households in general lagged behind male-headed households. Fewer female heads of household are educated. They have fewer school-going children and poor housing conditions. There was also a low rate of participation by female members from female-headed households in economic activities. Studies are needed to determine the extent of the lack of female employment opportunities and to identify constraints that hinder equitable participation of female members, particularly those belonging to the female-headed households.

Most (92%) of the households depend on the products and benefits derived from common property or publicly owned resources, either as a source of food for consumption or as a source of income. Most of the income of the fishing households come from products derived from common property resources in flooded forests, big rivers and lakes, flooded ricefields and river banks. As much as 81% of the households derive benefits from flooded forests. Results also show that if restrictions are imposed on access to and exploitation from these common property resources, there will be a significant negative effect on the livelihood opportunities especially for the subsistence households whose alternatives are extremely limited.

Overexploitation and increasing population growth were the main reasons cited by the households for the declining trend in the availability of the products and benefits from common property resources. Nevertheless, 90% of the households interviewed still prefer to enjoy a free and unlimited access rather than face regulations on the use of common property, probably due to the fear of losing a traditional source of livelihood.

Fishing households have a higher level of per capita intake of fresh fish (49.7 kg/yr) compared to non-fishing households (39.9 kg/yr). The average per capita consumption of fresh fish for the households living in the fishing communes is estimated at 43.5 kg per year. In addition, about 14 kg of processed fish per capita, consisting of fish paste, fermented fish, salt-dried and smoked fish, are consumed by the households. Based on available information on conversion rates, these processed fish amounts to nearly 27.5 kg of fresh fish equivalent. In addition, the fresh fish equivalent for fish sauce is about 4.5 kg based on the conversion of 1 liter fish sauce for every 0.8 kg fresh fish. Thus, the total fish consumption by the households living in the fishing dependent communes could be as high as 75.6 kg per capita per annum. Other animal proteins such as beef, pork, chicken and duck were consumed at the rate of 8 kg per capita. Obviously, fish represents the bulk of animal protein consumption by the people in the fishing dependent communes. Presumably, the proportion is significantly higher than the national average of 75% of the dietary animal protein supplied from fresh fish and processed fish.

About 56% of the average household expenditures were attributed to food, which amounted to 950,000 riel (US\$1=2 500 riel) per year per household. Households borrow from relatives, friends and local money lenders (who usually charge high interest rates), in order to buy rice (27%) and pay for medical treatment (27%). There were very few households (4.8%) who indicated they were lenders of money or rice.

Households were grouped into three levels of fishing involvement, namely: family fishing, middle-scale fishing and large-scale fishing following the official classification used by the Department of Fisheries. There were only 23 households (1%) engaged in fishing lots or large-scale fishing, either as lease or sub-lease holders or shareholders of fishing lots. The most common type of fishing lot was riverine/lake lot and the most popular gears used were bamboo barrage traps and seine nets.

There were a total of 284 households (<6%) engaged in middle-scale fishing. They were composed of the license holder, with or without cosharer(s). Their fishing grounds are located in Tonle Sap and its

connecting small rivers/lakes, upper portion of Mekong and small rivers/lakes connected to the Great Lake. Commonly used fishing gears were hook long lines, bamboo traps/fence traps and gillnets.

Family fishing is allowed during both open and closed seasons. Almost all of the fishing dependent households were involved in family fishing. Family fishing gears included single-hook lines, small handled dragnets, bamboo/rattan traps and gillnets. Households engaged in family fishing usually catch fish in small rivers/lakes, inundated forests and flooded ricefields. Based on the average size of catch from both family fishing (647 kg per household) and middle-scale fishing (3 319 kg per household), the estimated fish catch in the surveyed provinces was around 200 000t. Nearly 40% of the fish catch was consumed within the fishing dependent communes.

Eighty four percent of the marketable surplus of fresh fish caught was either directly transported to the market or collected by wholesale buyers from the fishing ground/lot. The remaining 16% was transformed and sold as processed fish such as smoked fish, fish sauce, salted dried fish and fish paste.

There were a number of regulations imposed by the Department of Fisheries in Cambodia. Only about 70% of the households were aware of the important regulations. Of the households who were aware of the regulations, 98% perceived that such regulations were important for the sustainability of the fisheries. Ninety three percent of the households stated that illegal fishing and overfishing are the major causes of the declining trend in fisheries production. A solution supported by 72% of the households was that the government authorities should have a stricter enforcement of the current regulations in order to protect the fisheries.

I. INTRODUCTION

A. *Topography and Resource Base*

Located on the Peninsula of mainland Southeast Asia, Cambodia's 181,000 km² area is mostly landlocked, bounded by three countries: Thailand (west and northwest), Laos (north) and Vietnam (east and southeast). It has a small coastline (about 300 km) along the Gulf of Siam (shown in Fig. 1.1). The country's interior is usually flat or occasionally rolling lowland plains that often break into a plateau and mountains. The Mekong River that flows through eastern Cambodia and the Tonle Sap River that originates in the lake of the same name (also known as the Great Lake) in the west cut across the country diagonally. The two rivers meet in Phnom Penh and continue to flow as the Bassac and Mekong Rivers into Vietnam. Various other smaller rivers and streams runoff this main drainage system, and are all important for fishing, transportation and the provision of alluvial soils through annual flooding (Ebihara 1968). Table 1.1 shows the area of the various inland water systems created by the Mekong River.

Table 1.1. Area of various types of land and water resources which support freshwater capture fisheries.

Type of land and water resources in Cambodia	Area (ha) 1985/87	Area (ha) 1992/93
Permanent water (river, lake, pond, etc.)	567 100	411 100
Flooded forest	795 400	370 700
Flooded secondary forest	28 200	259 800
Flooded grassland	80 800	84 900
Receding and floating ricefields	17 500	29 300
Seasonally flooded crop fields	366 800	529 900
Swamp	12 200	1 400
Total	1 868 000	1 687 100

Source: Ahmed et al. (1996) based on Cambodia Land Cover Atlas 1985/87-1992/93, Mekong Secretariat, Bangkok.

Note: Besides an overall decline, there were significant changes in the area under different types of land and water resources which support fisheries between 1985/87 and 1992/93. The changes in the area under each type of resource can be attributed to loss of primary flooded forests and timing of the survey between the two periods.

At one time, most of Cambodia was covered with forests: 71% in the late 1950s and early 1960s. The southwestern highlands and inter-riverine sections of the country were covered with dense tropical woods. The northern part had open forests with deciduous trees. The remainder of the country was covered with short grass and savannah. Around the Great Lake and on both sides of the Tonle Sap, Mekong and Bassac Rivers, large areas were covered with freshwater mangroves, known as inundated forests or flooded forests. Most of the grasslands and much of the open and inundated forests have been cleared for cultivation over the centuries, distributed into rice or vegetable plots or various domesticated flora (Lemasson 1949; Ebihara 1968).

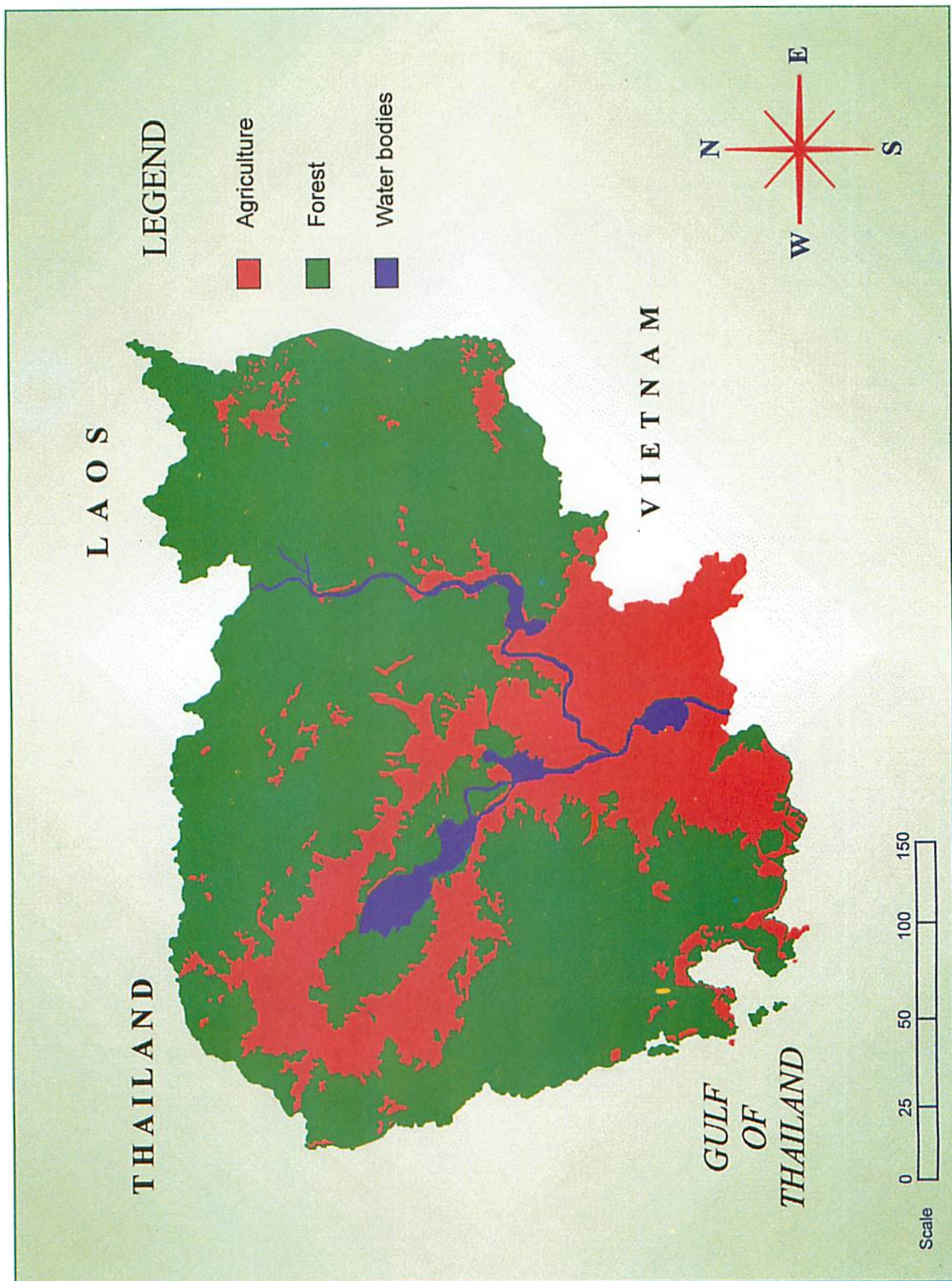


Figure 1.1. Map of Cambodia showing the river systems.

The Mekong, the world's sixteenth largest river with a 4 000 km long main stream, flows through six countries before reaching the South China Sea, discharging 11 000 m³s⁻¹ of water every year (Welcomme 1985). Its total catchment area in the six countries is about 795 000 km². All of Cambodia lies almost entirely in the catchment area of the Mekong. Excluding the provinces that are mountainous or open to the sea, all provinces produce a substantial amount of freshwater fish. The Department of Fisheries (DoF) considers 13 of these provinces (including Phnom Penh) as important for commercial freshwater fish production and reports the annual catch of freshwater capture fisheries from these provinces (Table 1.2). The bulk of the catch by households using family fishing gears is not reflected in the national statistics. The statistics on production are an underestimate (Ahmed et al. 1996). They do not reflect the catch from small-scale and subsistence fishing operation by household members, nor do they include fish production from provinces whose fisheries are not covered by licensing and leasing systems. Weak and inappropriate data collection systems also resulted in serious underreporting of catch from the commercial fisheries. Estimates based on an improved data collection system (introduced by the project in 1995-96) for commercial fisheries and rough estimates for family and ricefield fisheries suggest that freshwater fish production is of the order of 250 000 to 400 000 t/year (van Zalinge et al. 1996). Designated areas in rivers and lakes are auctioned as fishing lots for large-scale fishing, while licenses are issued for operating commercial fishing gears in open areas in the lakes and rivers in all of the 13 provinces (Appendix A, Table 1). The DOF collects nearly \$2 million as lease and license fees from the commercial fishery operators. Subsistence or family fishing, using a wide range of gears and fishing techniques, (Appendix A, Table 2) is carried out by almost every household living near the rivers, lakes and floodlands. They are not required to obtain a license for their fishing operations.

Inland fisheries occupy two major ecosystems consisting of: 1) the Great Lake and Tonle Sap River zone, and 2) the Mekong-Bassac inundated zone. The Great Lake-Tonle Sap fisheries account for 60% of current annual commercial fisheries production shown in government statistics. The provinces that are covered by the Great Lake-Tonle Sap zone are: Kampong Chhnang, Pursat, Battambang, Banteay Meanchey, Siem Reap, Kampong Thom and part of Kandal to the north of Phnom Penh. The Mekong-Bassac inundated zone covers the provinces of Kandal to the south of Phnom Penh, Kampong Cham, Takeo, Prey Veng and Svay Rieng. Of these, Svay Rieng is the only province where all fishing operations are open access and tax free. The three provinces Siem Reap, Kampong Chhnang and Kandal account for 50% of the total inland commercial catch. A third ecosystem consisting of the upper part of the Mekong and the rapids region of Cambodia covers provinces such as Kratie and Stung Treng, is considered less important for commercial fisheries, but serves as an important ecological link for most of the migratory species and provides subsistence fishing opportunities to the nearby residents.

Table 1.2. Distribution of freshwater capture fisheries production by province.

Name of Province	Fish production (t)			
	1980	1985	1990	1994
1. Phnom Penh	2 000	5 740	4 600	3 500
2. Kandal	1 500	10 375	12 500	9 000
3. Prey Veng	1 000	2 138	2 230	4 500
4. Takeo	600	1 447	1 900	1 850
5. Kampong Chhnang	3 700	10 220	12 000	12 200
6. Pursat	2 500	5 410	7 200	8 000
7. Battambang	1 300	3 700	4 300	4 800
8. Banteay Meanchey	-	-	190	250
9. Siem Reap	2 000	8 450	9 000	8 500
10. Kampong Thom	2 500	2 470	4 100	4 800
11. Kampong Cham	1 000	4 280	5 100	5 600
12. Kratie	300	1 500	1 300	1 500
13. Stung Treng	-	670	680	500
Total	18 400	56 400	65 100	65 000
Total including marine	19 600	67 578	105 000	95 000

Source: Department of Fisheries, Cambodia. Report of fishery sector from 1980 to 1994.

The Great Lake and Tonle Sap River are considered the largest tributaries of the Mekong. The drainage basin of the Great Lake is about 67 000 km², and it contributes 6.4% of the total water supply of the Mekong (MRC 1992). The volume of water entering the Great Lake from the Tonle Sap River is strongly correlated to the magnitude of Mekong floods. Any disruption through natural or man-made causes in the annual occurrence of floods is believed to be catastrophic for the freshwater fisheries in Cambodia (Ahmed et al. 1996).

B. *The Significance of Fisheries in the Rural Economy of Cambodia*

Cambodia is a country of forests, rivers and ricefields. Rice farming, fishing and extracting forest products have been the major means of generating food, materials and energy for subsistence since time immemorial. In the early 1960s, Cambodia had a population of 5 million, with 80% living in rural areas and in village settings with clearly defined spatial village boundaries. While the village residents had private rights on the arable lands within the village established by acquisition, ownership and other tenure arrangements, they enjoyed free access to forests and waters (streams, rivers and lakes), which were regarded as common property and often extended beyond the village boundaries (Ebihara 1968). Cultivation was primarily for subsistence and, hence, ties with markets were limited. The paddy was mainly rainfed with one crop a year.

Most people in Cambodia live around waterbodies. Self-sustaining villages are established along the sides of rivers and into the inter-riverine intersections. The villagers obtain housing materials, farming and fishing equipment and firewood from the forest. Fish provide protein to supplement rice. Fishing became a prime occupation for many people and the main source of protein for most due to the abundance of fish in the rivers in and around the villages. Traditional Khmer villagers pattern their livelihood around rice growing and fishing.

Ebihara (1968) gave the following account of fishing practices of the Cambodians:

"Every Cambodian farmer fishes to a limited extent in his paddies or nearby potholes or streams for family subsistence. Those who live along Lake Tonle Sap, along rivers, or on the coast may be exclusively fishermen, but these tend to be Vietnamese rather than Khmer. Fishing as an organized commercial activity is controlled largely by Chinese concessionaires who lease rights to fishing grounds on the Tonle Sap or Gulf of Siam from the Government. The total annual yield is quite large and is marketed fresh, dried, or as fish paste or oil; about one-third to one-quarter of the catch is exported".

Cambodians attach a great significance to rice growing. As such, every family must own or operate a ricefield. According to the 1955 census, more than 90% of the farmers had their own rice land. Fifty-five percent of the farmers had land holdings of less than 0.55 ha and the number of large land owners (>10 ha) were very few. The average size of rice land in the 1960s was 2.2 ha per family. Eighty-four percent of the farming households operated 1-5 ha of land (Ovesen et al. 1996). Rice was principally grown for subsistence by most farmers. Small kitchen gardens, fishing and limited gathering of plants supplemented the family food supply. Cash income necessary to purchase items not produced at home came from various non-agricultural activities such as palm sugar, raising chickens and pigs for sale, or temporary employment (Ebihara 1968).

Cambodia's agriculture was not well developed. Despite the poor soil conditions and an uneven water supply, Cambodian farmers were beginning to adopt some high yielding varieties (HYV) of rice toward the latter part of the 1960s like the farmers in many rice growing countries. The country fell into a series of political and civil strifes that lasted for two decades. As a result, the green revolution bypassed Cambodia. Production did not grow commensurate with population increases during the decades of war. By the early 1970s, Cambodia became a rice deficit country from being an exporter of 500 000 t of rice annually in the early 1960s. Today, it has one of the lowest yields in rice production in the world, averaging 1.3 t/ha compared to 3-4 t in Thailand and Indonesia (Shams and Ahmed 1996). In the deltaic part of Vietnam and China (Yunnan province), the production is 4 to 5.9 t/ha, respectively (Ojendal 1997). Based on the report of the FAO Mission Assessment in Cambodia in 1996, it is estimated that the production of rice is at 3.3 million tons, 40% above the estimated production in 1994/95 and 30% higher than the average for the preceding five years. This exceptional rice production in 1995/96 is attributed to favorable rainfall over most of the country and an increase in the use of fertilizers, which together encouraged an expansion in planting and favored crop development (GIEWS Report 1996).

At present, rice occupies 90% of the cropped area (1.844 million ha) and supplies 75% of the total calories consumed. Rainfed rice occupies 77% of the cultivated area and produces 67% of rice annually. Important subsidiary food and cash crops include: cassava, sugarcane, corn, sweet potato, soybean, mung bean, sesame, peanut, jute, tobacco and black pepper. The lack of a reliable water supply due to unpredictable rains, floods and droughts is a major cause of instability in agricultural production.

On the other hand, unlike many of its neighboring countries, Cambodia's ricefields and floodplains still produce a significant amount of aquatic products such as fish, shrimps, frogs, crabs and snails (Gregory and Guttman 1996; Gregory et al. 1996). These are of vital importance for local food supply and a source of income and subsistence to peasant households. Gathering of uncultivated vegetable food items and catching of fish from flooded ricefields are a necessary buffer to the yearly supply of food and income whenever crop production fails, which is a common phenomenon (Ovesen et al. 1996; Ahmed 1997).

Flooded forests also play an important role in the household food production and income systems. Despite encroachment and destructive practices, Cambodia still has nearly 700 000 ha of its area under

flooded forests. The common uses of flooded forests are: charcoal, fire wood, encroaching agriculture, catching wildlife through setting fire in the forest, supply of brush shelter and other fishing devices, and construction materials. In addition, food, medicine, honey, dye and glue are collected from flooded forests. The wildlife includes crocodiles, snakes, turtles, frogs and waterfowls. They are indiscriminately hunted for food, trade and other products.

The contribution of freshwater capture fisheries of Cambodia as a source of important food and nutrition, as well as income and employment, to the population is overwhelming. Fish and other aquatic products contribute greatly to Cambodia's food security. They are also a great environmental asset.

Thus, fishing and foraging activities in the lakes, rivers, flooded ricefields and flooded forests provide the necessary buffer to the food and income requirements of the rural population particularly during a poor rice harvest. In vast areas around the Great Lake, it is very common for farmers to grow only one rice crop and participate in extensive fishing and related activities, such as fish processing and fish selling (Ahmed et al. 1996).

It is difficult to separate rural Cambodians along occupational lines such as fishers and farmers. Similarly, it is also difficult to determine the degree of dependence of households on private and common property resources. In a peasant society, households depend on a range of occupations for their subsistence. The dependence on fishing, farming and other crafts and occupations varies depending on the resource endowments and access to land, water and markets. Tana et al. (1993) observed that even in a relatively less important fishing region, fish catch and consumption by households can have a wide range of variations. For instance families living near the waterbodies catch on average 86 kg of fish as compared to only 30 kg by those living away from the waterbodies. Even families that consider themselves fishing families differ widely in the amount of fish caught, e.g., 123 kg per household per annum for those located near waterbodies and 56 kg for those living far from waterbodies.

C. *Problems of Freshwater Fisheries*

The sustainability of fishery resources and their environment are a necessary precondition for the continued supply of fish and livelihood to rural people. Being a common natural resource pool, human intervention is critical in maintaining the sustainability of Cambodia's capture fisheries (Ahmed and van Zalinge 1996).

The current policy of distributing resource access and fishing rights by the state divides fishing into three distinct categories based on the type and scale of operations (Tan 1971). Large-scale fishing, also known as fishing lots, refers to highly commercial operations in designated water areas for which annual lease fees are collected by the government. Middle-scale fishing refers to commercial operations in open areas in the rivers and lakes for which the fishers are required to obtain licenses from the government. Small-scale or family fishing is a tax free operation carried out solely for subsistence. The large- and middle-scale commercial fishers; as well as small-scale family fishers, operate under extensive regulations enforced by the state authority. Competition to maximize the catch from the common pool resource has led to overfishing and destructive fishing practices by these user groups (Dennis 1990). Enforcement of regulations by experience of the DOF in protecting the public resource has been very weak and compliance has been very poor (Ahmed and van Zalinge 1996; Ahmed and Tana 1996).

As fishing pressure continues, degradation of the physical environment by both human initiated and natural causes is likely to have an unfavorable impact on the fishing dependent population, as well as the future supply of fish. The fragmentary information available refers exclusively to commercial fisheries (large- and middle-scale fisheries). The role of small-scale family fishing remains entirely unaccounted for, though family fishers comprise the largest segment of the fishing dependent population. A reassessment of the resource-base of the fisheries, the social and economic factors affecting the relationships between different uses and users of the water resources, the distribution of benefits for as well as the effectiveness of the present management regime are considered important in making any policy and legislative changes for the sector. The management policies in the future need to be directed toward ensuring a sustainable livelihood for the people who depend on the fisheries. Fishers and farmers need to have access to greater means of employment, income and production. It is, therefore, important to know and understand the fisherfolk, their rationale for fishing, their acceptance or refusal of management regulations or their adaptation of new technologies and livelihood opportunities.

The cooperation and support of the fisherfolk and those involved in the industry appear to be the most essential factors for realizing compliance to fishing regulations. The nature and distribution of household access rights to fishing grounds are also key factors in ensuring community participation in management. Likewise, the role of fisheries in household food security and income generation is an important factor in determining management objectives and recommending management options. Existing property rights and fishing access, socioeconomic status of the people living around the waterbodies and fishing grounds, including their dependence on fishing vis-à-vis other resources and alternatives for livelihood need to be investigated prior to any policy change or introducing new management interventions (Ahmed and van Zalinge 1996). On the other hand, the capacity of the DOF to carry out a proper assessment of fisheries is very limited. In view of the foregoing and as a part of the project entitled "Management of Freshwater Capture Fisheries of Cambodia," an assessment of the socioeconomic status of people and communities dependent on fishing and related activities was made through a baseline socioeconomic survey to provide the critical socioeconomic parameters for developing a sustainable management system.

D. Objectives

The overall objectives of the survey were:

- 1) to enhance the understanding of existing social and economic characteristics of the households living in fishing communes within the freshwater fishery environments of Cambodia; and
- 2) to characterize and assess the socioeconomic parameters that are crucial to the establishment of a sustainable resource management system.

The specific objectives of the socioeconomic investigations were:

- 1) to determine the role of fishing and related activities for the households living in the fishing dependent communes;
- 2) to describe the social and economic status of the households and the communities that depend on fishing and related activities for income, employment, food and livelihood;
- 3) to generate baseline information and a database on socioeconomic characteristics of households living in the fishing communes;
- 4) to identify problems and opportunities in fishing communities in relation to the changes in the fishing environment, resource availability and resource access; and
- 5) to strengthen the capacity of the national and provincial fisheries department in the collection, analysis and management of socioeconomic information on fisheries.

II. METHODOLOGY AND DATA COLLECTION

The investigation into the socioeconomic aspects of households dependent on freshwater capture fisheries focused on the households and communities that derive part or all of their income and livelihood from fishing and related activities such as processing, marketing, fishing gear construction and boat building.

A benchmark household survey was planned for selected fishing communities (communes/villages) in the Great Lake and Tonle Sap River environment, as well as the floodplains of the Mekong-Bassac River systems. There are 13 provinces that have access to the fishery resources of these two major water environments. Banteay Meanchey, Battambang, Pursat, Kampong Chhnang, Kampong Thom and Siem Reap represent the Great Lake-Tonle Sap environment, while Kandal, Kampong Cham, Phnom Penh, Prey Veng, Takeo, Kratie and Stung Treng represent the Mekong-Bassac River system and its adjoining floodlands. Eight of these provinces (Kandal, Kampong Cham, Kampong Chhnang, Siem Reap, Pursat, Battambang, Kampong Thom and Phnom Penh) were covered by the household survey (Fig. 2.1).

About 5.65 million people (60% of total national population) live in these provinces; 4.19 million reside in 562 communes within 51 fishing districts. Households in about 328 (58%) communes in the fishing districts have a significant dependence on fishing and these are defined as fishing dependent communes, to be called fishing communes hereinafter (Table 2.1). The total population of the fishing communes is 2.40 million living in 452 714 households (Appendix A, Table 5). The present study has focused on the households living in the fishing communes only. Hence, the sample households represent the 2.40 million population and households living in the fishing dependent communes in the eight provinces. Sampling procedures used in selecting households for interview are described in the following section.

Table 2.1. Number of fishing dependent communes and their population in the eight selected provinces.

Name of Provinces	Total		Fishing District					
	Population	No. of districts	Number of communes	No. of districts	Population of fishing districts	No. of communes		Total
						Fishing	Non-fishing	
Phnom Penh	833 872	7	62	3	295 189	16	19	35
Kandal	905 840	11	147	9	762 151	95	13	108
Kampong Cham	1 464 000	16	191	12	1 118 749	72	75	147
Kampong Chhnang	244 434	8	52	6	244 434	38	14	52
Siem Reap	637 451	14	108	6	476 026	33	34	67
Pursat	322 852	5	44	4	276 816	23	14	37
Battambang	694 854	8	66	6	580 005	25	31	56
Kampong Thom	546 791	8	81	5	438 279	26	34	60
Total	5 650 094	77	751	51	4 191 649	328	234	562

Source: Unpublished data from Provincial Agricultural Offices, Cambodia.

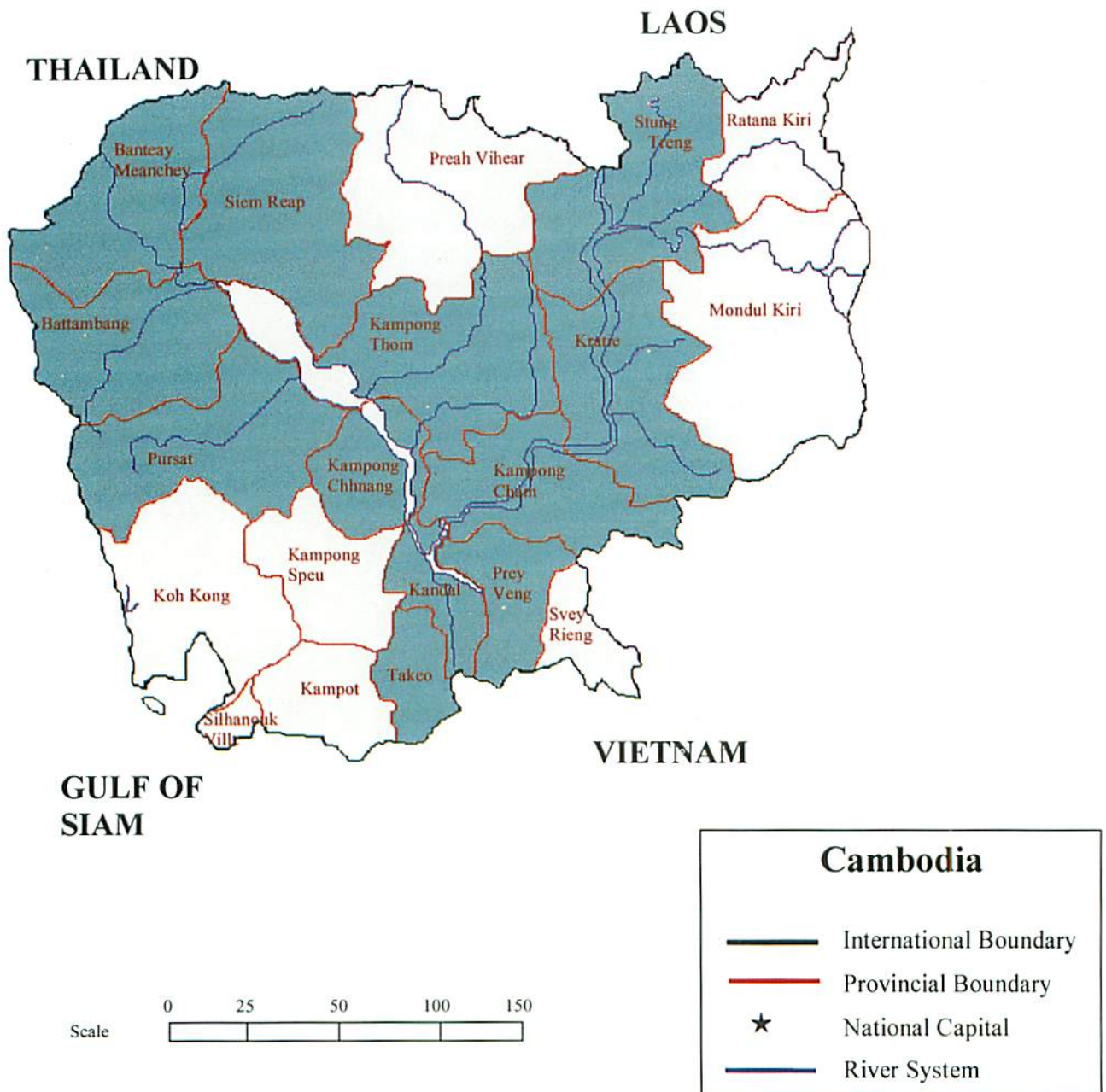


Fig. 2.1. Map of Cambodia showing the freshwater fishery provinces.

A. *Sampling Methods*

Given the capacity of the project, households from selected fishing communes were included in the survey. The diversified nature of fishing practices and marked differences among regions and communes in terms of resource characteristics, resource access and livelihood opportunities made it necessary to stratify communities in terms of similarities in resource systems, fishing practices and economic bases prior to the selection of sample communes or villages.

Under a decentralized fishery administration, basic information on the fishing communes, their locations, population size and nature of fishing dependence and other resources are expected to be maintained at the provincial fishery authorities. However, because of the lack of resource and poor organizational strength of the local authorities very little information is available at present. The Fishery Inspection Units in the provinces maintain a list of fishermen who use middle-scale mobile fishing gears within the jurisdiction of the unit. Information on family fishing, as well as statistics on people employed, such as labor by the leaseholds of fishing lots are virtually non-existent.

Thus, as a preliminary step, an extensive consultation at the field level was carried out to identify the appropriate sampling population. This involved: 1.) meetings with province/district level fisheries officials; 2.) interviews with key potential informers (e.g., commune leaders, fish traders, fishing lot operators and ordinary fishers); and 3.) personal observations by project experts during site visits in the provinces. These gave a fair basis for classifying the fishing dependent population in terms of relative availability of and access to resources (Appendix A, Table 3). A selection of sample fishing communes and fishing households for survey in the selected provinces was made based on this classification.

I. SELECTION OF FISHING COMMUNES

First, fishing districts were identified in each province (Figs. 2.2-2.9). Districts which have waterbodies and whose population is involved in fishing were classified as fishing districts. This was followed by a listing of communes in the fishing district. Communes were then divided into fishing and non-fishing communes (Appendix A, Table 4). Communes which have access to waterbodies and whose population was engaged in fishing and fishing related activities were categorized as fishing dependent communes. An additional step was to determine the degree of fishing dependence and type of accessible fishing grounds or environments for each fishing dependent commune. The accessible fishing grounds in the study areas were classified into five types, namely: 1) principal rivers/great lakes; 2) small lakes/streams/reservoirs; 3) inundated forests; 4) ricefield/floodlands; and 5) other rivers/lakes. In determining the degree of fishing dependence of the commune, the type of fishing practised by the members of the commune was analyzed (Appendix A, Table 5). The dominant fishing practices were family fishing, fishing lots, middle-scale fishing and combinations of two or three of these practices.

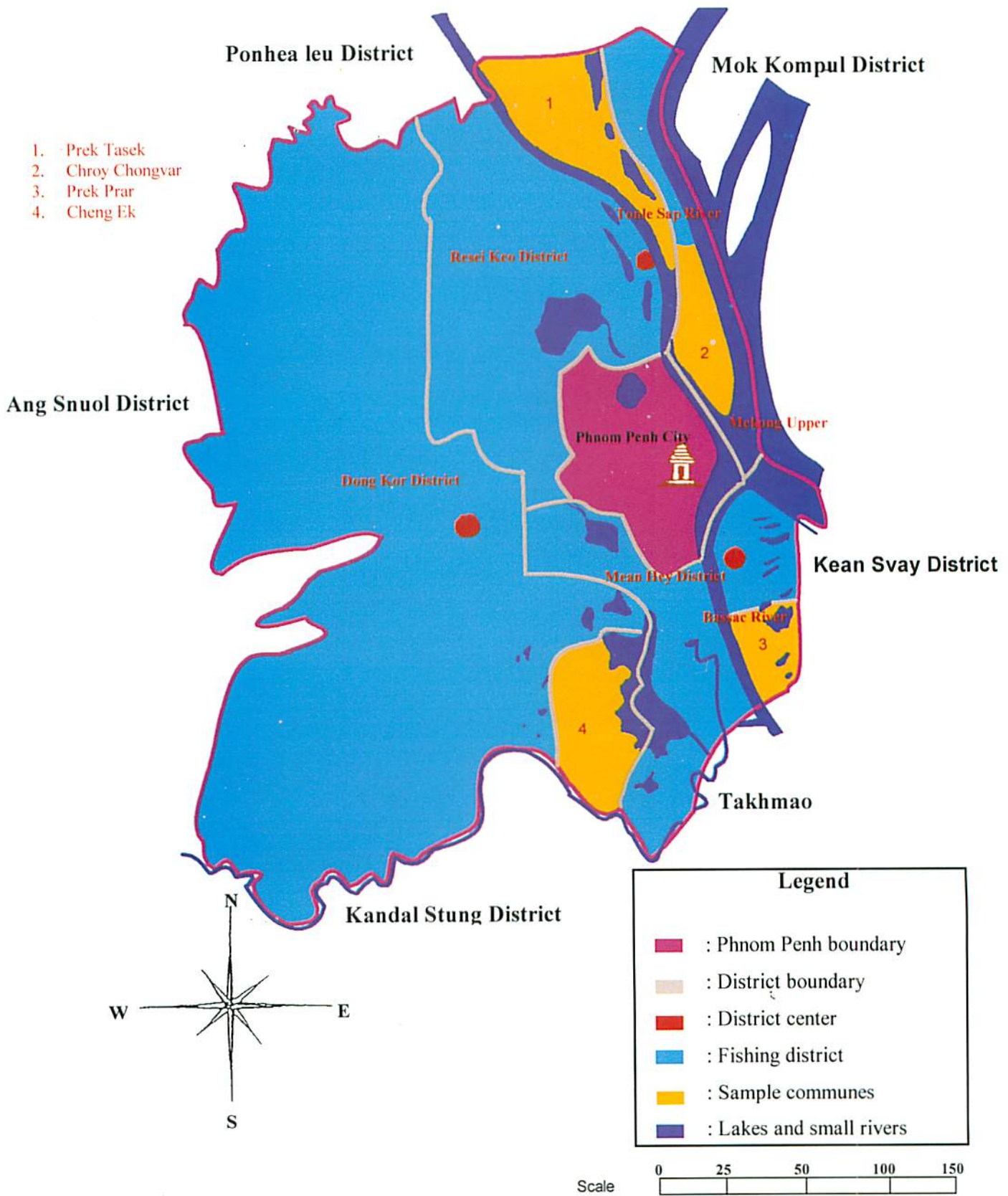


Fig. 2.2. Map of Phnom Penh showing fishing districts and sample communes for the household socioeconomic survey.

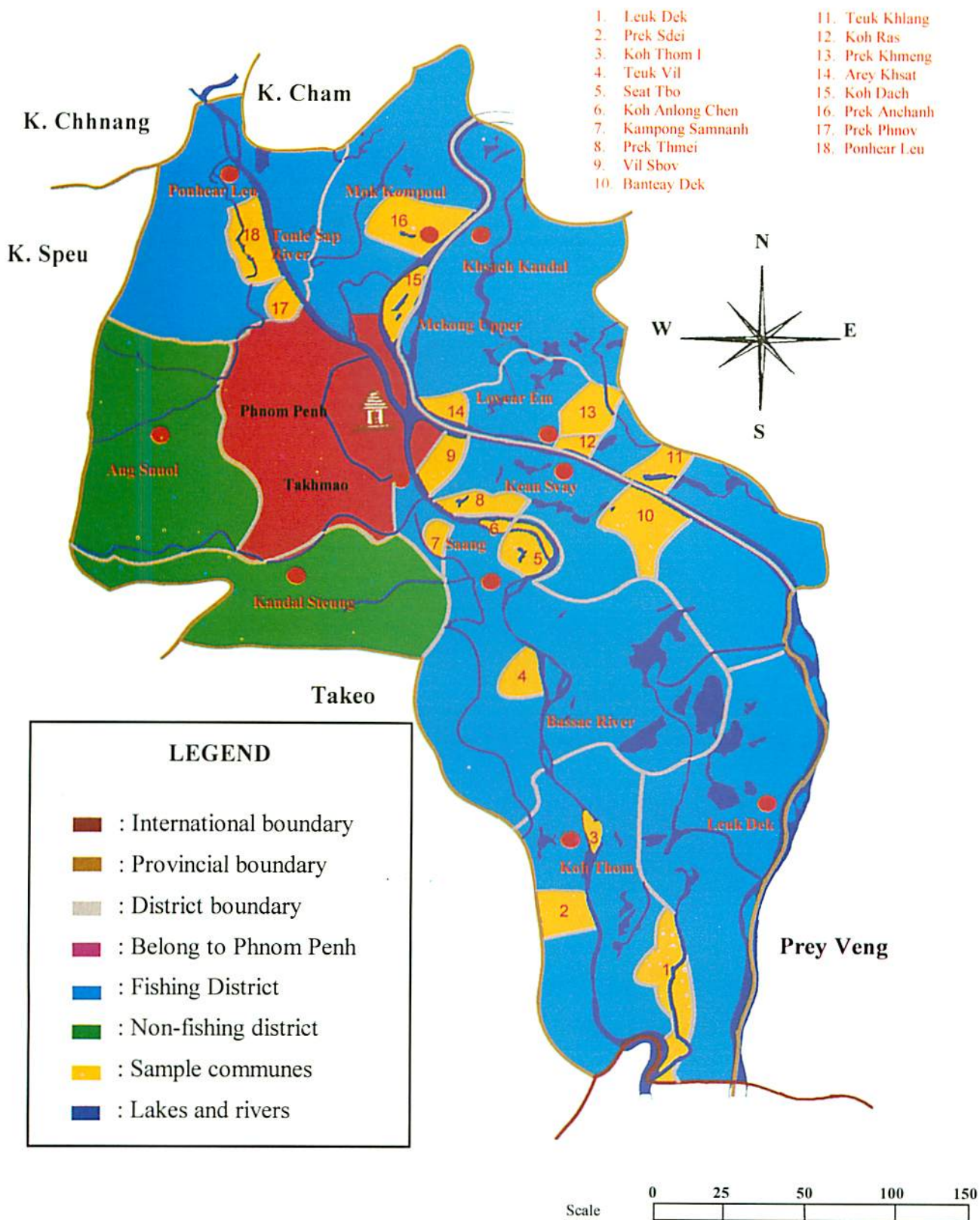


Fig. 2.3. Map of Kandal province showing fishing districts and sample communes for the household socioeconomic survey.

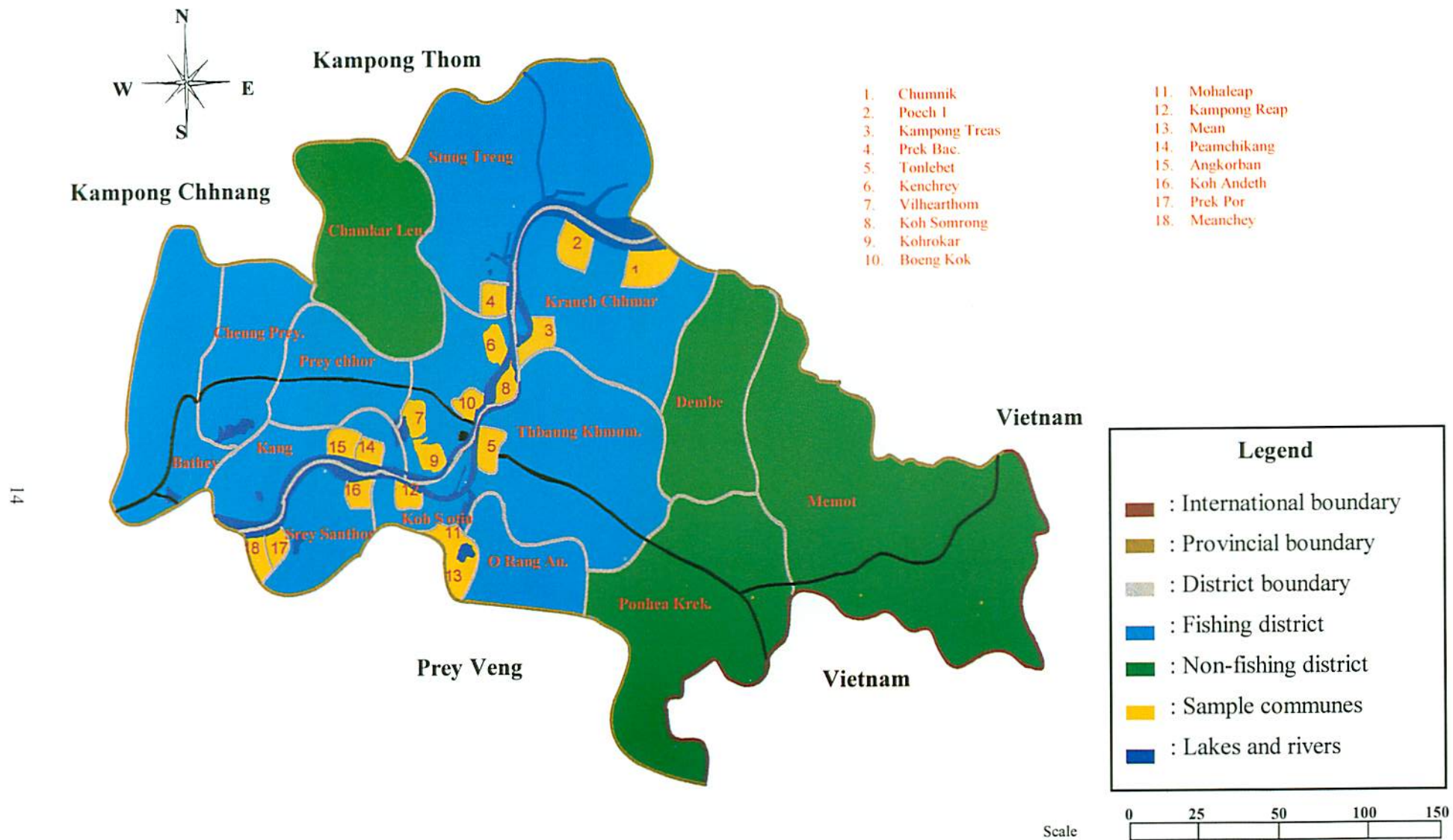
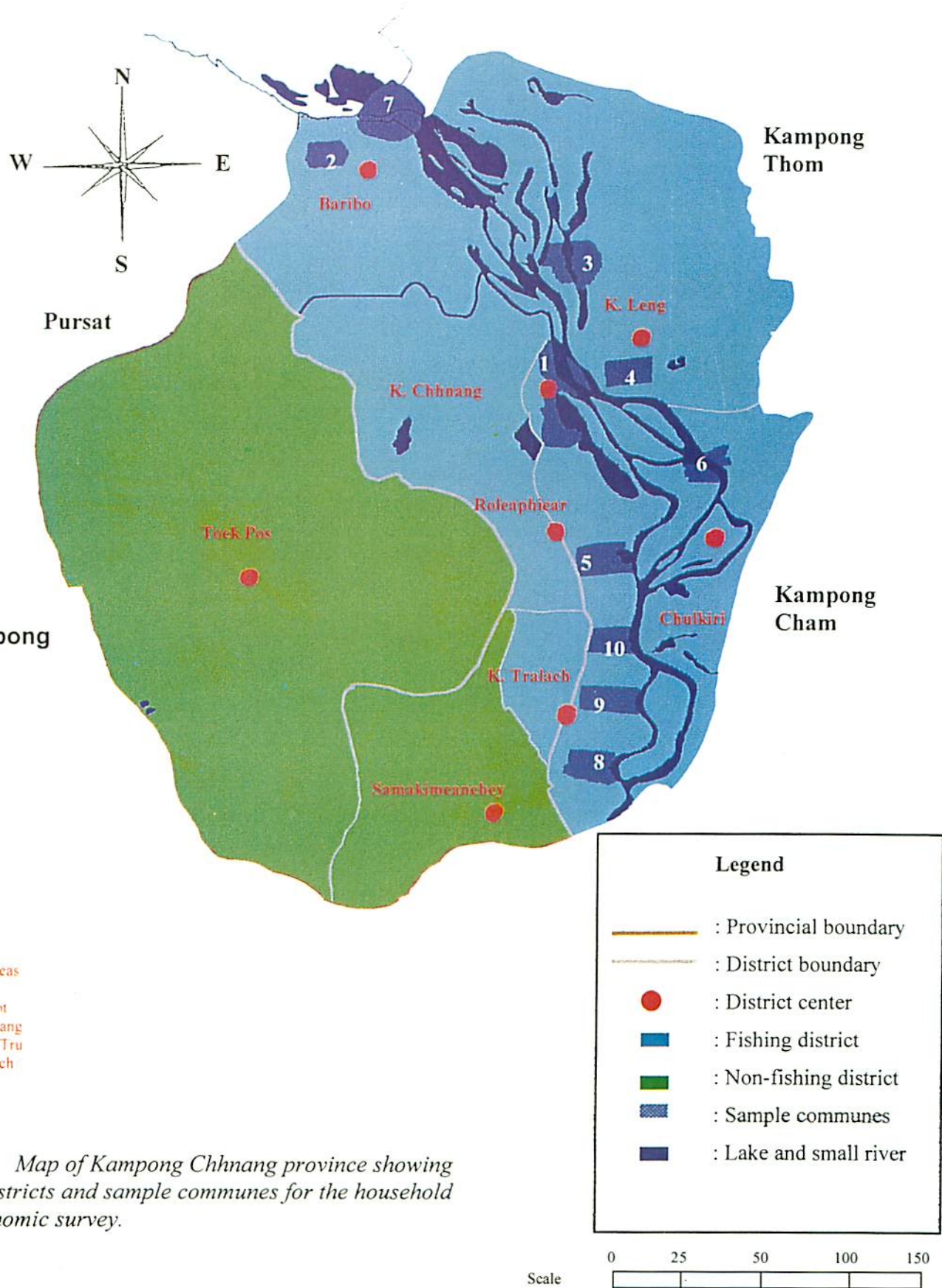


Fig. 2.4. Map of Kampong Cham province showing fishing districts and sample communes for the household socioeconomic survey.



- 1. Khum
- 2. Chork
- 3. Pralaymeas
- 4. K. Hov
- 5. Tuk Huot
- 6. K. Chhnang
- 7. Chhnok Tru
- 8. K. Tralach
- 9. Taches
- 10. Seb

Fig. 2.5. Map of Kampong Chhnang province showing fishing districts and sample communes for the household socioeconomic survey.

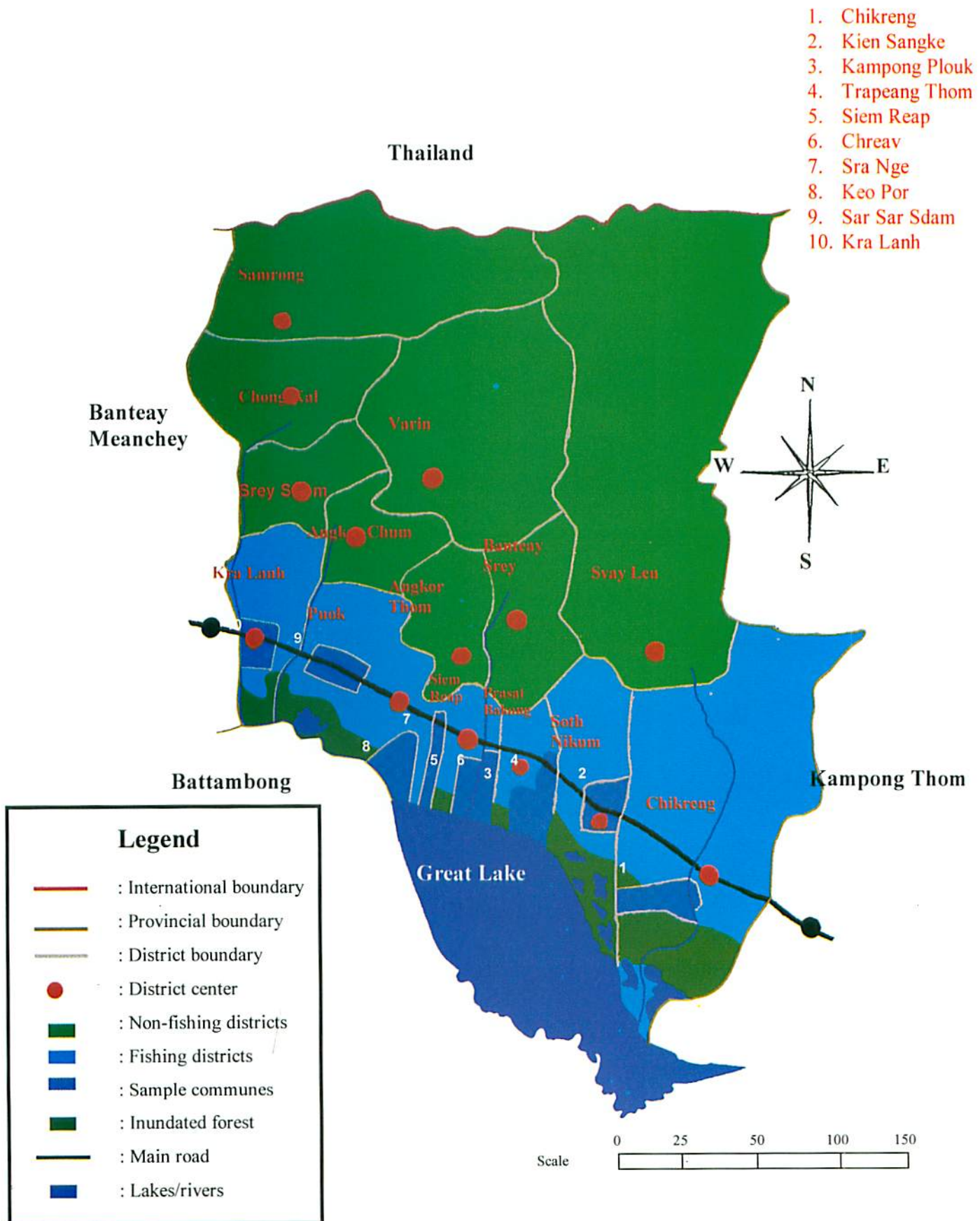


Fig.2.6. Map of Siem Reap province showing fishing districts and sample communes for the household socioeconomic survey.

1. Kampong Luong
2. Osandan
3. Ansa Chombok
4. Sya
5. Svay Luong
6. Lalork Sor
7. Snam Prass

17

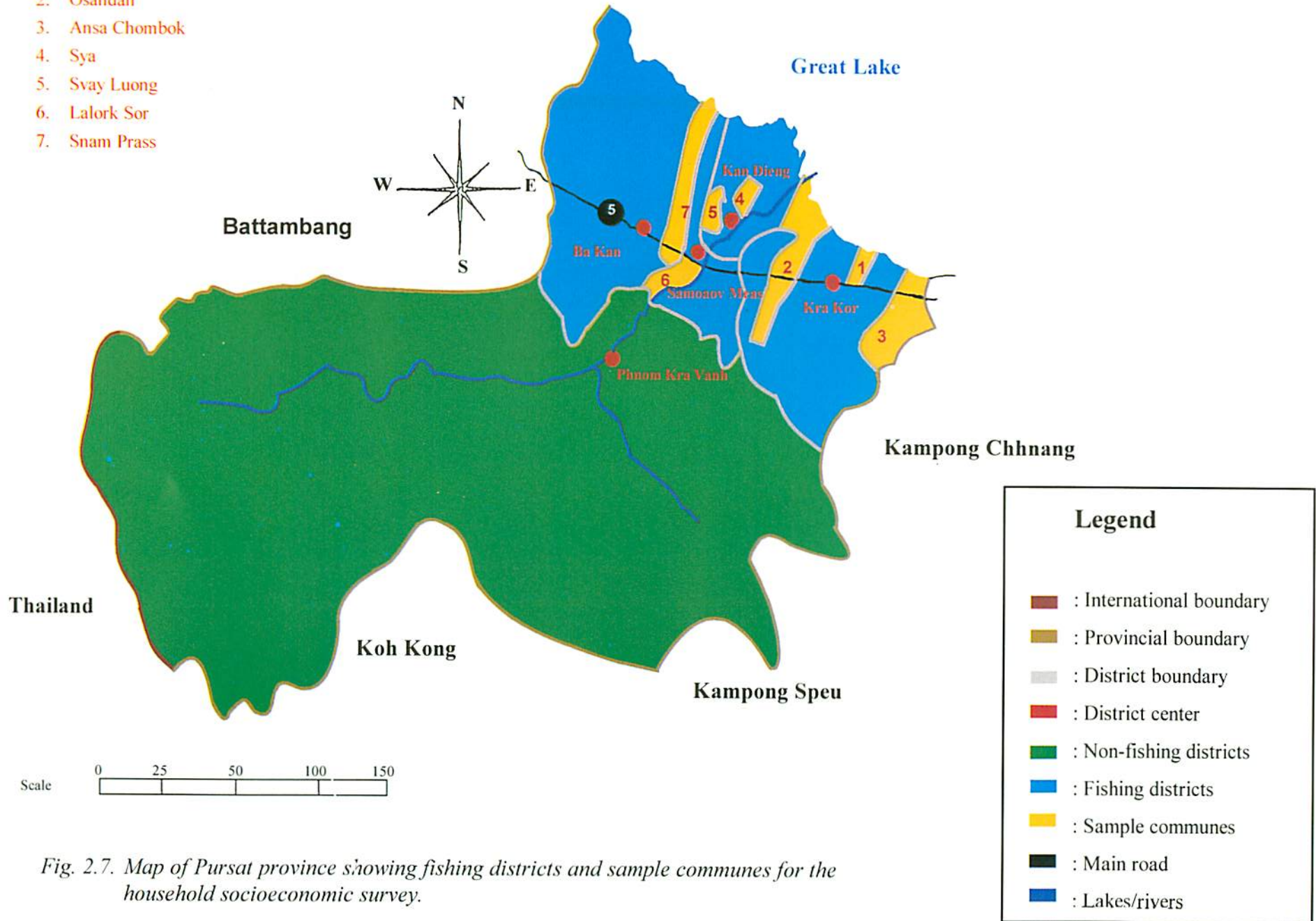


Fig. 2.7. Map of Pursat province showing fishing districts and sample communes for the household socioeconomic survey.

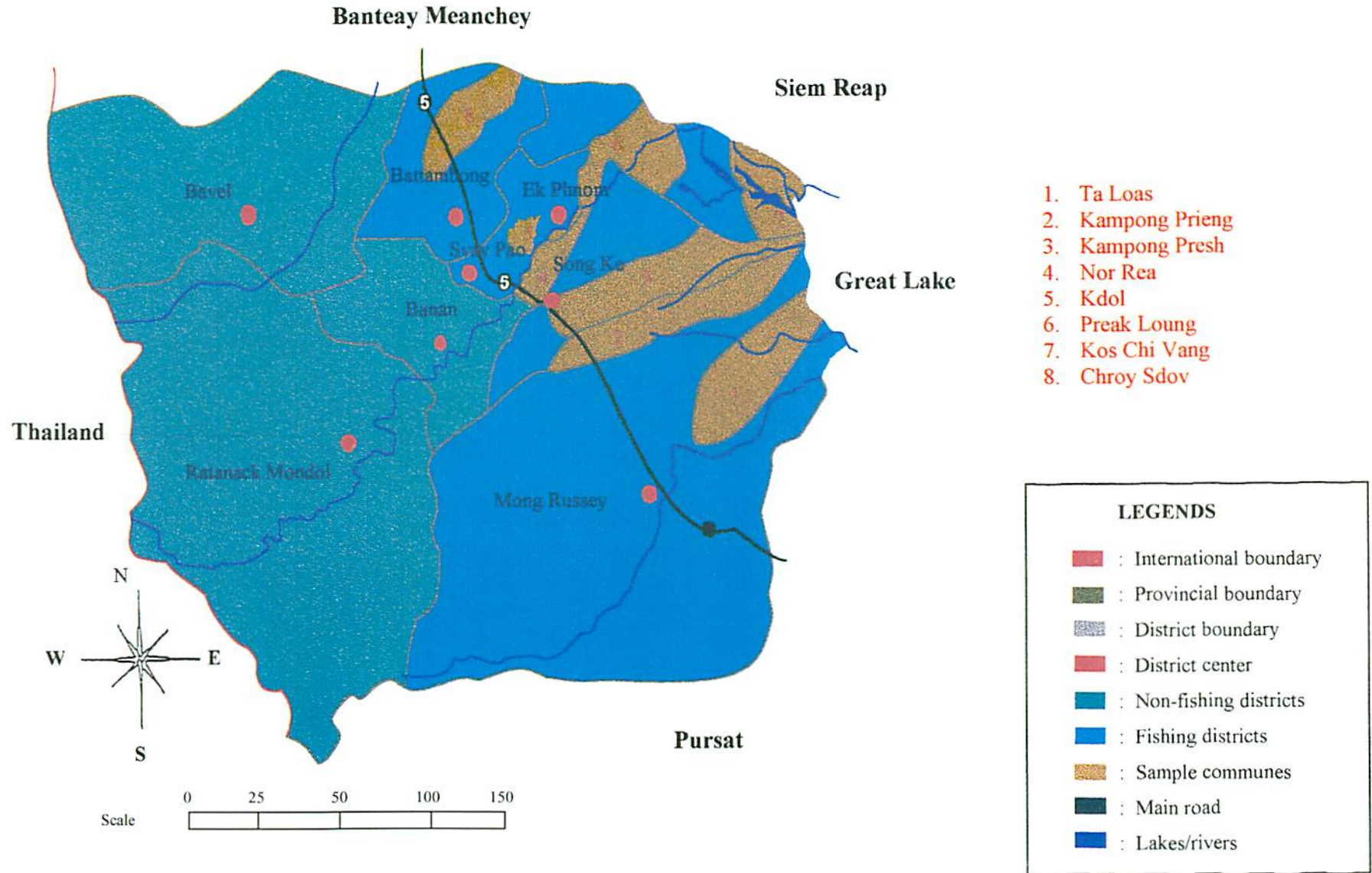


Fig.2.8. Map of Battambang province showing fishing districts and sample communes for the household socioeconomic survey.

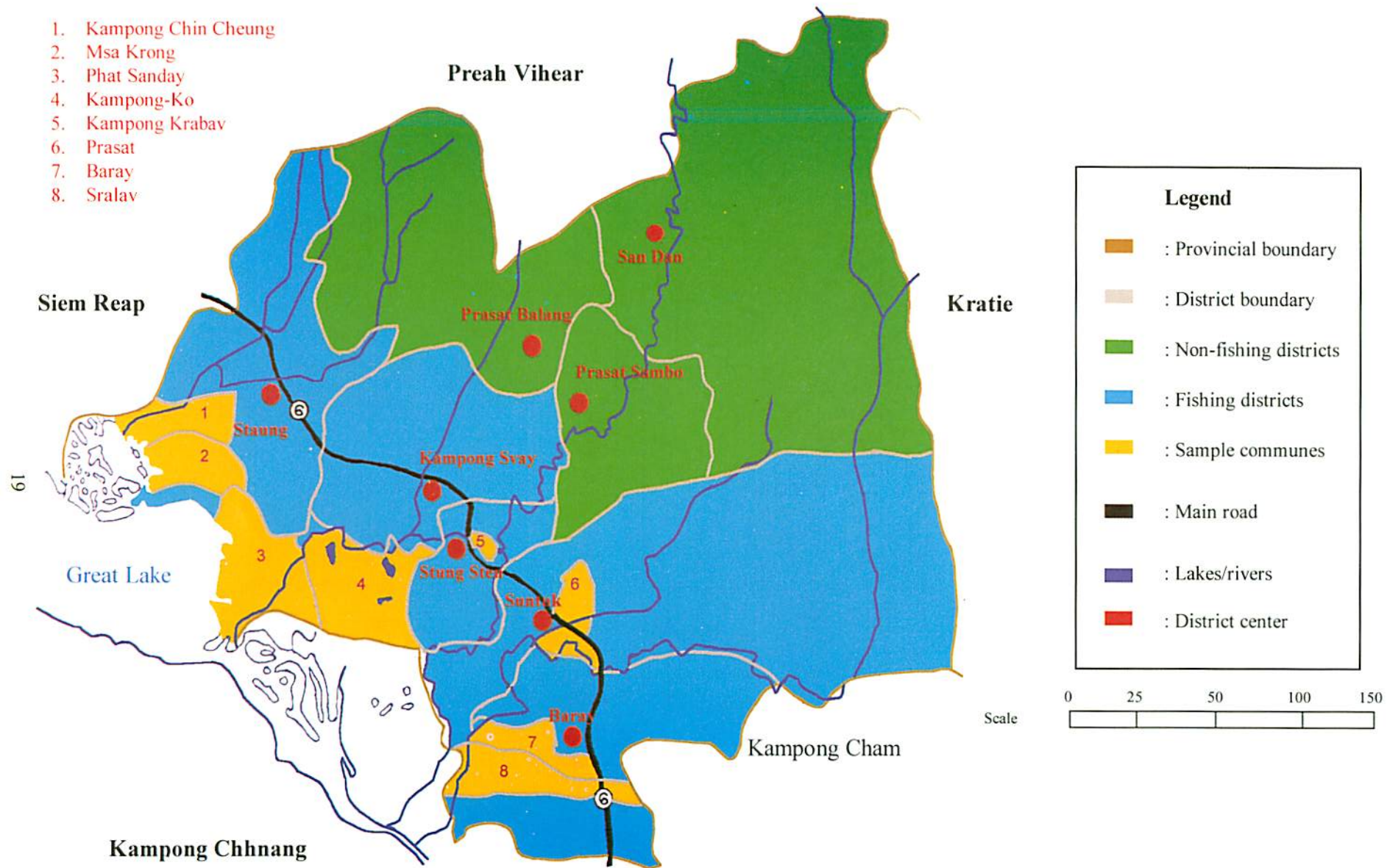


Fig. 2.9. Map of Kampong Thom province showing fishing districts and sample communes for the household socioeconomic survey.

After fishing dependent communes were identified, they were then stratified or grouped in terms of their fishing status and accessible fishing grounds. This formed the basis for selecting sample communes for conducting the household socioeconomic survey (Fig. 2.10). Eighty-three communes were randomly selected from the list of 328 fishing communes prepared on the basis of the classification discussed above. Fig. 2.10 shows the schematic diagram of the procedures followed in the selection of sample fishing communes.

2. SELECTION OF SAMPLE HOUSEHOLDS

Prior to selecting the sample households, data collectors and supervisors visited each of the selected communes and obtained the list of households along with the name, profession, village and group number of each household head. Sample households were then randomly selected for interview. Approximately 5% of the households were chosen for interview from each of the sample communes giving a total number of 5 117 sample households from seven provinces and Phnom Penh (Fig. 2.11 and Appendix A, Table 6).

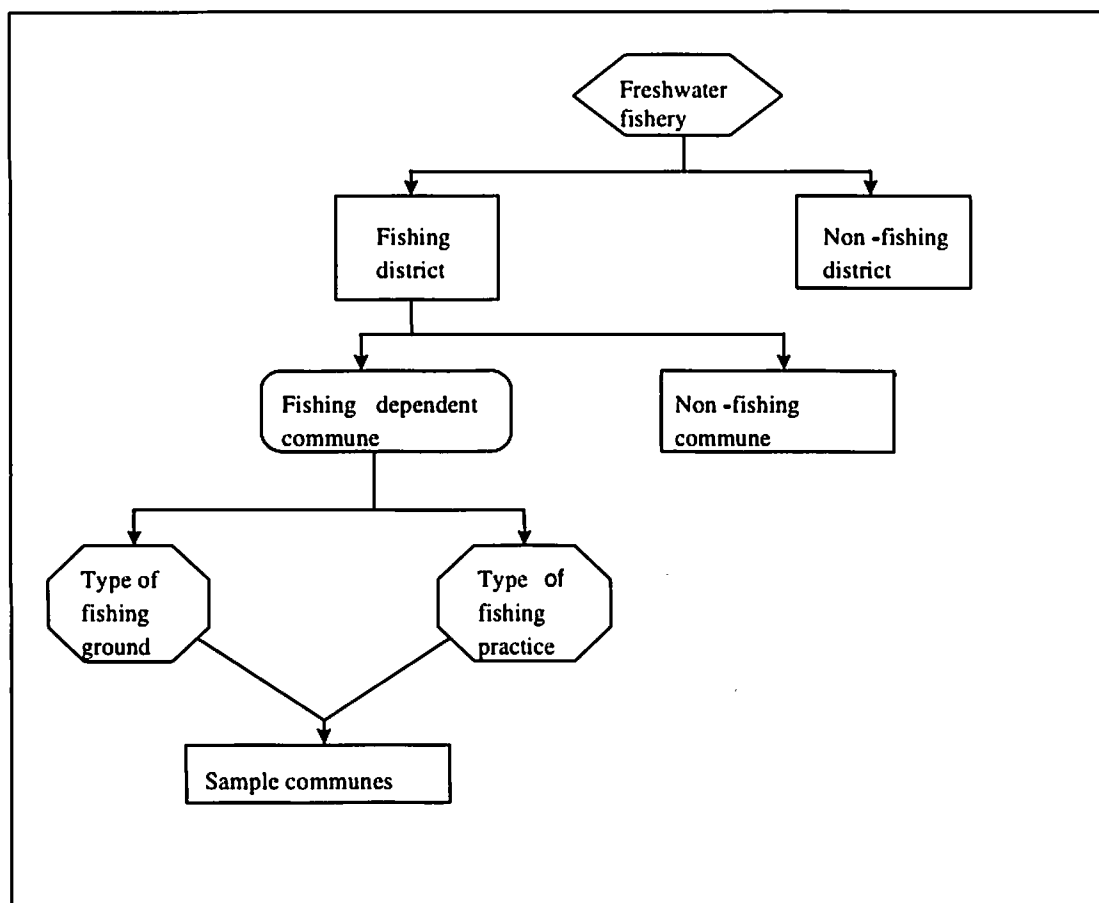


Fig. 2.10. Sample selection of fishing dependent communes.

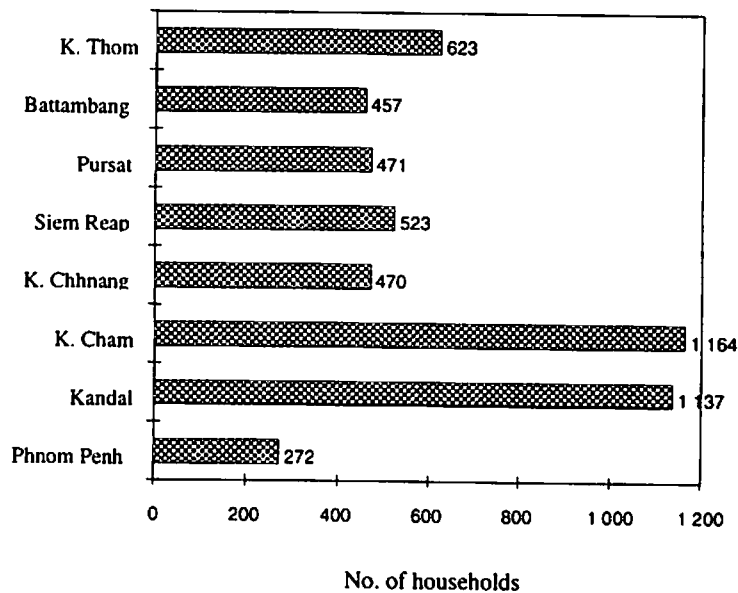


Fig. 2.11. Number of sample households in the selected provinces.

B. Data Collection and Training

Considering the limited capacity of the manpower available to carry out the field survey, the survey was divided into two phases which took place between mid-1995 and early 1996. The project document suggested that households from the provinces covered by the Great Lake and Tonle Sap River be investigated during the first half of the project period, while those in the deltaic region be investigated in the second half of the project. In view of the security situation in the country during the period of the study, it was not possible to carry out the survey in all provinces, particularly in the provinces covered by the Great Lake and Tonle Sap River. Thus, it was decided that only seven provinces and Phnom Penh be included. This did not affect the validity of the results as preliminary investigation through key informant surveys had already provided enough basis for stratification across resource systems and fishing practices and of the fishing dependent population.

A pre-designed questionnaire was used to obtain information on various aspects of the socioeconomic circumstances of the households (Appendix B).

The emphasis of the survey during the first half of the project was on establishing and testing the methodology and creating a core group of researchers through on-the-job training and learning-by-doing. The project hired and trained short-term data collectors to carry out the interviews. One supervisor and 3-6 data collectors were hired to conduct the survey in each of the selected provinces.

C. Database and Data Processing

Data from the questionnaire were computerized using Microsoft Access software. A program was designed to allow the data entry in the same order and format that the information appeared in the questionnaire. Initially a substantial amount of project resource and expert-time were devoted to train the counterparts and data collectors on the use of the database. The generation of standard tables and simple descriptive statistics were carried out using Microsoft Access and Microsoft Excel. The SPSS statistical package was used for other quantitative analyses.

D. Variables and Analysis

The important socioeconomic indicators used in this study are land ownership, farm size, age, sex, income and asset holdings. Standard definitions of measurement of these variables were used. The gross value of production was estimated using the average prices of products recorded for each household. The analysis of household income included both agricultural and non-agricultural income. Agricultural income included returns from crops (cereals, cash crops and vegetables), palm products, orchards, forests, livestock and poultry, fish and by-products both from private and common property resources. Sources of non-agricultural income included wages/salaries, business income, handicrafts, and remittance/gifts by relatives. Household income was computed by summing up all the returns to family labor and assets owned less current costs. However, the information gathered from the households does not include costs of inputs, hired labor, renting services and other current costs. Hence, the income was computed in terms of gross value only. Household assets included durable assets, furniture, fishing equipment, fish processing equipment, farm equipment, modern and other professional equipment.

The household was taken as the unit of analysis, and most of the information were analyzed on a per household and per capita basis. Simple statistical techniques such as frequency distribution, means and percentages were used to analyze the data. Most of the analysis was done by categorizing the respondent household into fishing and non-fishing households (see Definitions).

E. Definitions

Several terms used in this report need to be defined. The definition of households and fishing status of household, commune, district and province are the most important. Household is defined to consist of members of the family, including joint and extended families, who contribute to the common welfare of the family by providing production and income and who live and dine together whenever they are at home. Members residing outside their home for education, job and other purposes are also part of the household. This definition is also consistent with the one used by the commune office for administrative and other statistical purposes. The term head of household is defined as the person within the household who is accepted and recognized by other household members as head, regardless of gender and decision-making power within the household.

On the other hand, there is no precise definition of the fishing status of the households. It is difficult to draw a distinction between households by occupational involvement. In this study, households in which either the household head or at least one member is actively engaged in fishing for most of the time are regarded as fishing dependent households, or in short, fishing household. The remaining households are

grouped as non-fishing households, although a considerable number of households in the non-fishing category own small-scale fishing gears and participate occasionally in fishing and may catch a significant amount of fish.

Communes, districts, or provinces which have waterbodies from which fish are harvested and whose population is involved in fishing are defined as fishing communes, districts or provinces.

The terms family fishing, middle-scale fishing, and large-scale fishing are used to define the type of fishing practised by households. The classification is based on the official definition of Cambodia's freshwater fishing practices (Tan 1971; Tana 1990). Family fishing refers to fishing usually carried out by members of a family, involving limited gears, for household consumption and limited local sale. No license or fee is required for this type of fishing operation. Middle-scale fishing refers to commercial fishing requiring licenses and is allowed only during the open season (October-May). Large-scale fishing refers to operations in designated fishing grounds or water areas that are leased out on a two-yearly basis for exclusive fishing operation by the leaseholders or their agents during the open season (Oct-May) (Ahmed and Tana 1996).

III. RESULTS AND DISCUSSION

A. *Profile of the Households*

1. DEMOGRAPHIC CHARACTERISTICS

The demographic characteristics of the households in fishing dependent communes reflect the overall characteristics of the population in postwar Cambodia. Many households are headed by women, particularly widows, and a disproportionately large share of the population consists of children (Ovesen et al. 1996). Of the 5 117 households surveyed, 971 (19%) households are headed by women (Table 3.1). An earlier socioeconomic survey conducted during 1993-94 also revealed that about 21% of the households in Cambodia are female-headed (National Institute of Statistics 1995). In Siem Reap province, as much as 30% of the households are headed by women (Fig. 3.1). Compared to the male heads of households (97%), very few of the female heads of households (16%) are married. A majority (81%) of the female heads of households are widows (Fig. 3.2). In Pursat and Kandal provinces, 92% of the female heads of households are widows (Appendix A, Table 7). Including the household head, the ratio of male to female in the household is 49:51 (Fig 3.3).

Nearly 87% of the household heads belong to the working age group 16-61 years, while 11% are below 31 years old (Table 3.1). More details on the age distribution of household heads are given in Appendix A, Table 8. Table 3.1 also shows that the population in fishing communes consists of a relatively large number of young children; nearly 58% are below 21 years old, and 32% are below 10 years old. Excluding the household heads, as high as 38% of the household members are less than 11 years old (Table 3.1). In Kampong Chhnang and Siem Reap, 46% and 47% of the household members, respectively, are less than 10 years old (Appendix A, Table 9). These figures indicate that there are more dependents in the current population whose food, education and other basic needs have to be met by a few working members, and that there will be a tremendous increase in the labor force in the years to come. According to Ovesen et al. (1996), this has implications for the peace and development process in postwar Cambodia, as the demographic imbalance, the extensive poverty and undermining of village solidarity have left many women and children vulnerable and unsupported.

The average family size of the sample households is 6 across all provinces, except Phnom Penh where the average family size is 7 (Fig. 3.4).

Table 3.1. Age distribution of household heads and members, by sex, 1995-96.

Age Group	Male		Female		Total	
	No.	%	No.	%	No.	%
Household heads						
16-20 years	12	0.3	1	0.1	13	0.3
21-30 years	523	12.6	54	5.6	577	11.3
31-40 years	1 229	29.6	206	21.2	1 435	28.0
41-50 years	1 182	28.5	275	28.3	1 457	28.5
51-60 years	743	17.9	205	21.1	948	18.5
>61 years	457	11.0	230	23.7	687	13.4
Total	4 146	100.0	971	100.0	5 117	100.0
Household members						
≤10 years	4 738	44.8	4 803	33.0	9 541	37.9
11-20 years	4 009	37.9	3 849	26.4	7 858	31.2
21-30 years	1 358	12.8	2 075	14.2	3 433	13.7
31-40 years	251	2.4	1 807	12.4	2 058	8.2
41-60 years	106	1.0	1 614	11.1	1 720	6.8
>61 years	112	1.1	424	2.9	536	2.1
Total	10 574	100.0	14 572	100.0	25 146	100.0
Household heads and members						
≤10 years	4 738	32.2	4 803	30.9	9 541	31.5
11-20 years	4 021	27.3	3 850	24.8	7 871	26.0
21-30 years	1 881	12.8	2 129	13.7	4 010	13.3
31-40 years	1 480	10.0	2 013	13.0	3 493	11.5
41-60 years	2 031	13.8	2 094	13.5	4 125	13.6
>61 years	569	3.9	654	4.2	1 223	4.0
Total	14 720	100.0	15 543	100.0	30 263	100.0
Average family size	2.9		3.0		5.9	

Including those who can read only, the literacy rate among the household heads is high at 80% (Fig. 3.5). This does not vary much across the different provinces (Appendix A, Table 10). However, only 43% of the heads of household have a formal education. The literacy rate is lower among female heads of household at 57% compared to 85% for male heads of household (Appendix A, Table 10).

Fifty-nine percent of household members above 6 years old have had a formal education, e.g., primary, secondary, or above. The overall literacy rate among household members is, however, lower than that of the household heads (Figs. 3.5 and 3.6). In Siem Reap province, 45.4% of the household members have no education. Among the household members, the female literacy rate is 74% compared to the male literacy rate of 80% (Appendix A, Table 11).

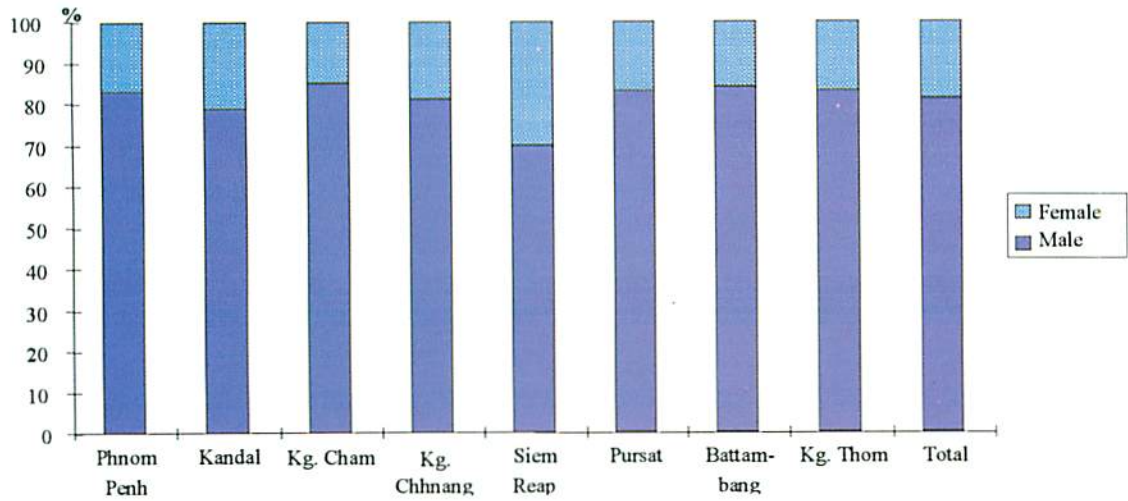


Fig. 3.1. Distribution of household heads by sex.

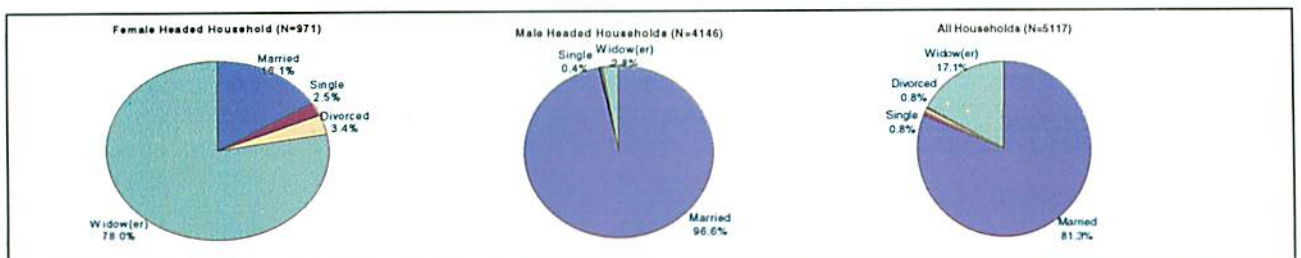


Fig. 3.2. Distribution of household heads by marital status.

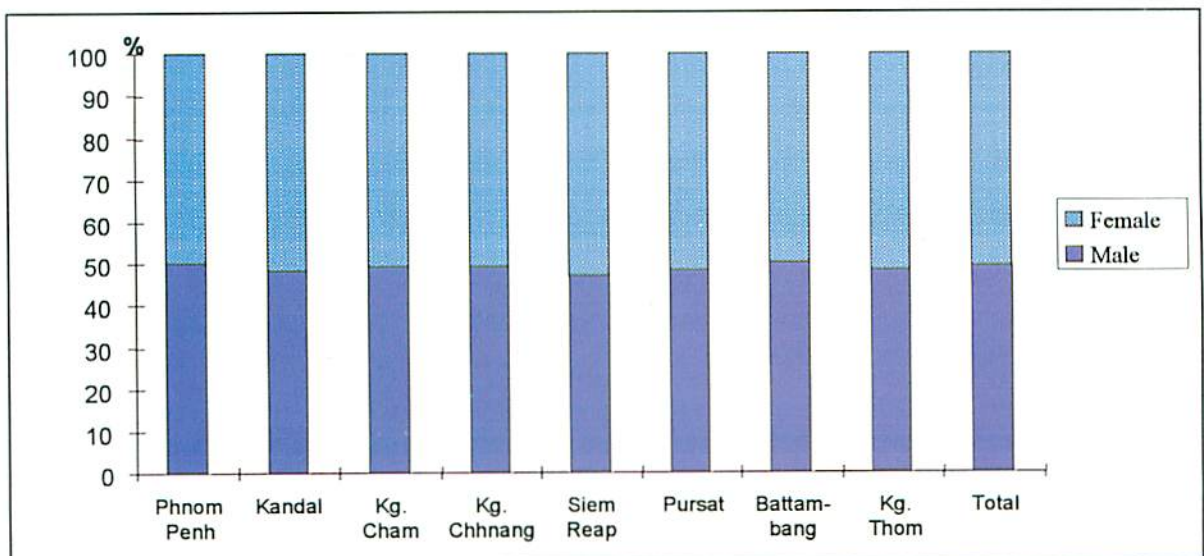


Fig. 3.3. Distribution of population by sex.

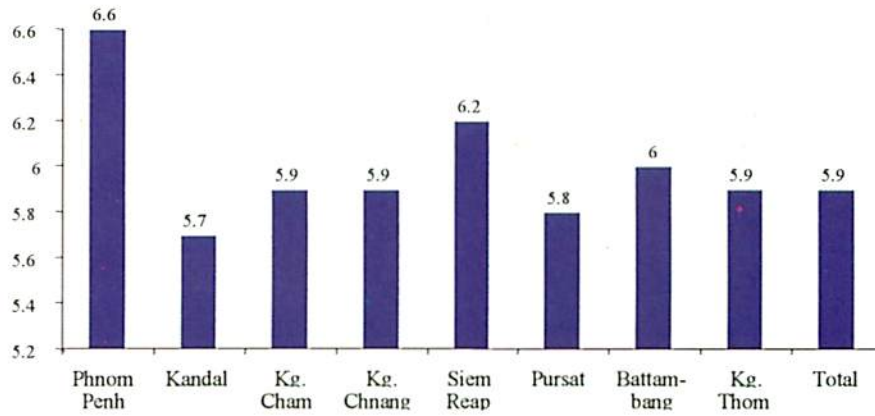


Fig. 3.4. Average family size of the households.

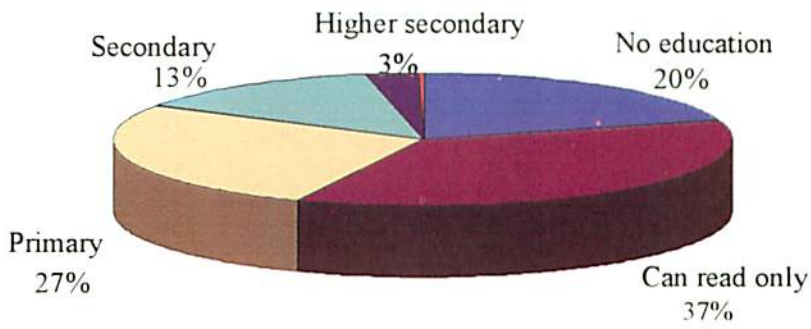


Figure 3.5. Educational status of household heads.

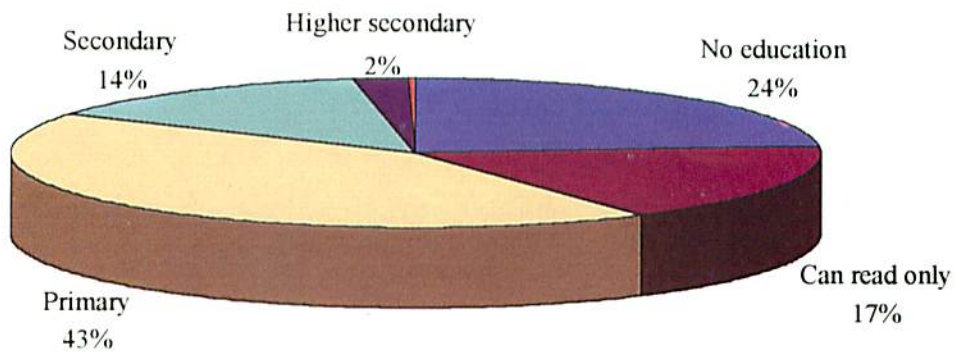


Fig. 3.6. Educational status of household members above 6 years old.

2. OCCUPATIONAL PROFILE

Households in the sample communes are usually engaged in a wide range of production and income generating activities (Table 3.2). Most households are land-based and hence are involved primarily in farming. At the same time, almost all households living close to water participate in fishing and fishing related activities. However, there is only a small minority of households that are engaged exclusively in fisheries. These are mostly those that live in floating villages around the Great Lake or along the Tonle Sap, Mekong and Bassac Rivers.

Table 3.2. Household involvement in various production and income-generating activities, 1995-96.

Occupation	Household heads			Total	Household members	Total no. of households*
	Primary	Secondary	Tertiary			
Fishing	9.32	20.25	6.31	35.88	24.60	38.79
Fish selling	0.82	1.93	1.49	4.24	12.16	13.15
Fish culture	0.10	1.74	0.66	2.50	2.31	2.91
Fish processing	0.21	0.78	0.61	1.60	8.74	9.01
Fishing net/trap/gear making	0.08	0.23	0.12	0.43	0.38	0.86
Bamboo and cane works	0.10	0.78	0.61	1.49	1.43	2.01
Farming	68.22	7.13	0.61	75.96	73.38	76.71
Daily labor	3.11	11.82	2.38	17.31	11.45	20.87
Housekeeping	0.98	7.54	5.84	14.36	74.13	76.67
Cloth handicraft	0.86	1.35	0.23	2.44	3.50	3.87
Petty trading/shopkeeping	4.44	10.73	1.95	17.12	21.07	23.47
Business	1.07	1.80	0.49	3.36	1.97	3.99
Government service	4.56	1.99	0.37	6.92	3.69	8.99
Ciclo/rowing boat service	0.12	0.06	0.02	0.20	0.14	0.27
Motor taxi/boat driving	1.19	1.49	0.39	3.07	0.88	3.40
Private/NGO service	0.20	0.14	0.04	0.38	0.27	0.55
Money lending	0.04	0.08	0.04	0.16	0.14	0.25
Others (e.g. firewood collection)	3.58	6.33	2.13	12.04	5.18	12.92

*Includes households whose head or member(s) is involved in a particular occupation. Hence, it may not equal the total of household heads and household members.

Seventy-seven percent of the households reported active involvement in farming. A significant dependence on fishing was reported by 39% of the households. These are regarded as fishing dependent households (see Definitions, Chapter II). The remainder of the households have either occasional involvement or do not have any involvement in fishing at all. Thirty-six percent of the heads of household practice fishing actively, categorized as their primary (9.32%), secondary (20.25%), or tertiary (6.31%) occupation. Household members in 25% of the households also participate actively in fishing. Fish selling and fish processing also form important household activities. About 13% and 9% of the households in the fishing communes are actively involved in fish selling and fish processing, respectively. Usually, it is the family members rather than the heads of the household who are involved in fish selling, fish processing, and other fishing related activities. The rate of involvement in fishing by households varies between provinces.

For instance, in Kampong Chhnang, 54% of the households are actively engaged in fishing compared to only 21% in Kampong Thom (Fig. 3.7).

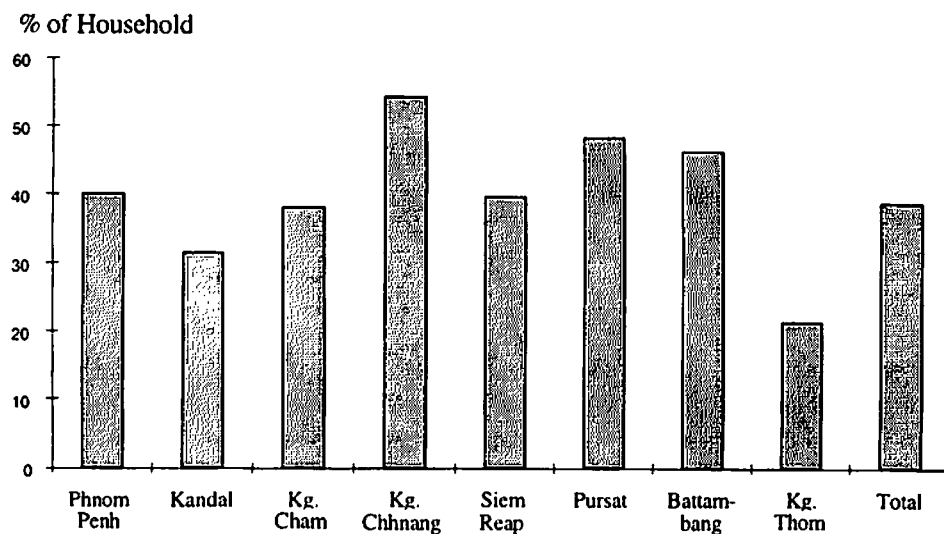


Fig. 3.7. Fishing involvement of households by province, 1995-96.

Participation of households in production and income generating activities is usually family based. This is particularly true in resource-based activities such as farming and fishing. For instance, in provinces where the percentage of heads of households involved in fishing is higher, the percentage of households with members involved in fishing is also higher (Appendix A, Table 12).

Thirteen percent of the households reported that their involvement in fishing is hereditary. Those households who did not inherit fishing as an occupation have spent 10 years in fishing on the average. Only 8% reported that fishing is a very profitable source of income. For 26.5% of the households, fishing is a part of traditional food collection for family consumption. For 23.8%, it is the only source of food and income. Since most households have free access to common property resources such as lakes and rivers, it is cheaper to catch fish than buy it from the market. This was given as the main reason for choosing to fish as a preferred activity by 21.6% of the households (Table 3.3).

Table 3.3. Percentage of households by main reason for choosing fishing as their preferred activity, 1995-96.

Reasons	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	All
Hereditary	9.1	7.5	25.6	17.9	6.6	3.5	25.5	4.2	12.5
More profitable source of income	11.4	23.1	11.2	12.4	2.4	1.7	30.2	7.5	8.1
Only alternative available for food and income	4.5	12.3	28.9	12.9	3.0	19.3	12.8	6.2	23.8
Part of traditional food collection during season for family food supply	6.1	25.0	18.5	11.2	5.7	11.5	15.8	6.2	26.5
Cheaper to catch fish than buying from the market	5.3	24.3	8.5	8.0	14.7	20.9	17.5	0.8	21.6
Others	19.6	51.1	0.0	1.1	6.5	17.4	1.1	3.3	1.8

B. Housing and Basic Facilities

In Cambodia, dwelling houses are built on land, on boats floating on water or on poles over water. Houses built on boats floating on water or on poles over water are common in communities living around the Great Lake and within inundated forest areas. Table 3.4 shows that 94% of the households surveyed live in houses built on land. However, provinces located around the Great Lake, such as Kampong Chhnang, Pursat, Siem Reap, Battambang, and Kampong Thom, have a sizable portion of households (4.2-16.6%) living in floating houses on boats or on poles over water compared to other provinces such as Kandal, Kampong Cham, and Phnom Penh (0.6-1.7%). Similarly, among the fishing dependent households, a relatively higher percentage (12.6%) live in houses built on boat or on pole on water compared to non-fishing households (1.9%) (Appendix A, Table 13).

The types of materials that are used for construction of houses are an important indication of the socioeconomic status of the households. Usually, in a land-based situation, richer households live in villa, flat or building type houses which are made of brick walls, cement floor and tile or concrete roofs. Middle-class households live in wooden houses, while those whose houses are made of bamboo and cane with roofs made of palm leaves are considered poor. In water-based communities, richer households own bigger houses made of wood and tin roofs. As shown in Fig. 3.8, the majority of the households (60.5%) in the fishing communes live in bamboo and palm leaf houses.

The living conditions of the fishing communes in the study areas appear to be poor and the amenities available are similar in the various provinces of Cambodia. Toilet facilities are lacking. Eighty-three percent of the interviewed households have no proper latrines. In the province of Siem Reap, less than 4% of the households have toilets (Table 3.4). On the average, 57% of the households still depend on river, lake and pond for supply of drinking water. Differences of water source between fishing and non-fishing households are not very significant across provinces except for Kampong Chhnang and Kampong Thom (Appendix A, Table 14). About 62% of the households purify or boil their water before drinking (Table 3.4).

There are only 11% of the total households who have access to electricity (Table 3.4). The sources of power are usually private companies. Some households rely on generators. As high as 99% of the sample households located in Pursat have no electricity. About 56% of the sample households have access to government hospitals (Table 3.4), where the average distance from their place to the hospital is 5 km.

Table 3.4. Percentage of households by type of housing and basic amenities and by province, 1995-96.

Housing and basic amenities	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam -bang	K. Thom	All
<i>Dwelling type</i>									
Built on land	98.8	99.4	98.3	85.7	95.8	91.2	83.5	92.8	94.2
Built on boat	0.4	0.6	1.6	2.6	0.2	6.3	5.5	2.1	2.2
Built over water	0.8	0.0	0.1	11.7	4.0	2.4	11.1	5.1	3.6
<i>Latrine type</i>									
Bamboo/palm leaf made open latrine on/above ground	16.2	7.3	21.7	3.0	1.7	8.5	16.4	21.1	12.6
Wooden compartment, cement/brick-made sealed latrine w/ no flushing (manual)	3.7	1.9	1.5	1.1	1.2	0.0	8.7	0.2	2.3
Sanitary (modern) latrine w/ flushing	6.6	0.2	0.6	0.6	0.4	0.4	1.0	0.0	0.8
No proper latrine	73.5	90.4	75.9	95.1	96.3	90.8	64.0	78.7	83.0
Others	0.0	0.2	0.3	0.2	0.4	0.2	10.0	0.0	1.4
<i>Drinking water source</i>									
River/lake/pond	77.2	74.0	47.9	49.9	24.7	50.3	81.1	47.8	57.3
Bottled water	0.4	0.4	0.3	0.2	0.0	0.0	0.5	0.2	0.3
Deepwell/tubewell	17.3	5.6	51.1	49.5	75.3	49.5	17.8	52.0	37.4
Others	5.1	20.0	0.7	0.4	0.0	0.2	0.6	0.0	5.0
<i>Purify/Boil drinking water</i>									
Yes	86.4	88.5	65.6	55.2	20.4	40.5	68.4	44.6	62.4
No	13.6	11.5	34.4	44.8	79.6	59.5	31.6	55.4	37.6
<i>Access to electricity</i>									
Yes	40.0	8.8	11.0	13.9	4.0	0.9	18.3	5.3	11.0
No	60.0	91.2	89.0	86.1	96.0	99.1	81.7	94.7	89.0
<i>Source of health care</i>									
Quack doctor	5.8	16.5	37.8	26.2	50.7	6.1	7.9	15.1	23.1
Gov't hospital	22.1	50.9	38.3	59.7	46.1	91.0	88.4	63.3	56.1
NGO hospital	23.5	0.2	0.2	0.0	0.0	0.0	0.2	0.0	1.4
Private clinic	47.8	32.3	23.1	13.0	2.3	2.8	3.4	21.5	19.1
Others	0.1	0.1	0.6	1.1	1.0	0.0	0.2	0.0	0.4
<i>Ave. distance to hospital (km)</i>	3.6	2.5	7.4	7.7	3.4	4.4	4.3	7.6	5.1

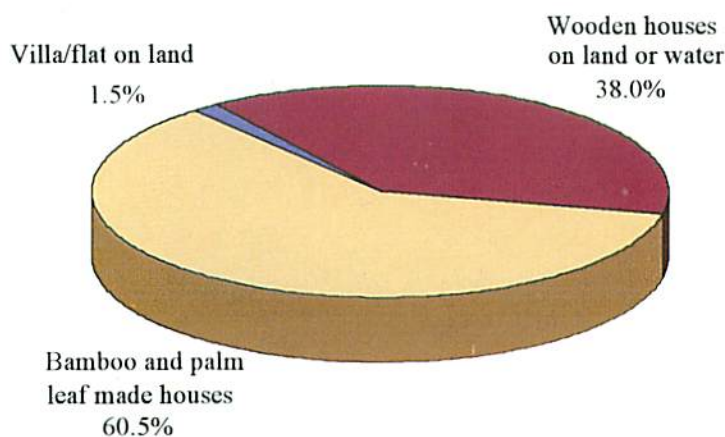


Fig. 3.8. Distribution of households by type of housing material, 1995-96.

C. Role of Women

In Cambodia, being a traditional fish eating country, almost all members of the household participate in fishing, fish selling, fish processing, fish gear and equipment construction and many other activities related to fishing throughout the year. However, the general perception is that women rarely go out for fishing and, hence, their role in fisheries may not be very significant. On the other hand, often it is women who are active in most on-shore activities such as fish selling, fish processing and fishing gear construction. In postwar Cambodia, where a sizable portion of households are headed by women, it is important to examine the role played by women in fishing dependent communes. The following analysis is based on household information on 362 households in the sample fishing communes in Siem Reap.

As shown in Fig. 3.1, Siem Reap province has the highest percentage of female headed households (30%) among the provinces surveyed in this study. Table 3.5 shows that a majority (63%) of the female heads of households in the province are widows. Nearly 50% of the widowed household heads are between 40 and 60 years old. About 22% of the widowed household heads are below 40 years old (Table 3.6).

Literacy among the female household heads is lower than that of male household heads (Table 3.7). Forty-seven percent of the female household heads have no education compared to only 18% of the male household heads. However, among household members aged 7 years or older, male-headed households have more members (1.36/hh) with no education than the female-headed households (1.08/hh) (Table 3.8). On the other hand, male-headed households have more members who can read or have completed a certain level of education. Female-headed households lag behind the male-headed households in the number of school-going children (Table 3.9): 36% of the female headed households have one or more children currently going to school compared to 48% in male-headed households. On the average, there are 7 school-going members for every 10 male-headed households, compared to only 5 for the same number of female-headed households.

Table 3.5. Marital status of female household heads in Siem Reap province.

Name of commune	Marital status				Total
	Married	Single	Divorced	Widow	
Chikreng	2 (11)	1 (6)	1 (6)	14 (77)	18 (100)
Kien Sangke	3 (14)	1 (5)	4 (19)	13 (62)	21 (100)
Kompong Plouk	0 (0)	0 (0)	0 (0)	2 (100)	2 (100)
Tropeand Thom	6 (33)	0 (0)	1 (6)	11 (61)	18 (100)
Siem Reap	6 (24)	1 (4)	2 (8)	16 (64)	25 (100)
Chreav	7 (50)	1 (7)	0 (0)	6 (43)	14 (100)
Sra Nge	6 (46)	0 (0)	1 (6)	6 (46)	13 (100)
Keo Por	0 (0)	0 (0)	0 (0)	7 (100)	7 (100)
Sar Sar Sdam	12 (34)	0 (0)	0 (0)	23 (66)	35 (100)
Kra Lanh	4 (44)	1 (12)	0 (0)	4 (44)	9 (100)
Total	46 (28)	5 (3)	9 (6)	102 (63)	162 (100)

Figures in parentheses indicate percentage.

Table 3.6. Age distribution of female household heads by marital status in Siem Reap province.

Marital status	Age group				Total
	21 - 30	31 - 40	40 - 60	> 60	
Married	12 (26)	16 (35)	15 (33)	3 (7)	46 (100)
Single	1 (20)	3 (60)	3 (60)	0 (0)	5 (100)
Divorced	1 (11)	3 (33)	3 (33)	1 (11)	9 (100)
Widow	8 (8)	14 (14)	14 (14)	30 (29)	102 (100)
Total	22 (14)	36 (22)	36 (22)	34 (21)	162 (100)

Figures in parentheses indicate percentage.

Table 3.7. Level of education of male and female household heads in Siem Reap province.

Level of education	Male-headed households		Female-headed households	
	Number	%	Number	%
No education	64	18.0	76	47.0
Can read only	220	61.0	76	47.0
Primary	47	13.0	6	4.0
Secondary	27	7.0	2	1.0
Higher secondary	4	1.0	2	1.0
Total	362	100.0	162	100.0

Table 3.8. Number of household members (aged ≥ 7 yrs) by level of education in male and female-headed households in Siem Reap province.

Level of education	Male-headed (no./ households)	Female-headed (no./ households)
No education	1.36	1.08
Can read only	0.67	0.47
Primary	0.9	0.64
Secondary	0.09	0.04
Higher secondary	0.01	0.006
Bachelor's and above	0.002	0.0

Table 3.9. Percentage of households and number of children per household with school-going children in Siem Reap province.

	Male-headed households (n=362)	Female-headed households (n=162)	Total (n=524)
Percentage of household	48.0	36.0	44.0
No. of children per household	0.73	0.51	0.62

The type of dwelling (Table 3.10) and source of drinking water (Table 3.11) were analyzed to compare the social and economic status of female-headed households with that of male-headed households. Despite generally poor living conditions in the fishing communes, 74% of the female-headed households live in houses made of bamboo and cane with palm leaf or thatched roof, compared to 64% of the male-headed households. Usually, families who own concrete (villa) or wooden houses are more affluent. Only 23% of female-headed households live in concrete (villa) or wooden houses, compared to 29% of male-headed households. On the other hand, only 16% of female-headed households obtained their drinking water from rivers, lakes or ponds compared to 28% of male-headed households.

Table 3.10. Percentage distribution of male and female-headed households by type of dwelling in Siem Reap province.

Type of dwelling	Male-headed households	Female-headed households
Villa, flat, building type	0.27	1
Wooden house on land	29	22
Bamboo and cane with palm leaves or thatched roof house on land	64	74
Small floating house on boat made of cane/bamboo and palm leaves	0.27	0
Big floating house on boat made of wood and tin roof	0	0
Floating house on water made of wood and tin roof with fish cage below	0	0
Floating house on water made of wood and tin roof without fish cage below	0.27	0
Floating house on water made of cane/bamboo and palm leaf roof, with fish cage below	0	0
Floating house on water made of cane/bamboo and palm leaf roof, without fish cage below	6	3

Table 3.11. Percentage distribution of households by source of drinking water in Siem Reap, province.

Source of water	Male-headed households (n=362)	Female-headed households (n=162)	Total (n=524)
River/lake/pond	28	16	25
Own deepwell/tubewell	25	26	25
Jointly owned deepwell	31	36	33
Community deep/tubewell	4	6	5
Neighbor's well	11	16	13
Total	100	100	100

Hardly any female household heads reported fishing as the principal occupation. However, 21% of them reported direct involvement in catching of fish. Eighty-three percent of female household heads reported farming as the principal occupation (Table 3.12).

Table 3.12. Occupation of female household heads in Siem Reap province.

Occupation	Principal	Secondary	Tertiary	Total	
				No.	%
Fishing	1	26	7	34	21
Fish selling	5	5	2	12	7
Fish cage operation	0	1	0	1	1
Fish processing	1	0	0	1	1
Fishing net/gear making	0	0	0	0	0
Bamboo and cane work	0	7	1	8	5
Farming	131	4	0	135	83
Daily labor	6	14	2	22	14
Housekeeping	1	11	4	16	10
Cloth handicraft	0	3	0	3	2
Petty trading/shopkeeping	8	26	3	37	23
Business	0	1	1	2	1
Government service	4	5	5	14	9
Motorized taxi/cart boat driving	0	0	0	0	0
Ciclo/non-motorized boat driving	2	1	0	3	2
Private/NGO service	1	1	0	2	1
Money lending	0	0	0	0	0
Other	2	3	2	7	4
Total	162 (100)	108 (67)	27 (17)	297	100

Note: Figures in parentheses indicate percentage of household heads involved in each occupation.

In general, communes that are located along the waters and inundated forests in the Great Lake have much higher dependence on fishing. Female members living in such communes with limited access to other resources have a higher participation in fishing and fishing related activities, such as fish selling, fish processing, fish cage operation and fishing gear construction as means of generating production and income. On the other hand, in communes where families have access to agricultural land, female household members have greater involvement in farming activities. For instance, in Kampong Pluok, which is located along the Great Lake and within the inundated forest, female members from nearly 30% of the households actively participate in fishing (Table 3.13). Fish selling, fish cage operation and fish processing provided employment to 24, 41 and 47% of the households, respectively (Table 3.13). Participation in fishing and fishing related activities by female members is much higher in male-headed households (Table 3.14). Also, a higher percentage of male-headed households have female members engaged in farming. Table 3.14 also

shows that a higher proportion of female members in male-headed households are involved in economic activities than the female members in female-headed households.

Table 3.13. Participation of female household members in various production and income-generating activities in Siem Reap province.

Name of commune/ occupation	Chik- reng (n=47)	Klen Sangke (n=75)	Kg. Plouk (n=17)	Tropeand Thom (n=55)	Siem Reap (n=78)	Chreav (n=46)	Sra Nge (n=30)	Keo Por (n=25)	Sarsat Sdam (n=82)	Kra Lanh (n=39)	Total
Fishing	3 (6)	5 (7)	5 (29)	3 (5)	0 (0)	4 (9)	0 (0)	0 (0)	1 (1)	2 (5)	23
Fish selling	0 (0)	6 (8)	4 (24)	1 (2)	4 (5)	3 (7)	1 (3)	1 (4)	0 (0)	2 (5)	22
Fish cage operation	0 (0)	1 (1)	7 (41)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	8
Fish processing	2 (4)	1 (1)	8 (47)	0 (0)	1 (1)	0 (0)	1 (3)	2 (8)	0 (0)	0 (0)	15
Fishing net/ gear making	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	1
Bamboo and cane works	2 (4)	1 (1)	0 (0)	1 (2)	2 (3)	1 (2)	6 (20)	1 (4)	3 (4)	0 (0)	17
Farming	45 (96)	54 (72)	0 (0)	44 (80)	45 (58)	33 (72)	20 (67)	25 (100)	66 (80)	27 (69)	359
Daily labor	2 (4)	2 (3)	7 (41)	3 (5)	4 (5)	1 (2)	0 (0)	0 (0)	2 (2)	0 (0)	21
Petty trading/ business	10 (21)	8 (11)	0 (0)	1 (2)	15 (19)	0 (0)	1 (3)	1 (4)	2 (2)	3 (8)	41
Handicraft	1 (2)	2 (3)	1 (6)	0 (0)	2 (3)	1 (2)	0 (0)	0 (0)	2 (2)	0 (0)	9

Note: Figures in parentheses indicate percentage of households.

Table 3.14. Occupation of female members in fishing dependent communes in Siem Reap, Cambodia.

Occupation	Male-headed households (n=362)		Female-headed households (n=162)		Total (n=524)	
	N	% ^a	N	%	N	%
Fishing	18	5	5	3	23	4
Fish selling	19	5	3	2	22	4
Fish cage operation	8	2	0	0	8	2
Fish processing ^b	15	4	0	0	15	3
Fishing net/gear making	0	0	1	1	1	0
Bamboo and cane works	12	3	5	3	17	3
Farming	266	73	93	57	359	69
Daily labor	10	3	4	2	14	3
Petty trading/business	26	7	15	9	41	8
Handicraft	9	2	0	0	9	2
Total	383	103	126	77	509	98

Note: ^aThe total is more than 100 since some household members are involved in more than one occupation.

^bThis does not include families whose members also process fish for regular family consumption.

D. Ownership of Land, Livestock and Trees

Land is an important asset of the rural households. It provides opportunities for diverse agricultural activities and to a large extent determines economic position. Reestablishment of private ownership of land began in 1986 and, following the 1992 Land Law, most lands in rural areas have been titled to households (Ovesen et al. 1996). In this study, land has been grouped according to its use: homestead, agriculture, orchard and fishpond (Appendix A, Table 15). The average land owned by the

sample households is less than one hectare (0.87 ha) (Table 3.15). However, the average ownership of land per household varies among provinces. For instance, in Phnom Penh and Kandal the average area of land owned is 0.46 and 0.40 ha, respectively, while in Pursat and Battambang it is 1.63 and 1.76 ha, respectively. Fishing households on the average own a slightly lower amount of land than non-fishing households. The difference is not significant. In fact, in Phnom Penh and Kampong Chhnang, fishing households own a much larger amount of land than non-fishing households (Table 3.15). This is also true for agricultural land owned by fishing and non-fishing households (Appendix A, Table 15). About 22% of fishing households and 24% of non-fishing households have no agricultural land (Table 3.16). Only 3.4% of households own fishponds located at their homestead, with an average size of 7.4 m² (Table 3.17). Four percent have trap ponds within their ricefields and 0.4% have fish cages (Table 3.17).

Table 3.18 presents the average size and value of common livestock holdings of the respondents. Not all households reported ownership of livestock. For instance, bullock/buffalo/cow ownership is reported by only 3 829 (74.8%) households. The average number of bullock/buffalo owned per household in Cambodia is 1.6 valued at an average of 517 100 riel (US\$1=2 500 riel). Chickens/ducks/pigeons are commonly owned by almost all households in Cambodia with an average of 7 heads per household. The total value of livestock holdings amounts to 641 500 riel for an average of 10 heads (Table 3.18).

Big trees such as mango, jackfruit, longan, bamboo thicket, coconut, betel nut and palm trees are also included in the inventory of assets owned. Each household has an average of 11 trees valued at 193 200 riel (Table 3.19). There is no significant difference between fishing and non-fishing households when it comes to the average number of livestock and big trees owned per household.

Table 3.15. Ownership of land by fishing and non-fishing households, 1995-96 (ha/household).

Name of Province	Fishing households		Non-fishing households		All households	
	Average	Std. dev.	Average	Std. dev.	Average	Std. dev.
Phnom Penh	0.46	0.61	0.29	0.55	0.35	0.58
Kandal	0.40	0.48	0.53	0.73	0.49	0.67
Kampong Cham	0.52	0.53	0.50	0.64	0.51	0.60
K a m p o n g Chhnang	0.92	0.92	0.72	0.89	0.81	0.91
Siem Reap	1.15	1.06	1.06	0.87	1.10	0.95
Pursat	1.49	1.14	1.71	1.26	1.63	1.22
Battambang	1.45	2.45	2.02	1.79	1.76	2.13
Kampong Thom	0.73	0.75	1.03	0.95	0.97	0.92
Total	0.86	1.29	0.88	1.10	0.87	1.17

Table 3.16. Distribution of agricultural land by size, 1995-96.

	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	Total
Landless									
<i>Fishing households</i>									
No. of households	55	63	83	40	26	15	118	26	426
%	56.7	18.9	21.6	20.1	12.9	9.8	41.3	31.0	21.5
<i>Non-fishing households</i>									
No. of households	107	330	152	65	35	13	35	47	784
%	65.6	41.4	19.6	29.0	11.1	5.2	10.4	12.9	24.3
0<Land<0.5 ha									
<i>Fishing households</i>									
No. of households	13	199	156	44	21	7	12	11	463
%	13.4	59.8	40.6	22.1	10.4	4.6	4.2	13.1	26.7
<i>Non-fishing households</i>									
No. of households	33	218	346	63	30	7	51	55	803
%	20.2	27.3	44.7	28.1	9.5	2.8	15.2	15.1	24.9
0.5<Land<1 ha									
<i>Fishing households</i>									
No. of households	15	54	109	66	95	56	56	35	486
%	15.5	16.2	28.4	33.2	47.3	36.6	19.6	41.7	28.0
<i>Non-fishing households</i>									
No. of households	13	174	222	66	179	102	81	174	1 011
%	8.0	21.8	28.7	29.5	56.6	41.0	24.1	47.7	31.3
Land>1ha									
<i>Fishing households</i>									
No. of households	14	17	36	49	59	75	100	12	362
%	14.4	5.1	9.4	24.6	29.4	49.0	35.0	14.3	20.8
<i>Non-fishing households</i>									
No. of households	10	76	54	30	72	127	169	89	627
%	6.1	9.5	7.0	13.4	22.8	51.0	50.3	24.4	19.4
Total									
<i>Fishing households</i>									
No. of households	97	333	384	199	201	153	286	84	1 737
%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<i>Non-fishing households</i>									
No. of households	163	798	774	224	316	249	336	365	3 225
%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 3.17. Distribution of households with fish pond, trap ponds and fish cages.

	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	All
Fishpond at homestead									
Yes	16 (6.2)	6 (0.5)	9 (0.8)	20 (4.7)	61 (11.8)	7 (1.7)	33 (5.3)	16 (3.6)	168 (3.4)
No	244 (93.8)	1 125 (99.5)	1 149 (99.2)	403 (95.3)	456 (88.2)	395 (98.3)	589 (94.7)	433 (96.4)	4 794 (96.6)
Average size of fishpond (in m ²) at homestead	22.7	1.3	3.7	14.7	19.4	3.4	8.9	4.7	7.4
Trap-pond ditch in ricefield									
Yes	4 (1.5)	8 (0.7)	0 (0)	2 (0.4)	42 (8.1)	44 (10.9)	15 (2.4)	83 (18.4)	198 (4.0)
No	256 (98.5)	1 123 (99.3)	1 158 (100.0)	421 (99.6)	475 (91.9)	358 (89.1)	607 (97.6)	366 (81.6)	4 764 (96.0)
Raise in fish cages									
Yes	4 (1.5)	0 (0.0)	3 (0.3)	3 (0.7)	5 (1.0)	3 (0.7)	0 (0.0)	3 (0.7)	21 (0.4)
No	256 (98.5)	1 131 (100.0)	1 155 (99.7)	420 (99.3)	512 (99.0)	399 (99.3)	622 (100.0)	446 (99.3)	4 941 (99.6)

Notes: Figures in parentheses indicate percentages.

Table 3.18. Average number and value of livestock holdings per household, 1995-96.

Type of livestock	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam-bang	K. Thom	All
Bullock/buffalo/cow									
No. of reporting households	155	849	976	247	444	386	450	322	3 829
Ave. no. of heads	0.7	1.3	1.3	2.0	2.1	2.0	2.0	2.0	1.6
Value ('000 riel)	297.7	521.7	482.7	546.6	312.1	735.4	689.1	473.2	517.1
Calves/sheep/goat									
No. of reporting households	154	849	977	247	444	385	450	321	3 827
Ave. no. of heads	0.5	0.3	0.4	0.9	0.8	0.7	0.3	0.6	0.5
Value ('000 riel)	90.8	30.5	36.9	77.7	43.5	68.0	25.4	32.2	42.4
Chicken/duck/pigeon									
No. of reporting households	156	849	977	247	444	385	449	322	3 829
Ave. no. of heads	9.2	3.8	6.7	7.3	8.2	13.0	9.6	3.2	7.1
Value ('000 riel)	33.5	16.2	17.3	21.0	22.9	33.7	26.6	8.0	20.6
Pig									
No. of reporting households	152	848	976	247	443	216	386	449	3 823
Ave. no. of heads	1.3	0.6	0.7	0.8	0.9	1.0	0.6	0.6	0.7
Value ('000 riel)	29.2	47.1	58.7	53.1	57.4	92.8	98.4	43.1	61.2
Total									
No. of reporting households	152	848	975	247	443	384	448	320	3 818
Ave. no. of heads	11.8	6.1	9.1	11.1	120	16.8	12.6	6.4	9.9
Value ('000 riel)	452.1	615.9	595.6	698.4	435.7	932.4	837.6	557.3	641.5

Note: US\$1=2 500 riel (1995-96).

Table 3.19. Average number and value of livestock holdings and big trees, 1995-96.

Livestock holdings/big trees	Fishing households		Non-fishing households		All households	
	Ave. no. per household	Ave. value ('000 riel)	Ave. no. per household	Ave. value ('000 riel)	Ave. no. per household	Ave. value ('000 riel)
Livestock holdings						
Bullock/buffalo/cow	1.6	470.6	1.6	542.4	1.6	517.1
Calves/sheep/goat	0.7	51.4	0.4	37.5	0.5	42.4
Chicken/duck/pigeon	7.3	21.2	6.9	20.2	7.1	20.6
Pig	0.7	51.4	0.8	66.6	0.7	61.2
Subtotal	10.4	594.4	9.7	667.1	9.9	641.5
Big trees						
Betel nut	0.3	2.2	0.6	2.5	0.5	2.4
Bamboo thicket	1.3	29.7	1.1	2.5	1.1	26.1
Coconut	2.9	44.6	4.2	24.5	3.8	51.5
Jackfruit	0.5	11.6	0.8	19.7	0.7	17.1
Longan	0.5	16.3	1.0	32.7	0.8	27.5
Mango	2.1	45.9	2.0	56.0	2.0	52.8
Palm tree	2.4	20.5	2.0	14.1	2.1	16.1
Subtotal	10.2	169.6	11.6	204.0	11.2	193.2
Total		764.0		871.1		834.7

E. Access to Common Property Resources

Besides the agricultural land that is held primarily under private ownership, people in the rural areas still rely on natural resources that are held as common property and have open access for a wide range of uses. These resources are economically important in rural village life (Ovensen et al. 1996).

As high as 92% of the households reported that they have access to common property resources located within or outside their commune. Major common property resources include: 1) inundated forests; 2) big rivers/lakes; 3) flooded ricefields; 4) banks/beds of rivers/lakes; and 5) irrigation canals/or dikes

(Table 3.20). Inundated forests are used by the largest number of households (81%) as a source of firewood, grazing land and fishing ground. Nearly 80% of the households use big rivers and lakes for fish and irrigation water. Flooded ricelands and riverbanks are used by 61% and 51%, respectively, of the households that have access to common property resources. Livestock grazing, snail/crab collection and vegetable crop production are the principal uses of these resources.

Vast areas of inundated forests are available in these provinces, especially those around the Great Lake. In Battambang, respondents reported 11 000 ha of forest accessible to the members of the fishing commune (Table 3.21). An average of 416 ha of big rivers and lakes can be utilized by the fishing commune in Phnom Penh. Communes located in Kandal province have more access to flooded ricefields or rivers/lakes/banks and beds than those in other provinces. There are more upland forests and reservoirs accessible to the communes located in Siem Reap as compared to other provinces under study.

Table 3.20. Access to common property resources, 1995-96.

Common property resources	Phnom Penh (n=266)	Kandal (n=1039)	K. Cham (n=1107)	K. Chhnang (n=388)	Siem Reap (n=449)	Pursat (n=457)	Battam- bang (n=623)	K. Thom (n=410)	All (n=4739)
<i>Inundated forests</i>									
No. of households	231	977	892	284	388	368	466	233	3 839
%	86.8	94.0	80.6	73.2	86.4	80.5	74.8	56.8	81.0
<i>Big rivers/lakes</i>									
No. of households	262	879	1 021	259	201	397	470	273	3 762
%	98.5	84.6	92.2	66.8	44.8	86.9	75.4	66.6	79.4
<i>Flooded ricefields^{a/}</i>									
No. of households	203	274	835	125	299	454	401	306	2 897
%	76.3	26.4	75.4	32.2	66.6	99.3	64.4	74.6	61.1
<i>Banks/beds of rivers/lakes</i>									
No. of households	8	59	798	151	119	418	586	299	2 438
%	3.0	5.7	72.1	38.9	26.5	91.5	94.1	72.9	51.4
<i>Irrigation canals/dikes/small rivers</i>									
No. of households	108	57	482	13	83	283	605	174	1 805
%	40.6	5.5	43.5	3.4	18.5	61.9	97.1	42.4	38.1
<i>Others^{b/}</i>									
No. of households	0	0	4	19	0	2	0	0	25
%	0.0	0.0	0.4	4.9	0.0	0.4	0.0	0.0	0.5

^{a/} Although ricefields are held as private land, it is treated as common property for fishery use during the flooded season.

^{b/} Others include upland forests and streams.

Table 3.21. Average area of accessible common resources by fishing commune, 1995-96. (ha)

Common property resources	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang	K. Thom	All
<i>Inundated forests</i>									
Average	105.2	245.9	247.2	438.2	1 190.1	2 363.7	11 064.5	35.5	1 854.8
Std. dev.	82.7	729.4	418.4	1114.3	1479.8	3625.9	6459.7	33.4	4357.4
<i>Big rivers/lakes</i>									
Average	415.6	143.6	287.7	233.2	137.9	111.3	15.6	234.5	224.5
Std. dev.	178.2	348.5	208.9	719.9	403.2	110.9	16.9	378.0	363.5
<i>Flooded ricefields</i>									
Average	158.6	725.4	128.7	250.6	413.3	276.1	367.6	88.8	253
Std. dev.	111.7	909.5	143.9	954.5	289.7	216.5	162.1	101.7	355.2
<i>Banks/beds of rivers/lakes</i>									
Average	24	272.3	52.6	52.5	211.8	60.8	108.4	122.6	82.5
Std. dev.	24.2	659.0	77.5	40.5	522.8	80.7	48.0	203.2	217.9
<i>Irrigation canals/dikes/ small rivers</i>									
Average	141.4	17.1	17.3	69.0	67.8	19.8	15.2	5.8	31.3
Std. dev.	32.5	16.8	52.5	74.9	247.5	19.9	16.6	1.7	107.8
<i>Others*</i>									
Average	70	5	56.8	126	136.5	16.8	0	20	56.6
Std. dev.	42.4	96.9	33.9	188.8	31.3				83.2
<i>Total</i>									
N	229	1 006	1 157	381	509	436	622	472	4 812
Average	655.9	434.3	622.4	376.0	1 621.2	1 664.1	8 117.4	150.4	1 687.7
Std. dev.	338.4	862.8	627.8	1 193.0	1 838.7	2 981.9	7 485.5	350.6	3 890.9

*Others include upland forests and reservoirs.

Households with open access to common property resources reported that more than 80% of the households within their commune also depend on the products/benefits derived from these resources. Clearly, the respondents greatly depend on these common property resources. If these resources become unavailable in the future, the livelihood opportunities of the people will be affected, especially the subsistence households whose alternatives are limited (Appendix A, Table 16). While 29% of the households fear significant negative effects on their livelihood, 54% report a less significant impact if access to common property resources become limited. The latter expect to manage easily with alternative sources. Eighteen percent of the households report that their livelihood opportunities will not be affected at all because the benefits they get from common property resources are very limited.

There is a declining trend in the availability of products and benefits derived from common property resources (Appendix A, Table 17). This can be attributed to overexploitation, increasing population pressure, change of environment, use of pesticides and other harmful chemicals in the ricefield, destruction of habitat and land conversion. However, overexploitation was cited by 71% of the households as the reason for the decline in products and benefits from common property resources (Appendix A, Table 18). Despite this trend, 90% of the households still prefer a free and unlimited access rather than restrictions or regulations on the use of common property resources (Appendix A, Table 19). Only 10% of the sample households are willing to buy licenses, pay lease fees for seasonal use of land and water, or ask permission from the head of the commune for gaining access to public or common property resources. Perhaps, this is due to their sense of traditional rights, to exploit these resources for subsistence without any restriction.

F. Ownership of Assets and Professional Equipment

An inventory of ownership of durable assets and professional equipment shows that households possess a range of assets and equipment although not all households own all of the listed items (Table 3.22). However, the pattern of ownership of durable assets such as television, radio, etc. is uniform among fishing and non-fishing households. Fishing equipment is owned mostly by fishing households. A number of non-fishing households also own some of the common fishing gears such as castnet and gillnet. It should be noted here that many non-fishing households occasionally take part in fishing in their ricefields or adjacent flooded land, although they do not consider their fishing involvement significant compared to other activities. Farm equipment is owned by more non-fishing households than by fishing households. However, though farming is practiced by 76% of the households living in fishing communities, only 35% of the households own a plough. Often farmers have plough-sharing arrangement with plough owners through exchange of labor and other inputs.

G. Annual Production and Income

Household income is the value of food and services accrued from agricultural and non-agricultural activities, plus other sources of income such as business and remittances. Agricultural income is basically derived from rice production, vegetable and tree crop production, livestock and poultry raising, and aquaculture. Non-agricultural income includes income from business, private/government employment and remittances/gifts from relatives.

Table 3.23 shows the average annual gross income per household derived from different sources. Net income could not be calculated due to insufficient data on cost of inputs. Fruits from homestead land and water has the highest value of production, followed by income from products from common property resources. Non-agricultural income, such as business and wages/salaries, is also a good source of income especially in the province of Phnom Penh.

H. Consumption and Expenditure

Seventy-six percent of the households are engaged in farming. However, due to the small size of land holdings, low productivity and loss of crop due to floods or drought, farmers often find the supplies from their own land insufficient to meet the yearly consumption needs of the household. Table 3.24 shows the rice self-sufficiency status of households during 1995-96. Of the households who own agricultural lands, 34% depend almost entirely on buying rice. Forty-three percent reported that rice supply from the land they till is not sufficient for a whole year consumption. Fourteen percent of the households had an adequate supply, while 9.3% had a surplus during 1995-96. There is a positive relationship between the size of agricultural land owned and the state of self-sufficiency in rice production. (Figs. 3.9 and 3.10). Table 3.24 also shows that 8% of the landless households met part or all of their rice requirements from their own production. Some landless households grow rice by renting, leasing or crop sharing arrangements. There is little variation between fishing and non-fishing households in terms of self-sufficiency.

If they do not grow enough rice for their consumption, households usually buy rice from the market. Some borrow from their neighbors and relatives. The distribution of the quantity of paddy rice bought or borrowed by fishing and non-fishing households is shown in Table 3.25. Less than or equal to 500 kg of paddy rice were bought or borrowed by 29% of the households in 1994-95.

Table 3.22. Ownership of durable assets and equipment by household farm, 1995-96.

	Fishing			Non-fishing			All			
	No. of households	% of owning household ^a	Ave. value /household ('000 riel)	No. of households	% of owning household ^a	Ave. value /household ('000 riel)	No. of households	% of owning household ^a	Ave. value /household ('000 riel)	Ave. no. owned/household ^b
Household durable assets										
Television	268	14.6	29.9	676	20.6	51.5	944	18.4	43.8	1.01
Radio	210	11.4	2.8	614	18.7	4.2	824	16.1	3.7	1.01
Radio cassette player	700	38.1	25.6	1 083	33.0	26.7	1 782	34.8	26.3	1.01
Sewing machine	59	3.2	3.5	128	3.9	4.3	187	3.7	4.0	1.03
Bicycle	1 053	57.4	29.2	2 239	68.2	38.6	3 292	64.3	35.2	1.25
Motorbike	141	7.7	8.4	533	16.3	205.1	674	13.2	161.6	1.08
Boat	874	47.6	119.9	360	10.9	27.8	1 233	24.1	60.9	1.20
Engine boat	286	15.6	161.6	57	1.7	22.0	343	6.7	72.1	1.13
Generator	24	1.3	8.5	46	1.4	15.3	70	1.4	12.8	1.06
Battery	751	40.9	14.4	1 137	34.6	12.9	1 887	35.9	13.4	1.05
Deep well	63	3.4	2.2	189	5.8	7.4	252	4.9	5.6	1.03
Hand tubewell	7	0.4	1.0	20	0.6	1.8	27	0.5	1.5	1.00
Hand phone	12	0.7	2.1	16	0.5	0.5	28	0.5	1.1	1.61
Clock	704	38.4	19.1	1 216	37.0	21.8	1 919	37.5	20.8	1.58
Furniture										
Table	311	16.9	3.7	704	21.5	5.2	1 015	19.8	4.6	1.15
Chair	257	14.0	2.0	645	19.6	3.7	901	17.6	3.1	2.27
Sofa set	23	1.3	1.4	100	3.1	2.2	123	2.4	1.9	1.70
Cupboards	230	12.5	12.0	612	18.7	16.7	842	16.5	15.0	1.26
Bed	655	35.7	15.0	1 430	43.6	26.8	2 084	40.7	22.5	1.55
Fishing equipment										
Harpoon	100	5.4	1.6	8	0.2	0.0	108	2.1	0.6	2.25
Bamboo/rattan trap	550	30.0	19.2	70	2.1	0.3	620	12.1	7.0	8.19
Castnet	515	28.1	12.9	63	1.9	0.7	578	11.3	5.1	1.06
Scoop/lift net	136	7.4	3.2	29	0.9	0.1	165	3.2	1.2	1.13
Gillnet	1 221	66.5	47.0	108	3.3	1.2	1 328	26.0	17.7	2.60
Seine/dragnet	112	6.1	12.6	5	0.2	0.2	117	2.3	4.7	3.68
River pelagic trawl	35	1.9	6.4	6	0.2	1.4	41	0.8	3.2	45.20
Hooked line	459	25.0	5.4	56	1.7	0.3	515	10.1	2.1	35.30
Bamboo barrage	31	1.7	1.2	0	0.1	0.0	31	0.7	0.4	0.20
Arrow-fence	1	0.1	0.1	0	0.0	0.0	1	0.0	0.0	1.00
Fish bagnet	3	0.2	0.4	0	0.0	0.0	3	0.1	0.2	1.67
Shrimp bagnet	1	0.1	0.0	0	0.0	0.0	1	0.1	0.0	1.67
Fish processing equipment										
Barrel	39	2.1	1.3	16	0.5	0.4	55	1.1	0.7	2.64
Freezing barrel	0	0.0	0.0	4	0.1	0.3	4	0.8	0.5	1.75
Smoking grill	31	1.7	0.5	9	0.3	0.5	40	0.8	0.5	1.75
Jar	599	32.6	6.6	608	18.5	1.8	1 206	23.6	3.5	2.87
Farm equipment										
Plough	612	33.4	11.5	1 167	35.6	11.1	1 779	34.8	11.2	1.05
Ox-cart	543	29.6	49.2	1 099	33.5	51.2	1 642	32.1	50.4	1.01
Water wheel	90	4.9	8.0	222	6.8	7.6	312	6.1	7.8	1.11
Palm sugar pan	51	2.8	0.7	91	2.8	1.1	142	2.8	0.9	1.18
Tobacco kiln	31	1.7	6.0	39	1.2	3.0	70	1.4	4.0	1.04
Tractor	0	0.0	0.0	1	0.0	3.9	1	0.0	2.5	1.00
Power tiller	1	0.1	0.8	1	0.0	0.6	2	0.0	0.7	1.00
Mechanical thresher	1	0.1	0.0	0	0.0	0.0	1	0.0	0.0	1.00
Low lift pump	50	2.7	11.8	69	2.1	10.0	119	2.3	10.7	1.10
Rice mill	10	0.5	4.9	30	0.9	16.8	40	0.8	12.6	1.03
Other professional equipment										
Brick kiln	1	0.1	0.1	2	0.1	0.1	3	0.1	0.1	1.00
Handicraft	14	0.8	0.2	58	1.8	2.3	72	1.4	1.5	1.36
Miscellaneous	1	0.1	0.0	3	0.1	0.0	4	0.1	0.0	1.25
Total	1 835	100.0	673.8	3 282	100.0	609.3	5 117	100.0	659.5	

^a Percent of owning household is computed as the number of households who own an asset divided by the total sample households.

^b Average refers to number of assets owned by households that had the asset.

Table 3.23. Average annual gross income (in '000 riel) per household by source, 1995-96.

Sources of income	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	All
Fishing households:									
<i>Homestead land & water</i>									
Fruits	2 891.70	2 737.64	331.14	977.75	352.02	717.40	2 629.17	59.58	1 385.
Poultry/livestock	395.67	504.57	645.67	686.17	277.54	393.11	258.10	36.36	452.
Pond/cage culture	143.38	4.63	32.33	291.94	257.14	10.28	345.61	584.73	169.
<i>Agricultural land</i>									
Cereals	121.17	471.74	230.37	351.73	245.97	510.96	791.47	138.61	395.
Vegetables/fruits	129.24	52.13	51.54	88.55	23.59	64.41	14.34	2.77	50.
Fish from ricefield	94.91	94.86	29.68	0.00	2.53	303.14	33.06	153.86	72.
Palm products	691.57	26.97	276.81	809.39	127.01	293.79	1.30	73.49	254.
Orchard	0.00	56.97	32.55	7.76	350.80	14.92	3.83	0.00	59.
<i>Common property resources^a</i>									
	1 844.91	309.53	535.00	1 234.00	447.69	791.00	1 892.25	1 145.75	918.
<i>Other sources of income</i>									
Business	260.45	79.57	348.00	1222.20	57.55	173.00	194.25	25.93	317.
Wages/salaries	122.80	192.12	290.00	114.06	58.52	175.00	125.23	88.36	166.
Non-farm ^b	36.64	24.26	373.00	430.67	115.09	52.00	32.54	0.96	164.
Remittance/gifts	29.71	26.20	9.00	2.95	8.78	0.00	937.75	0.96	156.
Subtotal	6 762.15	4 581.19	3 185.09	6 217.17	2 324.23	3 499.01	7 258.89	2 311.37	4 561.
Non-fishing households:									
<i>Homestead land & water</i>									
Fruits	1 408.08	5 967.86	1 404.38	255.03	376.31	863.35	23 522.29	149.57	4 412.
Poultry/livestock	176.84	748.22	442.75	456.21	516.38	330.93	317.75	54.11	445.
Pond/cage culture	0.00	9.85	24.50	50.09	51.47	0.00	14.64	42.51	23.
<i>Agricultural land</i>									
Cereals	110.43	540.23	349.50	233.48	303.14	596.55	938.79	288.06	445.
Vegetables/fruits	229.29	45.64	30.91	7.83	12.56	112.46	141.14	28.72	59.
Fish from ricefield	35.59	0.00	4.76	0.00	0.00	15.81	0.00	20.89	6.
Palm products	37.21	120.64	87.26	3 475.96	632.34	359.50	14.62	150.85	406.
Orchard	5.40	66.19	3.62	5 280.85	176.25	2.25	36.33	0.00	409.
<i>Common property resources</i>									
	223.88	210.87	109.72	37.98	39.52	139.15	63.96	0.81	113.
<i>Other sources of income</i>									
Business	2 073.95	365.12	534.62	426.85	126.45	362.33	270.45	339.24	462.
Wages/salaries	963.14	284.09	375.03	112.14	133.48	272.88	443.14	366.89	338.
Non-farm ^b	19.05	105.44	254.34	111.23	227.43	44.28	3.65	3.25	121.
Remittance/gifts	62.87	18.55	25.93	0.90	14.93	0.00	61.22	4.07	22.
Subtotal	5 345.73	8 482.69	3 647.32	10 448.54	2 610.05	3 099.49	25 827.98	1 448.97	7 265.
All households:									
<i>Homestead land & water</i>									
Fruits	1 940.12	4 809.47	1 019.50	514.20	367.20	811.01	16 029.84	117.30	3 326.
Poultry/livestock	255.31	660.84	515.52	538.68	430.73	353.22	296.36	47.74	447.
Pond/cage culture	51.42	1.66	11.59	104.69	92.21	3.69	123.94	209.69	60.
<i>Agricultural land</i>									
Cereals	114.28	515.67	306.78	275.89	282.64	565.86	885.96	234.47	427.
Vegetables/fruits	191.10	98.17	123.82	45.92	29.04	134.89	135.44	50.11	97.
Fish from ricefield	56.86	34.02	13.69	0.00	0.91	118.85	11.85	68.57	29.
Palm products	271.87	87.05	155.24	2519.70	451.13	335.93	9.84	123.11	351.
Orchard	23.87	97.81	67.64	2232.23	531.38	235.93	10.75	96.75	281.
<i>Common property resources</i>									
	805.19	246.25	262.23	466.88	185.89	372.91	719.60	411.40	402.
<i>Other sources of income</i>									
Business	1423.61	262.11	467.70	712.07	101.74	294.44	243.13	226.88	410.
Wages/salaries	661.79	251.11	344.54	112.83	106.60	237.78	329.13	267.01	276.
Non-farm ^b	25.36	76.32	296.89	225.79	187.15	47.05	14.01	2.43	136.
Remittance/gifts	50.98	21.29	19.86	1.64	12.72	0.00	375.55	2.95	70.
Total	5 871.76	7 162.39	3 605.00	7750.52	2 779.73	3 511.55	19 185.40	1 858.41	6 320.

^a Include mainly fish.

^b Non-farm income includes income from cloth handicraft, fishing net/gear making, bamboo and cane works.

Table 3.24. Annual self-sufficiency status* in rice, by size of agricultural land, 1995-96.

Size of agricultural land	More than sufficient and have surplus to sell or lend out	Just adequate	Not sufficient (good for 7-10 mos)	Not sufficient (good for 3-6 mos)	Not sufficient (good for <3mos)	Entirely dependent on buying rice	Total
Landless							
<i>Fishing households</i>							
No. of households	5.0	7.0	6.0	11.0	7.0	391.0	427
%	1.2	1.6	1.4	2.6	1.6	91.6	100
<i>Non-fishing households</i>							
No. of households	5.0	9.0	24.0	20.0	11.0	714.0	783
%	0.6	1.1	3.1	2.6	1.4	91.2	100
Subtotal	10.0	16.0	30.0	31.0	18.0	1 105.0	1 210
%	2.2	2.3	2.9	4.7	4.2	65.4	24.4
0<Land<0.5 ha							
<i>Fishing households</i>							
No. of households	1.0	27.0	208.0	76.0	53.0	98.0	463
%	0.2	5.8	44.9	16.4	11.4	21.2	100
<i>Non-fishing households</i>							
No. of households	11.0	68.0	201.0	141.0	152.0	230.0	803
%	1.4	8.5	25.0	17.6	18.9	28.6	100
Subtotal	12.0	95.0	409.0	217.0	205.0	328.0	1 266
%	2.6	14.0	39.2	33.0	48.0	19.4	25.5
0.5<Land<1 ha							
<i>Fishing households</i>							
No. of households	39.0	84.0	145.0	93.0	47.0	78.0	486
%	8.0	17.3.0	29.8	19.1	9.7	16.0	100
<i>Non-fishing households</i>							
No. of households	79.0	230.0	259.0	206.0	120.0	117.0	1 011
%	7.8	22.7	25.6	20.4	11.9	11.6	100
Sub-total	118.0	314.0	404.0	299.0	167.0	195.0	1 497
%	25.5	46.1	38.7	45.4	39.1	11.5	30.2
Land>1ha							
<i>Fishing households</i>							
No. of households	103.0	81.0	80.0	43.0	19.0	35.0	363
%	28.4	22.3	22.0	12.4	5.2	9.6	100
<i>Non-fishing households</i>							
No. of households	219.0	175.0	121.0	68.0	18.0	27.0	628
%	34.9	27.9	19.3	10.8	2.9	4.3	100
Sub-total	322.0	256.0	201.0	111.0	37.0	62.0	991
%	69.7	37.6	19.3	16.9	8.7	3.7	20.0
All							
<i>Fishing households</i>							
No. of households	148.0	199.0	439.0	223.0	126.0	602.0	1 737
%	8.5	11.4	25.2	12.9.0	7.2	34.6	100
<i>Non-fishing households</i>							
No. of households	314.0	482.0	605.0	435.0	301.0	1 088.0	3 225
%	9.7	14.9	18.8	13.5	9.3	33.7	100
Grand total	462.0	681.0	1 044.0	658.0	427.0	1 690.0	4 962
%	100.0	100.0	100.0	100.0	100.0	100	100

*Of the total 5117 households, information on self-sufficiency status in rice was available only for 4 962 households.

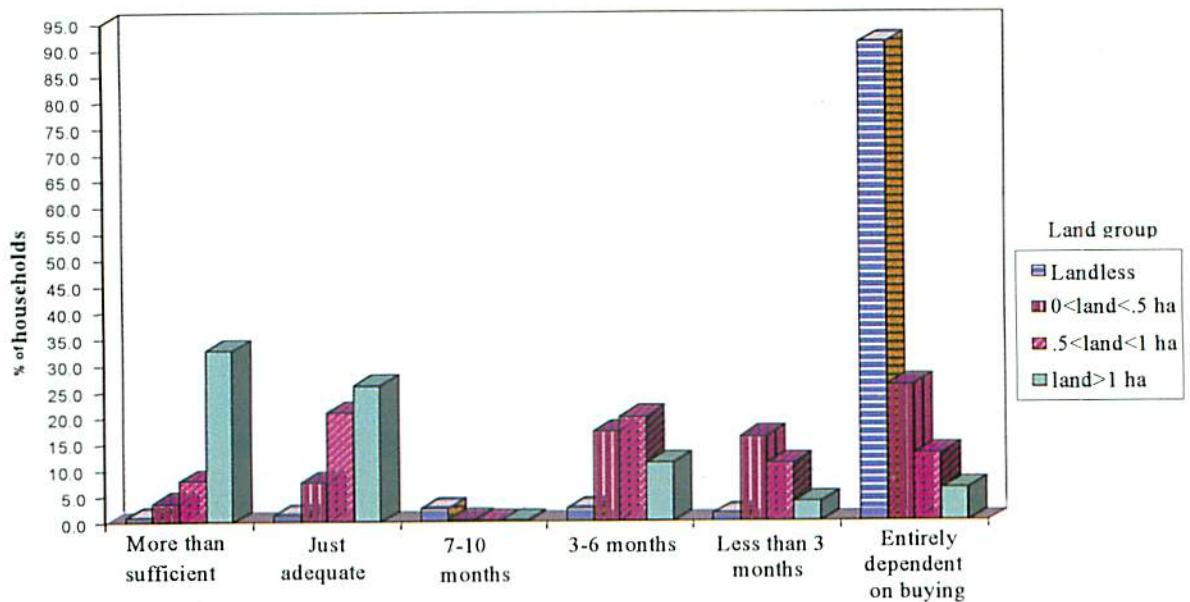


Fig. 3.9. Distribution of land ownership for various levels of self-sufficiency status in rice, 1995-96.

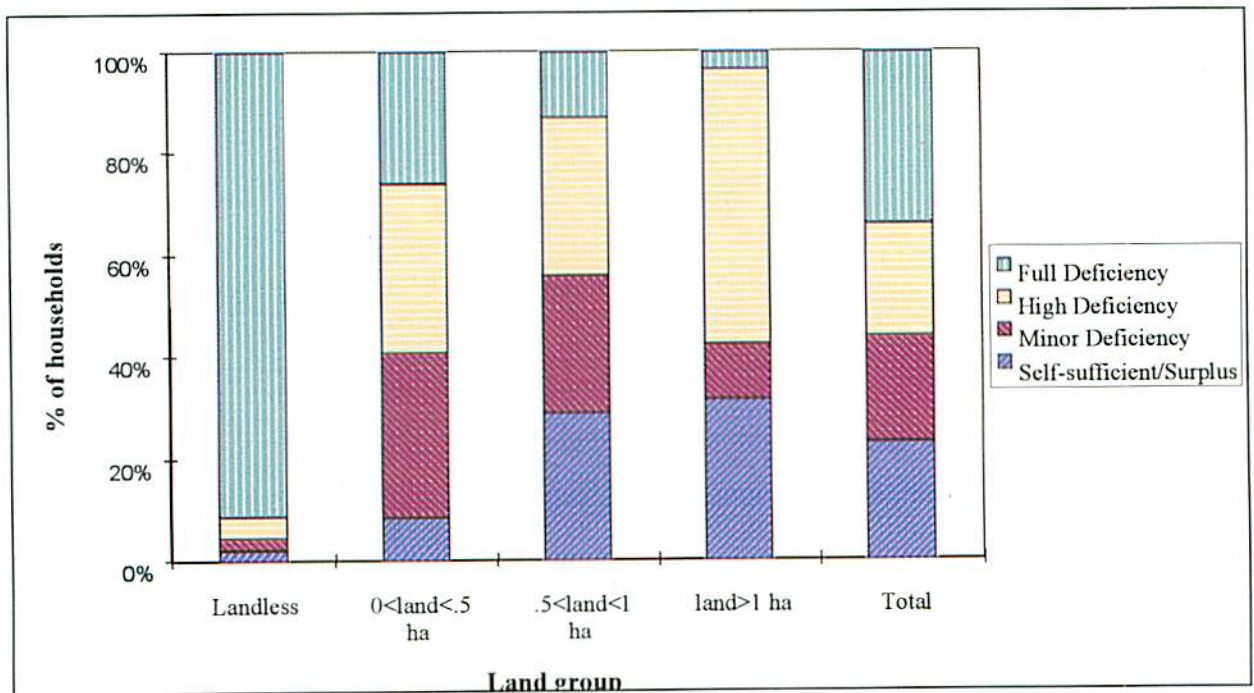


Fig. 3.10. Degree of self-sufficiency in rice supply for each land group.

Note: Self-sufficient/surplus refers to more than sufficient and just adequate supply of rice; minor deficiency refers to 7-10 months sufficiency in supply of rice from own land; high deficiency refers to less than 3 months of sufficient rice supply; and full deficiency refers to entirely dependent on buying rice.

Table 3.25. Distribution of households by amount of paddy rice bought or borrowed in the previous year (1994-95).

	Fishing households		Non fishing households		All households	
	No.	%	No.	%	No.	%
Non-borrowers	357	19.5	813	24.8	1 170	22.9
500 kg and below	545	29.7	915	27.9	1 460	28.6
501-1 000 kg	492	26.8	845	25.8	1 337	26.2
1 001-1 500 kg	287	15.7	450	13.7	737	14.4
Above 1 500 kg	152	8.3	253	7.7	405	7.9
Total	1 833	100.0	3 276	100.0	5 109	100.0

Table 3.26. Average amount (in kg) of paddy rice bought or borrowed per household, 1995-96.

	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang	K. Thom	All
<i>Fishing households</i>									
N	103	337	388	239	203	177	287	101	1835
Average	917.5	559.4	1019.0	739.0	599.0	395.0	455.9	714.3	681.0
<i>Non-fishing households</i>									
N	169	800	776	230	320	280	336	370	3282
Average	857.8	703.3	965.3	502.9	469.4	308.3	261.6	456.0	629.3
Total									
N	272	1137	1164	469	523	457	623	471	5117
Average	880.41	660.65	983.2	623.21	519.70	341.88	351.10	511.40	647.84

Among the provinces included in this study, K. Cham has the highest amount of rice bought or borrowed for home consumption with an average of 983.2 kg per household per year (Table 3.26). Generally, the amount borrowed or bought by fishing households is higher compared to non-fishing households, except for the province of Kandal where the average amount borrowed or bought by non-fishing households is substantially higher than fishing households. It should be noted here that in Kandal province the average size of land owned by non-fishing households is lower than that of fishing households. Households whose own supply is not sufficient usually buy rice from the market. Others borrow from neighbors or relatives. Even households whose production is higher than the family's subsistence requirements have to buy or borrow rice since their own production has to be sold to finance recurring expenses.

Cambodia is traditionally a fish eating country. Households usually consume fish both in fresh and processed forms. The average annual consumption of fresh fish per household during the open season is higher than in the close season (Table 3.27). Based on the weekly consumption of fresh fish per household, an average per capita fresh fish consumption of 43.5 kg per annum has been estimated. Fishing households have a higher per capita annual intake of fresh fish (49.7 kg) than non-fishing households (39.9 kg) (Table 3.28).

Table 3.27. Average annual consumption (in kg) of fresh fish per household in open and closed seasons, 1995-96.

Average consumption	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	Total
Open season									
Fishing households									
No. of households	103	337	388	240	203	177	287	101	1 836
Average	282.4	198.0	193.3	320.0	165.0	243.8	110.1	190.9	204.3
Non-fishing households									
No. of households	169	800	776	230	320	280	337	370	3 282
Average	218.5	167.6	160.5	230.2	126.8	226.0	78.2	138.1	161.5
Closed season									
Fishing households									
No. of households	102	337	388	241	203	177	287	101	1 836
Average	113.5	92.6	67.5	134.7	82.2	124.6	47.0	98.0	89.1
Non-fishing households									
No. of households	168	795	776	230	318	280	336	370	3 273
Average	88.2	78.6	63.2	113.7	65.8	110.3	33.0	74.1	74.2
Total									
Fishing households									
No. of households	103	337	388	240	203	177	287	101	1 836
Average	395.9	290.6	260.8	454.6	247.2	368.4	157.1	288.9	293.4
Non-fishing households									
No. of households	168	795	776	230	318	280	336	370	3 273
Average	306.8	246.3	223.6	343.9	192.5	336.3	111.2	212.2	235.6
Overall Total									
No. of households	270	1 132	1 164	471	521	457	622	471	5 108
Average	340.4	259.4	236.0	400.6	213.9	348.7	132.3	228.6	256.4
Std. Deviation	119.7	93.8	107.8	204.0	133.7	131.8	78.8	120.4	141.1

Table 3.28. Per capita annual consumption (in kg) of fresh fish, 1995-96.

Average consumption	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	Total
Fishing households									
No. of households	102	337	388	241	203	177	287	101	1 836
Average	60.0	51.0	44.2	77.1	39.9	63.5	26.2	49.0	49.7
Non-fishing households									
No. of households	168	795	776	230	318	280	336	370	3 273
Average	46.5	43.2	37.9	58.3	31.0	58.0	18.5	36.0	39.9
Total									
No. of households	270	1 132	1 164	471	521	457	622	471	5 108
Average	51.6	45.5	40.0	67.9	34.5	60.1	22.1	38.7	43.5
Std. deviation	18.1	16.5	18.3	34.6	21.6	22.7	13.1	20.4	23.9
Average family size	6.6	5.7	5.9	5.9	6.2	5.8	6.0	5.9	5.9

Besides fresh fish, a wide range of processed fish is also consumed. Due to the seasonal nature of the fish harvest, various fish processing and preservation techniques have developed. Hence, the rate of consumption of processed fish is expected to be considerably high in Cambodia. There are five types of processed fish products considered in this study: salted dried fish, smoked fish, fermented fish, fish paste and fish sauce. Both fishing and non-fishing households exhibit a uniform level of intake of all types of processed fish. On the average, smoked fish, salted dried fish, fermented fish and fish paste are consumed by the sample households at the rate of 19.6, 21.8, 20.2 and 22.1 kg, respectively, on a per household basis (Appendix A, Table 20). Consumption of fish sauce is also quite high (33 liters per household). On a per capita basis consumption of fish sauce ranges from as low as 3 liters for non-fishing households in Siem Reap to as high as 10 liters for fishing households in Kampong Chhnang per annum (Table 3.29). Households in Kampong Chhnang have the highest level of per capita intake of other processed fish such as fish paste, smoked fish and salted dried fish. As shown in Table 3.28, Kampong Chhnang also has the highest level of per capita consumption of fresh fish. Excluding fish sauce, the average annual per capita consumption of processed fish amounts to 14 kg per annum, which is about one-third of total fresh fish

consumption. However, if converted into fresh fish, processed fish including fish sauce can account for up to 32 kg (Table 3.30). Thus, per capita consumption of fish in both fresh and processed form (excluding fish sauce) amounts to 71 kg per annum (Fig. 3.11). If fish sauce is included, per capita consumption of fish (fresh and fresh equivalent of processed fish) will reach as high as 75.6 kg. For the fishing households, per capita consumption is about 80 kg per annum compared to about 67 kg for non-fishing households. Unlike other processed fish, fish sauce is only produced commercially and is mainly purchased by the households from the market. It usually comes from outside the fishing communes. Based on the average per capita annual consumption of 71 kg, the total amount of fish consumed by the 2.3 million people living in the fishing communes in the survey provinces is estimated to be 163 000 t. Using the annual per capita fish consumption for non-fishing households (67 kg) as the basis, the total consumption of the entire population of 4.2 million living in the fishing districts in the provinces covered by the household survey is estimated to be about 290 000 t.

Fish supply for home consumption comes from various sources. Table 3.31 shows the different sources of fish supply for family consumption. Fifty-seven percent of the fishing households indicate that their supply of fish comes mainly from family fishing in rivers/lakes and in flooded ricefields. Only 28.4% of the fishing households report that the fish they consume is mostly purchased from the market while 93% of the non-fishing households buy fish from the market.

Table 3.29. Annual per capita consumption of processed fish, 1995-96.

	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	All
Fish paste (kg)									
Fishing households (n=1 786)	3.3	2.7	3.9	6.7	2.5	5.0	2.9	5.9	3.9
Non fishing households (n=3 189)	3.3	2.8	3.6	6.9	2.4	5.0	3.1	4.6	3.6
All (n=4 975)	3.3	2.8	3.7	6.6	2.4	4.9	3.0	4.8	3.7
Fermented fish (kg)									
Fishing households (n=1 243)	3.4	2.4	5.2	5.2	2.4	2.6	2.2	3.4	3.5
Non-fishing households (n=2 132)	2.5	2.5	4.7	4.4	2.4	2.3	2.3	3.4	3.4
All (n=3 375)	2.9	2.5	4.9	4.6	2.4	2.4	2.2	3.4	3.4
Fish sauce (liter)									
Fishing households (n=1 721)	6.3	5.5	7.2	10.1	3.0	5.1	3.9	6.1	6.0
Non-fishing households (n=3 078)	6.0	5.6	5.9	7.7	2.8	4.7	4.2	6.0	5.4
All (n=4 799)	6.1	5.6	6.3	9.0	2.9	4.8	4.0	6.1	5.6
Smoked fish (kg)									
Fishing households (n=1 170)	3.9	2.5	3.9	5.5	4.3	3.0	3.3	3.9	3.6
Non-fishing households (n=2 054)	2.2	2.5	3.5	6.6	4.0	2.7	3.2	3.7	3.2
All (n=3 224)	2.8	2.5	3.6	5.4	4.1	2.8	3.1	3.7	3.3
Salted dried fish (kg)									
Fishing households (n=1 288)	2.6	3.3	3.1	5.5	4.9	3.5	3.6	5.2	3.9
Non-fishing households (n=2 237)	2.0	3.3	3.1	5.7	4.1	3.8	3.1	3.8	3.6
All (n=3 525)	2.2	3.7	3.0	5.3	4.4	3.7	3.2	4.0	3.7
Total* (kg)									
Fishing households (n=1 827)	13.2	10.9	16.1	22.9	14.1	14.1	12.0	18.4	14.9
Non-fishing households (n=3 258)	10.0	11.1	14.9	23.6	12.9	13.9	11.7	15.5	13.8
All (5 085)	11.1	11.5	15.2	21.9	13.3	13.9	11.5	15.9	14.1

*Total is the sum of per capita consumption of each processed fish excluding fish sauce.

Table 3.30. Annual per capita consumption of processed fish (fresh equivalent), 1995-96.

	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang	K. Thom	All	Conversion rate ^a
Fish paste (kg)										
Fishing households (n=1 786)	4.6	3.8	5.5	9.4	3.5	7.0	4.1	8.3	5.5	1.4
Non fishing households (n=3 189)	4.6	3.9	5.0	9.7	3.4	7.0	4.3	6.4	5.0	
All (n=4 975)	4.6	3.9	5.2	9.2	3.4	6.9	4.2	6.7	5.2	
Fermented fish (kg)										
Fishing households (n=1 243)	4.8	3.4	7.3	7.3	3.4	3.6	3.1	4.8	4.9	1.4
Non-fishing households (n=2 132)	3.5	3.5	6.6	6.2	3.4	3.2	3.2	4.8	4.8	
All (n=3 375)	4.1	3.5	6.9	6.4	3.4	3.4	3.1	4.8	4.8	
Fish sauce (liter)										
Fishing households (n=1 721)	5.0	4.4	5.8	8.1	2.4	4.1	3.1	4.9	4.8	0.8
Non-fishing households (n=3 078)	4.8	4.5	4.7	6.2	2.2	3.8	3.4	4.8	4.3	
All (n=4 799)	4.9	4.5	5.0	7.2	2.3	3.8	3.2	4.9	4.5	
Smoked fish (kg)										
Fishing households (n=1 170)	9.8	6.3	9.8	13.8	10.8	7.5	8.3	9.8	9.0	2.5
Non-fishing households (n=2 054)	5.5	6.3	8.8	16.5	10.0	6.8	8.0	9.3	8.0	
All (n=3 224)	7.0	6.3	9.0	13.5	10.3	7.0	7.8	9.3	8.3	
Salted dried fish (kg)										
Fishing households (n=1 288)	6.5	8.3	7.8	13.8	12.3	8.8	9.0	13.0	9.8	2.5
Non-fishing households (n=2 237)	5.0	8.3	7.8	14.3	10.3	9.5	7.8	9.5	9.0	
All (n=3 525)	5.5	9.3	7.5	13.3	11.0	9.3	8.0	10.0	9.3	
Total* (kg)										
Fishing households (n=1 827)	30.7	26.0	36.0	52.2	32.3	31.0	27.5	40.7	33.9	
Non-fishing households (n=3 258)	23.4	26.4	32.8	52.7	29.2	30.2	26.7	34.8	31.1	
All (5 085)	26.1	27.4	33.6	49.6	30.3	30.3	26.2	35.6	32.1	

^a Amount of fresh fish required per unit of processed fish (Lieng 1992; Chhouk 1996).

* Total is the sum of per capita consumption of each processed fish.

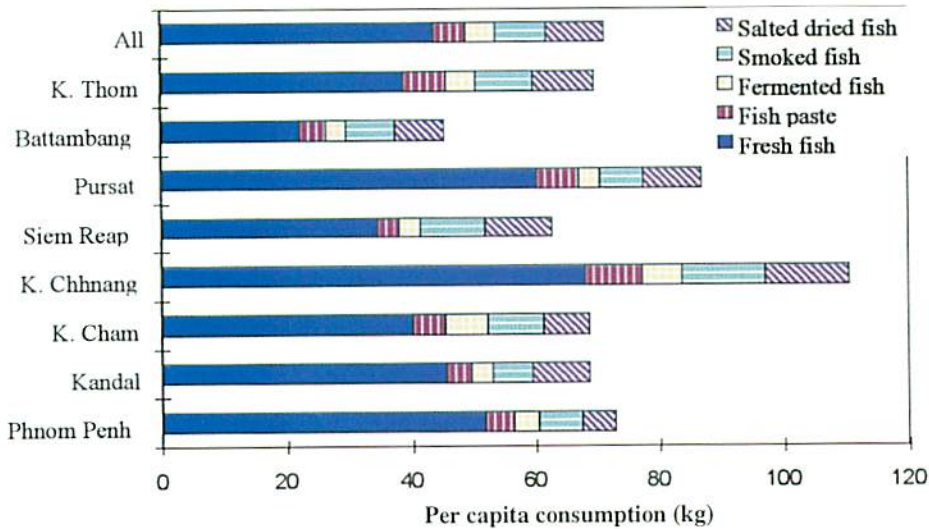


Fig. 3.11. Average per capita consumption of fresh fish and processed fish (fresh equivalent).

Table 3.31. Main source (% of households) of supply of fish and fish products for family consumption, 1995-96.

Province	Surplus from commercial catch		Family fishing/own pond/cage culture		Purchased from market		Given by relatives/friends	
	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing
Phnom Penh	57.3	0.6	35.9	3.4	8.7	94.8	0.0	0.0
Kandal	6.2	0.1	36.8	4.5	59.9	93.5	0.6	0.2
Kampong Cham	17.3	0.5	63.9	5.8	18.6	93.1	0.3	0.5
Kampong Chhnang	10.4	0.0	68.9	6.5	19.1	93.9	0.0	1.4
Siem Reap	0.0	0.0	93.1	2.1	27.6	84.8	0.5	1.6
Pursat	15.3	1.4	37.9	9.6	46.3	89.3	0.0	0.0
Battambang	30.0	1.2	51.9	0.6	17.8	98.8	0.0	0.0
Kampong Thom	29.7	0.3	69.3	7.0	3.0	92.0	0.0	0.3
Total	17.1	0.4	57.2	4.9	28.4	92.5	0.2	0.5

Note: Purchased from market includes purchased fresh and processed fish and home-made fish paste from purchased fish.

Table 3.32 gives the average annual consumption of various sources of animal protein which are either produced or bought from the market. For beef and pork, more is purchased than self produced. This is also true for poultry products except in Battambang and Pursat where more home raised chicken are consumed (Table 3.32). Except for pork and eggs, the consumption of non-fish animal protein products does not vary between fishing and non-fishing households (Table 3.33) The mean differences as to per capita consumption of various other animal protein products between fishing and non-fishing households were highly significant for pork and eggs (Table 3.33). Existing estimates suggest that 75% of the dietary animal protein consumed by the population of Cambodia as a whole come from fresh fish and processed fish. The remaining 25% can be attributed to livestock products such as beef, pork and chicken. Based on the average consumption of fish and other animal protein in the fishing communes, it can be concluded that fish supplies nearly 90% of the total animal protein in the fishing dependent provinces, assuming same conversion of protein for all types of animal foods.

Table 3.32. Average annual consumption (in kg) of non-fish animal protein other than fish per household, 1995-96.

Sources of animal protein	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang	K. Thom	Total
Beef									
Own production	0.31	0.02	0.84	0.05	0.0	0.11	0.04	0.0	0.24
Purchased	15.5	12.4	13.3	13.4	7.8	8.6	15.2	16.1	12.7
Total	15.8	12.4	14.2	13.5	7.8	8.7	15.3	16.1	13.0
Pork									
Own production	0.12	0.1	0.6	0.07	0.0	0.26	0.06	0.23	2.2
Purchased	27.7	19.7	22.3	18.0	16.0	14.3	17.9	20.8	19.6
Total	27.8	19.8	22.9	18.1	16.0	14.5	17.9	21.0	21.8
Chicken									
Own production	5.3	4.2	4.3	5.6	4.9	8.4	7.6	3.5	5.2
Purchased	9.4	9.6	7.7	7.7	6.5	3.4	4.0	10.6	7.4
Total	14.7	13.8	12.0	13.3	11.4	11.8	11.5	14.1	12.6
Eggs									
Own production	15.4	1.24	20.3	6.4	12.1	0.55	14.5	4.6	9.7
Purchased	132.4	112.3	64.7	25.9	50.3	4.0	31.8	39.4	62.2
Total	147.8	113.6	85.0	32.3	62.4	4.5	46.3	44.0	71.9
Duck									
Own production	0.24	0.26	0.54	0.72	0.18	0.02	0.17	0.11	0.31
Purchased	0.96	1.1	1.7	0.72	2.6	0.02	1.3	0.38	1.2
Total	1.2	1.3	2.3	1.4	2.8	0.04	1.5	0.49	1.5

Table 3.33. Per capita consumption of animal protein, 1995-96.

Province	Beef (kg)		Pork (kg)		Chicken (kg)		Eggs (no)		Duck (kg)		Total *	
	Fish- ing	Non- fishing	Fish- ing	Non- fishing	Fish- ing	Non- fishing	Fish- ing	Non- fishing	Fish- ing	Non- fishing	Fish- ing	Non- fishing
Phnom Penh	2.4	2.4	2.4	5.3	2.2	2.2	18.5	24.7	0.3	0.1	7.2	9.9
Kandal	2.1	2.2	2.7	3.7	2.9	2.2	21.5	19.4	0.1	0.3	7.9	8.4
K. Cham	2.2	2.4	3.1	4.3	2.2	2.0	13.8	14.6	0.7	0.2	8.2	8.9
K. Chhnang	2.1	2.4	2.6	3.5	2.0	2.4	5.5	5.5	0.2	0.2	7.0	8.6
Siem Reap	1.4	1.2	2.9	2.3	2.1	1.6	12.2	8.7	0.7	0.3	7.1	5.4
Pursat	1.4	1.4	2.5	2.7	2.1	2.0	0.4	1.0	0.0	0.02	6.0	6.1
Battambang	2.3	2.8	2.2	3.6	1.9	1.9	7.2	9.2	0.3	0.2	6.7	8.5
K. Thom	2.1	2.8	2.6	3.9	1.4	2.6	2.8	8.7	0.02	1.0	6.1	10.4
Total	2.1	2.2	2.6	3.7	2.2	2.1	11.2	12.8	0.3	0.2	7.3	8.2

* Excluding eggs.

Monthly cash expenditures on food, clothing and other basic needs per household are shown in Table 3.34. On the average, expenditures on food amount to 950 000 riel (approximately US\$380.00) per annum per household. This accounts for 56% of the total average expenses on the basic needs.

Table 3.34. Average annual cash expenditure ('000 riel) per household on different items of basic needs, 1995-96.

Items	Phnom Penh (n=272)	Kandal (n=1 137)	K. Cham (n=1 164)	K. Chhnang (n=469)	Siem Reap (n=523)	Pursat (n=457)	Battam- bang (n=623)	K. Thom (n=471)	All (n=5 117)
Food	1 341.6 (59.2) ^a	1 538.2 (70.9)	787.8 (53.9)	778.3 (40.7)	407.4 (42.0)	843.1 (60.3)	896.4 (45.7)	655.6 (45.2)	950.4 (56.1)
Clothing and supplies	136.8 (6.0)	109.9 (5.1)	184.6 (12.6)	253.2 (13.2)	132.0 (13.6)	88.8 (6.4)	280.4 (14.3)	126.0 (8.7)	163.8 (9.7)
Children's education	430.8 (19.0)	167.5 (7.7)	161.6 (11.1)	222.0 (11.6)	145.6 (15.0)	58.9 (4.2)	248.3 (12.7)	222.0 (15.3)	190.4 (11.2)
Medicare/medicine	130.8 (5.8)	151.0 (7.0)	180.7 (12.4)	343.2 (17.9)	156.0 (16.1)	123.2 (8.8)	238.2 (12.2)	229.2 (15.8)	190.0 (11.2)
Fuel/firewood (for cooking/transport)	115.2 (5.1)	116.6 (5.4)	67.2 (4.6)	141.6 (7.4)	63.1 (6.5)	40.2 (2.9)	120.0 (6.1)	108.0 (7.5)	94.7 (5.6)
Electricity and water	109.2 (4.8)	87.0 (4.0)	80.4 (5.5)	175.4 (9.2)	64.8 (6.7)	242.9 (17.4)	178.9 (9.1)	108.8 (7.5)	105.6 (6.2)
Total	2 264.4 (100.0)	2 170.2 (100.0)	1 462.3 (100.0)	1 913.7 (100.0)	968.9 (100.0)	1 397.1 (100.0)	1 962.2 (100.0)	1 449.6 (100.0)	1 694.9 (100.0)

Note: US\$1.00=2 500 riel.

^a Figures in parentheses indicate percentage of total.

I. Borrowing and Lending Activities

Borrowing and lending of money and various necessities of life are common practices in rural Cambodia. About 50% of the households reported involvement in borrowing or lending of rice or money (Fig. 3.12). As shown by Fig. 3.12, in Siem Reap nearly 75% of the households reported their involvement in borrowing or lending compared to only 27% in Kandal. Tables 3.35 and 3.36 show that only 1.8 and 0.6% of the households lent money and rice, respectively, during 1994-95. A higher percentage of fishing households are engaged in rice lending, whereas a higher percentage of non-fishing households are engaged in money lending (Table 3.35 and 3.36)

The average amount of money lent by each of the lender household varied among the provinces ranging from as low as 185 000 riel in Kandal to as high as 905 000 riel in Kampong Chhnang (Table 3.37). The average is 476 000 riel per household. Similarly, about 273 kg of rice was lent out by each lender household (Table 3.38). It should be noted that no data were available on Phnom Penh on the lending activities of households.

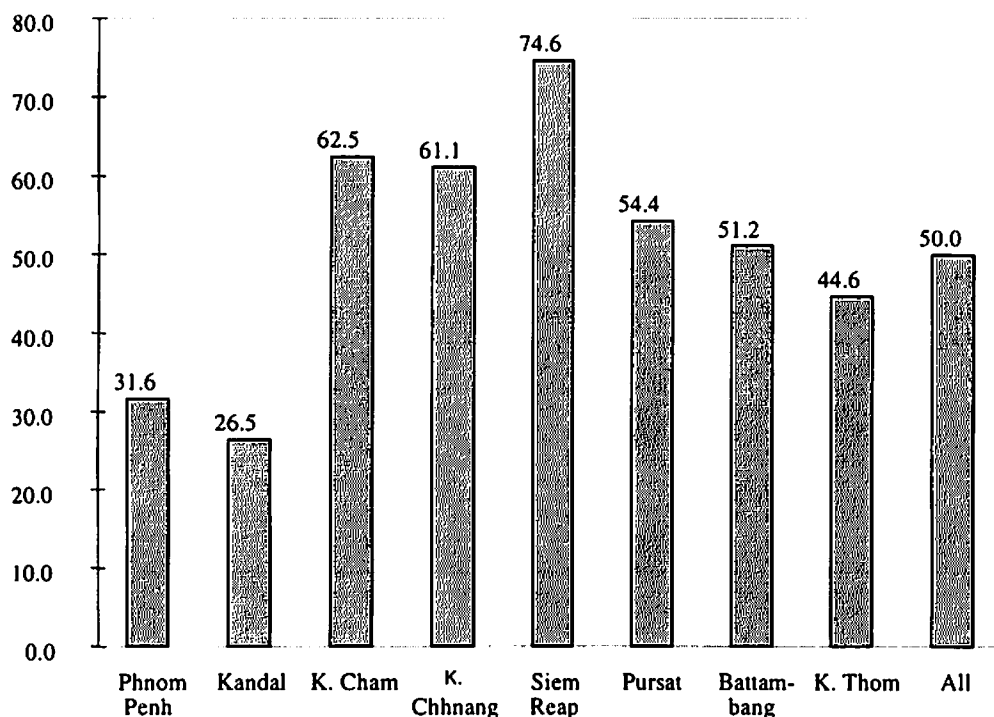


Fig. 3.12. Percentage of households involved in lending or borrowing (money or rice).

Table 3.35. Number and percentage of households who lent money, 1994-95.

Province	Fishing households		Non-fishing households		Total	
	No. of lenders	%	No. of lenders	%	No. of lenders	%
Phnom Penh	n.a.		n.a.		n.a.	
Kandal	2	0.59	3	0.38	5	0.44
K. Cham	9	2.32	7	0.9	16	1.37
K. Chhnang	5	2.09	10	4.35	15	3.20
Siem Reap	5	2.46	12	3.75	17	3.25
Pursat	4	2.26	17	6.07	21	4.60
Battambang	5	1.74	4	1.19	9	1.44
K. Thom	2	1.98	5	1.35	7	1.49
All	32	1.74	58	1.77	90	1.76

Note: % refers to total for each type of household in each province.

Table 3.36. Number and percentage of households who lent rice, 1994-95.

Province	Fishing households		Non-fishing households		Total	
	No. of lenders	%	No. of lenders	%	No. of lenders	%
Phnom Penh	n.a.		n.a.		n.a.	
Kandal	0	0.0	2	0.25	2	0.18
K. Cham	4	1.03	1	0.13	5	0.43
K. Chhnang	1	0.42	3	1.30	4	0.85
Siem Reap	5	2.46	7	2.19	12	2.29
Pursat	1	0.56	2	0.71	3	0.66
Battambang	3	1.05	3	0.89	6	0.96
K. Thom	0	0.0	1	0.27	1	0.21
All	14	0.76	19	0.58	33	0.64

Note: % refers to total for each type of household in each province.

Table 3.37. Distribution of households by amount of money, 1994-95.

Distribution (*000 riel)	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang	K. Thom	All
≤100	n.a.	2	5	6	10	10	0	1	31
101-500	n.a.	3	8	4	4	10	4	5	35
501-1 000	n.a.	0	2	2	2	1	3	1	11
1 001-2 000	n.a.	0	1	1	0	0	1	0	3
2 001-3 000	n.a.	0	0	1	0	0	1	0	2
>3 000	n.a.	0	0	1	1	0	0	0	2
No of household	n.a.	5	16	15	17	21	9	7	90
Ave amount lent/household	n.a.	185	402	905	502	211	933	259	476

Table 3.38. Distribution of households by amount of rice lent, 1994-95.

Distribution (in kg)	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang	K. Thom	All
≤50	n.a.	1	3	2	2	0	0	0	7
51-100	n.a.	0	0	2	2	0	0	0	4
101-500	n.a.	1	2	0	8	3	3	1	18
501-1 000	n.a.	0	0	0	0	0	2	0	2
>1 000	n.a.	0	0	0	0	0	1	0	1
No. of household	n.a.	2	5	4	12	3	6	1	33
Ave amount lent/household	n.a.	200	85	61	205	260	733	480	273

Of the total households, 43.7% have standing cash debts and 13% have rice debts (Tables 3.39 and 3.40). Among fishing households, 49.9% borrowed money and 15.6% borrowed rice, whereas for non-fishing households, these figures are 40.2% and 11.8%, respectively. The average amount of cash debt for the borrowing households ranged from 331 000 riel in Siem Reap to 1 252 000 riel per household in Kampong Chhnang (Table 3.41). The average rice debt ranged from 177 kg in Kampong Chhnang to 643 kg per household in Battambang (Table 3.42). The common sources of borrowing are relatives and friends (Table 3.43), who may or may not charge interest, and local money lenders who usually charge a high interest rate. Money borrowed is usually spent to buy rice and medicines (Table 3.44). Other households borrow for financing income generating activities, and purchasing farm inputs, fishing equipment, and commodities for business and trading.

Table 3.39. Number and percentage of households who borrowed money, 1994-95.

Province	Fishing households		Non-fishing households		Total	
	No.	%	No.	%	No.	%
Phnom Penh	51	49.5	34	20.1	85	31.3
Kandal	78	23.1	204	25.5	282	24.8
K. Cham	239	61.6	437	56.3	676	58.1
K. Chhnang	141	59.0	92	40.0	233	49.7
Siem Reap	145	71.4	182	56.9	327	62.5
Pursat	81	45.8	129	46.1	210	46.0
Battambang	105	36.6	54	16.0	159	25.5
K. Thom	75	74.3	188	50.8	263	55.8
All	915	49.9	1 320	40.2	2 235	43.7

Note: % refers to total number of households in each category.

Table 3.40. Number and percentage of households who borrowed rice, 1994-95.

Province	Fishing households		Non-fishing households		Total	
	No.	%	No.	%	No.	%
Phnom Penh	3	2.9	0	0.0	3	1.1
Kandal	11	3.3	18	2.3	29	2.6
K. Cham	77	19.8	95	12.2	172	14.8
K. Chhnang	32	13.4	41	17.8	73	15.6
Siem Reap	92	45.3	127	39.7	219	41.9
Pursat	18	10.2	27	9.6	45	9.8
Battambang	41	14.3	60	17.8	101	16.2
K. Thom	12	11.9	18	4.9	30	6.4
All	286	15.6	386	11.8	672	13.1

Note: % refers to total number of households in each category.

Table 3.41. Distribution of households by amount of money, 1995-96.

Distribution ('000 riel)	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang	K. Thom	All
≤100	12	117	217	59	154	88	59	79	785
101-500	44	119	311	102	137	84	83	144	1 024
501-1 000	18	30	100	37	19	20	11	21	256
1 001-2 000	6	7	33	16	9	11	2	9	93
2 001-3 000	2	5	10	6	3	3	0	5	34
3 001-5 000	2	4	4	5	3	4	3	4	29
>5 000	1	0	1	8	2	0	1	1	14
No. of household	85	282	676	233	327	210	159	263	2 235
Ave. amount of money borrowed	683	365	394	1 252	331	407	437	436	491

Table 3.42. Distribution of households by amount of rice borrowed, 1995-96.

Distribution (kg)	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang	K. Thom	All
≤50	0	2	19	7	4	3	0	0	35
51-100	1	3	27	17	13	2	8	7	78
101-500	2	19	109	48	177	33	58	22	468
501-1 000	0	5	14	1	16	6	25	1	68
>1 000	0	0	3	0	9	1	10	0	23
No. of household	3	29	172	73	219	45	101	30	672
Ave. amount of rice borrowed	267	323	287	177	417	340	643	225	373

Table 3.43. Distribution (in %) of households by sources of borrowing.

Source of borrowing	Phnom Penh (n=86)	Kandal (n=281)	K. Cham (n=735)	K. Chhnang (n=281)	Siem Reap (n=422)	Pursat (n=241)	Battambang (n=234)	K. Thom (n=278)	All (n=2 558)
Friends/relatives w/o interest	51.2	36.7	63.7	55.2	59.2	29.0	10.7	15.5	45.5
Local money lenders	46.5	49.8	33.7	36.7	38.2	57.3	76.9	81.3	48.3
Government bank	2.3	2.8	0.4	0.7	2.1	12.0	0.4	2.2	2.3
Private bank					0.2		0.4		0.1
NGO		2.8	1.8	7.5	0.2	1.7	11.5	1.1	3.0
Others		6.0	0.4						0.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 3.44. Distribution (in %) of households by main purpose of borrowing (%).

Purpose of borrowing	Phnom Penh (n=86)	Kandal (n=281)	K. Cham (n=735)	K. Chhnang (n=281)	Siem Reap (n=422)	Pursat (n=241)	Battambang (n=234)	K. Thom (n=278)	All (n=2 558)
Buy rice	19.6	21.7	28.2	17.4	38.1	35.8	18.0	25.1	27.0
Make prahoc for home consumption	3.9	12.3	7.4	5.4	3.1	4.9	5.7	6.7	6.6
Buy boats/nets for fishing	26.5	3.6	5.5	19.9	3.5	5.2	17.2	8.0	8.2
Buy inputs for farming	5.9	3.9	7.6	15.3	4.5	5.6	23.4	6.1	8.0
Buy cattle for farming	3.9	2.2	1.9	4.6	2.3	2.4	2.9	0.9	2.2
Medical treatment/emergency	18.6	29.2	27.7	15.9	33.2	25.3	20.1	29.9	27.0
Sending children to school	2.0	5.5	4.9	1.8	2.3		4.9	9.2	4.7
Spending during wedding/festival	2.0	1.2	4.7	1.0	7.5	1.0	1.6	11.7	5.2
Finance business investment	2.0	8.4	6.7	9.7	3.0	14.9	5.3	2.2	6.2
Others	15.7	12.0	5.3	9.0	2.4	4.9	0.8		4.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

J. Fishing and Fishing Related Activities

There are three levels of fishing involvement identified in this study: family (or subsistence), middle-scale and large-scale (fishing lot) fishing. Middle-scale and large-scale fishing are only allowed during the open season (Oct-May), while family fishing is allowed at all times of the year (Tan 1971; Ahmed and Tana 1996).

As seen in Table 3.2, 39% (1 985) of the households living in the fishing communes are actively involved in fishing. Also, household heads in 36% (1 835) of the households are involved in fishing activity (Table 3.2). During the open season, majority (87%) of these household heads are involved in family fishing (Table 3.45). About 10% of the household heads are engaged in commercial fishing either as license holders in middle-scale fishing or lease/sub-lease holders in large-scale fishing. In addition, about 3% of the household heads also participate in fishing as commercial fish workers, mostly in large-scale fishing (Table 3.45). Including household members, nearly all the fishing households are engaged in family fishing (Table 3.45).

Table 3.45. Distribution of fishing households by type of fishing involvement in the open season, 1995-96.

Type of involvement	Household heads		All households	
	No. of households	% ^b	No. of Households	% ^c
Family fishing	1 599	87	1 971	99
Middle-scale fishing	172	9	283	14
Large-scale fishing	19	1	23	1
Commercial fish worker	45	3	53	3
Total^a	1 835	100.0	2 330	117

^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)

The river and lake ecosystems of Cambodia support a rich fish diversity (Rainboth 1996). The species composition of fish in the household catch varies by fishing season, type of fishing and geographic area. Table 3.46 shows a list of 15 of the most important species in terms of quantity in the household catch. The highest number of households in all fishing categories reported mud carp (Riel) as the most important species in terms of quantity in their catch. This was followed by climbing perch (Kranh Srai), snakehead (Raws) and moonlight gourami (Kawmpleanh).

The involvement in large-scale fishing by households living in fishing dependent communes is generally very limited. Fishing lots (fishing grounds or areas designated for large-scale fishing) are leased by rich people coming from outside the fishing communities. The fishing crew (fish workers) is also often brought in from other locations. Very few of the people living in the adjacent or nearby communities get employed or choose to work in the large-scale fishing operation as fishing crew (Ahmed and Tana 1996). As shown in Table 3.45, only 23 household heads, which represent 1.2% of the fishing households, and some 42 members from the fishing households are engaged in large-scale fishing. Also, none of the households from Kandal, Siem Reap and Pursat have any involvement in large-scale fishing operations as leasee or sub-leasee, although many of the fishing lots are located within these provinces.

Table 3.47 shows the distribution of households engaged in large-scale fishing by type of fishing ground or fishing lots in Phnom Penh, K. Cham, K. Chhnang and K. Thom (see Appendix A, Table 21 for distribution by commune). The average area of the lot is 24 182 m² for the fishing lots leased or sub-leased by the household heads. Households have operated in their current fishing lots for an average of 2 to 10 years but they have been involved in such fishing activity for 9 to 30 years.

Table 3.46. Percentage of households reporting the most important species (ranked as number one in terms of catch quantity) by type of fishing involvement, 1995-96.

Name of species ^a	Scientific Name	Family fishing (n=1 758)	Middle-scale fishing (n=207)	Large-scale fishing (n=22)
Riel (mud carp)	<i>Henicorhynchus</i> spp.	33.2	44.4	31.8
Kranh Srai (climbing perch)	<i>Anabas testudineus</i>	10.5		4.5
Raws (snakehead)	<i>Channa marulius</i>	8.6	4.3	
Kawnpleanh (moonlight gourami)	<i>Trichogaster microlepis</i>	6.0		4.5
Kanchos (mystus catfish)	<i>Mystus</i> spp.	3.2		
Kompeus (small shrimp)		3.1	2.4	
Changwa (blue danio)	<i>Danio aequipinnatus</i>	2.4	4.3	9.1
Kes (common sheat fish)	<i>Micronema</i> spp.	2.0		13.6
Andaing (walking catfish)	<i>Clarius</i> spp.	2.3		
Chhlang (yellow Mystus)	<i>Mystus nemurus</i>	1.9		4.5
Lingh (white lady carp)	<i>Thynnichthys thynnoides</i>	1.5	1.9	
Ta aun (whiskered sheat fish)	<i>Ompok hypophthalmus</i>	1.6	4.8	9.1
Pruol (small scale mud carp)	<i>Cirrhinus microlepis</i>		3.4	
Pra (tridescent shark-catfish)	<i>Pangasianodon hypophthalmus</i>		2.4	
Klang hey (twisted faw sheat fish)	<i>Belodontichthys dinema</i>		1.9	

^aDetails on various fish species of Cambodian Mekong are available in Rainboth (1996).

Table 3.47. Distribution of households (number) engaged in large-scale fishing in various fishing grounds, 1995-96.

Fishing ground	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang*	K. Thom	All
Riverine/lake lot	2	0	5	4	0	0	-	2	13
Fish dai lot	1	0	0	0	0	0	-	0	1
River bank/lot	0	0	4	0	0	0	-	0	4
Shrimp dai lot	0	0	0	0	0	0	-	0	0
Others	0	0	0	1	0	0	-	0	1
Total	3	0	9	5	0	0	4	2	23

* Information on the distribution of households by fishing ground was not available for Battambang.

Middle-scale fishing requires licenses issued by the Department of Fisheries. Majority of the middle-scale fishers operate in Mekong Upper (37%) and Tonle Sap Rivers (31%). Those along the Great Lake and its adjoining small rivers/lakes comprise 18% of the total middle-scale fishers (Table 3.48). Those engaged in middle-scale fishing are mostly license holders with one cosharer located in almost all of the provinces under study except in Kandal and Battambang (Appendix A, Table 22).

Subsistence fishers concentrate mainly in the small rivers and lake (39%), followed by inundated forest (17%) and Tonle Sap River (15%) (Table 3.48 and Appendix A, Tables 23-24). Note that family

fishers have limited access to good fishing grounds thus prompting them to violate fish reserves and go beyond lot boundaries in order to obtain a bigger catch for their fishing efforts (Ahmed et al. 1996).

Table 3.48. Number of households engaged in middle-scale fishing in various fishing grounds, 1995-96.

Fishing ground	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang	K. Thom	All	%
Tonle Sap	31	6	0	32	0	0	1	17	87	30.7
Great Lake	0	0	0	2	5	0	14	0	21	7.4
Mekong Upper	16	0	90	0	0	0	0	0	106	37.5
Mekong Lower	2	0	4	0	0	0	0	0	6	2.1
Bassac	4	0	0	0	0	0	0	0	4	1.4
Small river/lake connected to the Tonle Sap	1	0	0	5	0	0	0	11	17	5.7
Small river/lake connected to the Great Lake	0	0	0	0	0	30	0	0	30	10.6
Small river/lake connected to the Mekong/Bassac	4	1	7	0	0	0	0	0	12	4.2
Others	0	1	0	0	0	0	0	0	1	0.4
Total	58	8	101	39	5	30	15	28	284	100
(%) ^a	21.32	0.70	8.68	8.30	0.96	6.56	2.41	5.94	5.55	

^a Percentage of total number of households surveyed.

Table 3.49. Number of households engaged in family fishing during the open season in various fishing grounds by province in Cambodia, 1995-96.

Fishing ground	Phnom Penh (n=95)	Kandal (n=340)	K. Cham (n=447)	K. Chhnang (n=257)	Siem Reap (n=203)	Pursat (n=238)	Battambang (n=287)	K. Thom (n=104)	Total (n=1 971)
Great Lake	0	0	0	4	33	2	0	6	45
Tonle Sap	13	5	37	150	12	0	0	0	217
Flooded Ricefield	21	76	71	58	96	16	141	39	518
Mekong River	0	11	131	1	1	0	0	0	144
Bassac River	0	30	12	2	5	2	0	1	52
Small river/lake	27	268	169	122	147	157	245	70	1 205
Inundated Forest	16	64	33	67	81	30	197	29	517
Others	0	0	0	0	0	0	1	0	1
Total^a	77	454	453	404	375	207	584	145	2 699

^a Indicate number of households engaged in fishing. This may exceed the total number of households engaged in family fishing in some of the provinces since some household fish in more than one fishing ground.

Table 3.50. Number of households engaged in family fishing during the closed season in various fishing grounds by province in Cambodia, 1995-96.

Fishing ground	Phnom Penh (n=95)	Kandal (n=340)	K. Cham (n=447)	K. Chhnang (n=257)	Siem Reap (n=203)	Pursat (n=238)	Battambang (n=287)	K. Thom (n=104)	Total (n=1 971)
Great Lake	0	0	0	4	35	4	0	0	43
Tonle Sap	28	3	27	136	6	0	0	6	206
Flooded ricefield	43	60	117	76	107	204	111	45	763
Mekong River	8	11	133	0	1	0	0	0	153
Bassac River	4	24	16	2	4	2	0	1	53
Small river/lake	36	264	215	124	93	125	217	72	1146
Inundated forest	27	56	50	77	80	33	148	31	502
Others	1	0	0	0	0	0	0	0	1
Total^a	147	418	558	419	326	368	476	155	2 867

^a Indicate number of households engaged in fishing. This may exceed the total number of households engaged in family fishing in some of the provinces since some household fish in more than one fishing ground.

The types of gears/equipment depend on the environmental conditions and the species to be caught. There are restrictions on the type of gear that can be used in fishing (Tan 1971). Family fishers use smaller gears than middle-scale and large-scale fishers. The most common family fishing gears used are castnet, gillnet, single hooked line and bamboo/rattan traps (Appendix A, Table 25). As shown in Table 3.51, an

estimated 102 603 households (65% of total fishing households involved in family fishing) from the eight study provinces use gillnet during the closed season. Bamboo and rattan traps are used by 44 342 households (28%).

Table 3.51. Estimated number of households using various types of family fishing gears during the open (Oct-May) and closed season (June-Sept) in selected freshwater fishery provinces in Cambodia^a, 1995-96.

	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	All
No. of family fishing households ^b	6 306	39 428	34 481	20 807	14 017	16 356	21 219	5 238	157 852
Closed season:									
<i>No. of households using:</i>									
Harpooned gear	200	236	1 246	180	756	76	1 532	431	4 657
Bamboo/rattan traps	500	4 014	4 570	3 063	3 642	6 314	10 035	789	32 927
Castnet	300	7 083	3 573	1 081	2 542	6 314	9 958	646	31 498
Scooping net (Thnong/ chnouk)	0	236	4 985	360	550	304	766	0	7 202
Gillnet (Morgn)	2 802	27 151	14 872	13 331	4 329	6 314	10 724	4 162	83 686
Small handled dragnet	0	708	166	0	137	152	153	144	1 461
Single hooked line	701	4 250	6 730	3 693	2 955	4 108	1 072	1 292	24 800
Total	4 504	43 678	36 142	21 708	14 911	23 583	34 242	7 462	186 230
<i>Average no. of gear/ household:</i>									
Harpooned gear	1.0	1.5	1.4	30.0	1.3	1.0	1.2	1.5	2.3
Bamboo/rattan traps	7.0	22.4	8.2	14.3	5.0	6.5	9.2	8.7	9.4
Castnet	1.0	1.0	1.2	1.0	1.2	1.0	1.1	1.0	1.1
Scooping net (Thnong/ chnouk)	0	4.5	1.3	1.8	2.1	1.0	1.0	1.0	1.4
Gillnet (Morgn)	1.7	2.6	2.3	3.2	6.9	1.6	3.8	3.1	3.0
Small handled dragnet	0.0	15.5	1.0	0.0	1.0	1.5	1.5	1.0	6.6
Single hook line	53.1	29.2	82.3	156.7	71.3	1.5	45.4	137.1	70.6
Open season:									
<i>No. of households using:</i>									
Harpooned gear	0	236	1 662	180	756	152	1 915	502	5 403
Bamboo/rattan traps	300	4 368	3 822	3 153	4 741	1 598	11 491	718	30 189
Castnet	601	7 319	3 573	1 261	4 947	6 542	12 640	718	37 600
Scooping net (Thnong/ chnouk)	0	354	4 154	540	550	152	689	0	6 440
Gillnet (Morgn)	2 402	29 630	13 792	14 052	3 504	6 238	11 950	4 162	85 730
Small handled dragnet	0	590	249	0	275	76	153	144	1 487
Single hooked line	601	4 368	5 317	3 513	1 924	3 956	1 379	1 363	22 421
Total	3 903	46 865	32 570	22 699	16 697	18 714	40 217	7 606	189 271
<i>Average no. of gear/ household:</i>									
Harpooned gear	0.0	1.0	1.4	30.0	3.9	1.0	1.1	1.4	2.5
Bamboo/rattan traps	5.7	26.2	8.4	11.1	5.5	16.4	9.1	10.3	10.6
Castnet	0.8	1.0	1.2	1.1	1.1	1.0	1.1	1.1	1.1
Scooping net (Thnong/ chnouk)	0.0	3.3	1.2	2.0	2.1	1.0	1.1	0.0	1.4
Gillnet (Morgn)	1.5	3.3	2.2	3.7	7.6	1.6	3.6	3.1	3.2
Small handled dragnet	0.0	16.2	1.0	1.1	0.0	2.0	2.0	1.0	5.6
Single hook line	58.7	28.5	67.2	144.2	92.3	1.4	41.3	156.2	67.3

^a Based on information obtained on family scale fishing gear from sample households.

^b Estimated number of households involved in family fishing.

Middle-scale fishers use hooked long lines, bamboo fence traps, and gillnets (Appendix A, Table 25). Estimates of the number of households using various middle-scale fishing are shown in Table 3.52. As high as 63% of the households use gillnets.

Table 3.52. Estimated number of households using various middle-scale fishing gears^a, 1995-96.

	Phnom Penh	Kandal	K. Cham	K. Chhnang	Slem Reap	Pursat	Battam- bang	K. Thom	All
<i>No. of households</i>	4 704	590	5 401	2 702	275	1 750	536	1 794	17 752
<i>No. of households using:</i>									
Bamboo fence trap (Lop norrav)	0	0	0	90	69	0	230	789	1 178
Bamboo trap (Lop/sayoeun/pong/ tom/trou)	100	0	0	180	0	0	77	72	429
Castnet (Sam nanh/chayra)	500	0	748	180	0	0	0	72	1 500
Scoop/lift net (Thnong/ chhnouc/pruam/chuorn)	0	118	332	0	0	0	230	0	680
Gillnet (Mogn)	2 102	236	3 573	2 072	206	1 445	77	1 435	11 146
Seine net (Uorn)	500	118	831	180	206	0	0	144	1 979
Dragged bag net (Neam)	400	118	249	180	0	0	0	0	948
River pelagic trawl (Manh)	0	0	332	0	0	0	77	0	409
Hooked long lines (Santuch ro norng)	0	236	415	360	69	76	0	72	1 228
Cast single hooked-line (Santuch buos)	0	0	0	0	0	0	0	144	144
<i>Total</i>	<i>3 602</i>	<i>826</i>	<i>6 480</i>	<i>3 243</i>	<i>550</i>	<i>1 521</i>	<i>689</i>	<i>2 727</i>	<i>19 640</i>
<i>Average no. of gear / household:</i>									
Bamboo fence trap (Lop norrav)	0.0	0.0	0.0	1.0	1.0	0.0	1.0	4.8	3.6
Bamboo trap (Lop/sayoeun/pong/tom/ trou)	5.0	0.0	0.0	4.5	0.0	0.0	7.0	10.0	6.2
Castnet (Sam nanh/chayra)	1.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0	1.0
Scoop/lift net (Thnong/ chhnouc/pruam/chuorn)	0.0	2.0	1.0	0.0	0.0	0.0	1.0	0.0	1.1
Gillnet (Mogn)	5.5	4.5	3.3	5.9	8.3	1.3	2.0	5.0	4.2
Seine net (Uorn)	1.0	1.0	1.0	1.5	1.0	0.0	0.0	1.0	1.0
Dragged bag net (Neam)	1.8	1.0	1.0	1.0	0.0	0.0	0.0	0.0	1.3
River pelagic trawl (Manh)	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0
Hooked long lines (Santuch ro norng)	0.0	1.5	7.8	1.5	1.0	4.0	0.0	2.0	3.9
Cast single hooked-line (Santuch buos)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.5

^a Based on information obtained on middle-scale fishing gears from sample households.

^b Estimated number of households involved in middle-scale fishing.

More intensive gears are used in fishing lots, such as bamboo barrage traps to enclose large areas and seine nets to enclose shoals of fish (Appendix A, Table 25). Our estimate shows that there are about 1 000 households involved in large-scale fishing as lease holders or shareholders (Table 3.53). Most of the gears used in large-scale fishing are jointly owned by the shareholders. Table 3.53 also shows the number of each gear per household.

Table 3.53. Estimated number of households involved in large-scale fishing and average number of gears per household in selected freshwater fisheries provinces in Cambodia, 1995-96.^a

	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	All ^b
<i>Total no. of households^b</i>	200		914	360				144	1 900
<i>Average no. of gear / households:</i>									
Arrow shaped bamboo fence trap (nor rut chung)	0.0		0.0	1.0				0.0	1.0
Bamboo barrage trap (thnuos)	5.0		2.5	3.3				1.0	2.7
Set bag net (dai)	1.0		0.0	1.0				0.0	1.0
Seine nets	1.0		1.3	1.3				1.0	1.2
Fish cage	0.0		2.0	1.8				0.0	1.8

^a Based on information obtained on large-scale fishing gears from sample households.

^b Estimated number of households involved in large-scale fishing either as lease holders or shareholders.

The average catch of individual fishing lots located in Phnom Penh, K. Cham, K. Chhnang and K. Thom was 85 468 kg at the time of the survey (Table 3.54). This is based on catch from 21 fishing households which is about 0.41% of the total sample. Households involved in middle-scale fishing comprised (5.5%) of the total households and had an average catch of 3 376 kg. About 30% of the total households are involved in family fishing. Family fishers had an average annual catch of 658 kg (Table 3.54). Estimated total annual catch from middle-scale and family-scale fishing by household living in the fishing communes in the eight provinces included in the survey amounted to 199 204 t (Table 3.55).

Table 3.54. Average catch by type of fishing involvement by province, Cambodia, 1995-96.

Fishing Involvement	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	All
<i>Large-scale fishing</i>									
Number of households*	2	0	9	4	0	0	4	2	21
Average catch (kg)	153 750	0	106 147	8 300	0	0	0	100 000	85 468
<i>Middle-scale fishing</i>									
Number of households*	22	2	60	27	4	21	7	25	168
Average catch (kg)	3 896	2 610	1 334	1 981	8 750	5 248	3 929	6 802	3 376
<i>Family fishing (open season)</i>									
Number of households*	46	296	345	209	181	149	259	69	1 554
Average catch (kg)	798	585	161	872	223	178	451	473	427
<i>Family fishing (closed season)</i>									
Number of households*	46	296	345	209	181	149	259	69	1 554
Average catch (kg)	313	320	102	265	239	176	253	363	231
<i>Sub-total</i>	1 111	905	263	1 137	462	354	704	836	658
<i>Total average catch of all households</i>	6 347	916	2 720	1 351	641	959	777	4 456	1 942

* Indicates households for which catch information was made available during the interview.

Table 3.55. Estimated average annual catch for fish from middle-scale and family-scale fishing in the study provinces, Cambodia (based on catch rate of sample households in 1994-95).

Province	Total no. of households ^a	% of households engaged in ^b		No. of households engaged in		Ave. annual catch per household ^c		Total catch per annum (mt)		
		Middle-scale	Small scale	Middle-scale	Small-scale	Middle-scale	Small scale	Middle-scale	Small scale	Total
Phnom Penh	27 224	21.32	34.93	5 805	9 508	3 896	1 111	22 617	10 565	33 178
Kandal	134 220	0.70	29.90	944	40 136	2 610	905	2 465	36 319	38 771
K. Cham	96 712	8.68	38.40	8 392	37 139	1 334	263	11 194	9 767	20 966
K. Chhnang	42 335	8.30	54.68	3 513	23 149	1 981	1 137	6 959	26 320	33 281
Siem Reap	35 937	0.96	38.81	344	13 949	8 750	462	3 006	6 444	9 462
Pursat	34 766	6.56	52.08	2 282	18 106	5 248	354	11 977	6 410	18 378
Battambang	47 724	2.41	46.07	1 149	21 985	3 929	704	4 515	15 475	19 994
K. Thom	33 796	5.94	22.08	2 009	7 462	6 802	836	13 666	6 238	19 893
All	452 714	5.55	38.52	25 126	174 379	3 376	658	84 826	114 686	199 204

^a Based on Appendix A, Table 5.

^b Based on percentage of households engaged in each type of fishing in the sample survey (Table 3.48 and 3.49).

^c Based on Table 3.54.

Besides direct participation in fishing a large number of households were also involved in various fishing related activities such as fish processing, bamboo fence trap/net making or repairing, wholesale/retail fish buying and selling, and fish oil extraction. Table 3.56 shows the number of households actively involved in fishing related activities. Processing of fish was the single most important activity in the fishing dependent communes. A total of 1 786 (35%) of the households reported involvement in fish processing as an important livelihood activity. Fish selling and net making were undertaken by 742 (15%) and 548 (11%) households, respectively.

Table 3.56. Number of households involved in various types of fishing related activities, 1995-96.

Fishing related activity	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battambang	K. Thom	All House holds		
									Fishing	Non-fishing	Total
Bamboo fence/trap making	12 (4.4)	37 (3.3)	31 (2.7)	9 (1.9)	12 (2.3)	96 (21.0)	86 (13.8)	28 (5.9)	272 (13.7)	39 (1.2)	311 (6.1)
Net making/repairing	50 (18.4)	166 (14.6)	87 (7.5)	9 (1.9)	8 (1.5)	32 (7.0)	111 (17.8)	85 (18.0)	513 (25.8)	35 (1.1)	548 (10.7)
Fish processing (prahok, smoked fish, fish sauce, dried fish)	56 (20.6)	36 (3.2)	910 (78.2)	88 (18.7)	55 (10.5)	215 (47.0)	244 (39.2)	182 (38.6)	1057 (53.2)	729 (23.3)	1786 (34.9)
Fish oil extraction	2 (0.7)	0 (0.0)	101 (8.7)	3 (0.6)	4 (0.8)	0 (0.0)	3 (0.5)	2 (0.4)	83 (4.2)	32 (1.0)	115 (2.2)
Fish transport (by boat, motor-cart etc)	25 (9.2)	1 (0.1)	28 (2.4)	2 (0.4)	3 (0.6)	8 (1.8)	95 (15.2)	74 (15.7)	212 (10.7)	19 (0.6)	231 (4.5)
Labor in fish landing/ processing site	0 (0.0)	4 (0.4)	1 (0.1)	1 (0.2)	0 (0.0)	0 (0.0)	3 (0.5)	0 (0.0)	7 (0.4)	2 (0.1)	9 (0.2)
Selling food/ materials at fish landing/ processing site	0 (0.0)	0 (0.0)	10 (0.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	8 (0.4)	2 (0.1)	10 (0.2)
Selling fishing equip/ fish baskets/containers etc	0 (0.0)	0 (0.0)	6 (0.5)	2 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (0.3)	2 (0.1)	8 (0.2)
Wholesale fish buying and selling	2 (0.7)	5 (0.4)	69 (5.9)	13 (2.8)	5 (1.0)	3 (0.7)	88 (14.1)	58 (12.3)	217 (10.9)	26 (0.8)	243 (4.7)
Retail fish selling	8 (2.9)	210 (18.5)	111 (9.5)	102 (21.7)	35 (6.7)	94 (20.6)	130 (20.9)	52 (11.0)	683 (34.4)	59 (1.9)	742 (14.5)
Others	1 (0.4)	3 (0.3)	4 (0.3)	2 (0.4)	0 (0.0)	4 (0.9)	0 (0.0)	0 (0.0)	11 (0.6)	3 (0.1)	14 (0.3)
Total	156 (57.4)	462 (40.6)	1358 (116.7)	231 (49.1)	122 (23.3)	452 (98.9)	760 (122.0)	481 (102.1)	3069 (154.6)	948 (30.3)	4022 (78.6)

Note: Numbers in parentheses are percentages. Some households are involved in more than one fishing related activity.

K. Fish Marketing System

Table 3.57 shows the distribution of households by type of marketing channels for fish. Direct marketing was practiced by 75% of the fishing households. Others allowed wholesale buyers to collect from their fishing ground (18%) and a few brought their catch to the landing site and sold it to wholesalers or vendors (7%). On the average, 84% of the fish sold in the market is fresh (Appendix A, Table 26). The rest is processed into smoked fish, fish paste, fish sauce, or salt dried fish. To keep fish fresh before selling, some households put salt or ice, but most often they just transported the fish live in boats or cages (Appendix A, Table 27).

Table 3.57. Distribution of households by marketing system of fish, 1995-96.

Marketing System	Phnom Penh	Kandal	K. Cham	K. Chhnang	Siem Reap	Pursat	Battam- bang	K. Thom	All
<i>Directly carry to the market and sell to the consumers</i>									
No. of households*	53	284	201	90	93	150	150	44	1 065
%	57.6	96.3	82.7	51.4	66.4	94.3	68.8	44.0	74.9
<i>Bring to the landing site and sell to vendors/wholesale buyers</i>									
No. of households*	20	1	3	37	1	4	2	26	94
%	21.7	0.3	1.2	21.1	0.7	2.5	0.9	26.0	6.6
<i>Wholesale buyers collect from fishing ground/lot site</i>									
No. of households*	18	5	37	48	46	5	66	30	255
%	19.6	1.7	15.2	27.4	32.9	3.1	30.3	30.0	17.9
<i>Others**</i>									
No. of households*	1	5	2						8
%	1.1	1.7	0.8						0.6
Total households	92	295	243	175	140	159	218	100	1 422
%	6.5	20.7	17.1	12.3	9.8	11.2	15.3	7.0	100.0

* Number of households indicate households for which marketing information was available during the interview.

** Others include households that keep fish for own consumption, sell or exchange fish with neighbors.

L. Sustainability and Management Issues

Historically, Cambodia's freshwater fisheries management relied on state management directed towards the control and enforcement of regulations or restrictions, introduced by the French at the beginning of the current century. There were a number of regulations which the government considered crucial to ensure sustainable production. Most of these regulations are directed to control fishing efforts (gears and mesh size restrictions) and fishing practices (e.g., ban on use of explosives and chemicals). These were enumerated in the survey questionnaire and households. Irrespective of their fishing status, households were asked to give their views regarding the role of these regulations in the sustainability of the fisheries resources. The investigation revealed that 66-69% of the households were aware of a particular type of regulation, as shown in Table 3.58 (more details are shown in Appendix A, Table 28). Nearly all respondents (98.6%) considered these regulations important for the sustainability of the fisheries. A few (0.1%) said that the regulations are not important at all because they are not followed in practice (Table 3.59).

With very limited livelihood opportunities and difficulty in obtaining licenses, regulatory measures were considered unfair by about 3% of the sample households. Illegal fishing practices and overfishing were the principal causes of the decline of according to 95% of the sample households (Table 3.60).

On possible measures to be undertaken by the government, 71.5% suggested that stricter enforcement measures must be implemented, while 12.6% said that awareness on the current regulations be developed or increased in order to protect the fisheries (Table 3.61).

Table 3.58. Awareness among households (in % of households) about government regulations on fisheries, 1995-96.

Regulations	Phnom Penh (n=272)	Kandal (n=1 137)	K. Cham (n=1 164)	K. Chhnang (n=470)	Siem Reap (n=523)	Pursat (457)	Battambang (n=623)	K. Thom (n=471)	All (n=5 117)
Ban on fishing during June-Sep. except for family fishing	79.4	60.8	99.0	48.3	69.4	67.0	68.7	23.4	68.3
Ban on catching/selling/transporting fingerlings/eggs of certain species	74.6	60.9	99.0	49.4	69.4	67.0	67.3	24.6	68.1
Prohibition on using larger size net and gear than allowed for family fishing without license from authority	72.8	60.9	99.2	48.5	69.4	67.0	60.0	16.3	66.3
Ban on use of small mesh net (<1.5 cm)	72.1	64.2	99.0	49.4	70.6	67.0	58.6	18.3	67.1
Ban of catching endangered species (catlo carpio; giant Mekong-catfish)	73.9	64.2	99.1	48.9	70.4	67.0	61.8	23.6	68.1
Ban on putting brush shelter (samras)	76.1	64.2	99.1	49.4	70.4	67.0	63.2	24.4	68.5
Ban on use of electricity/explosives/poisons to catch fish	76.5	64.2	99.3	49.4	70.4	67.0	69.7	24.4	69.4

Table 3.59. Perceptions on the importance of regulations for the sustainability of fisheries, 1994-95.

Province	Yes, all of them		Yes, but not all of them		Not important at all	
	No.	%	No.	%	No.	%
Phnom Penh (n=223)	223	100.0	0	0.0	0	0.0
Kandal (n=941)	939	99.8	1	0.1	1	0.1
K. Cham (n=1 152)	1 144	99.3	6	0.5	2	0.2
K. Chhnang (n=230)	221	96.1	9	3.9	0	0.0
Siem Reap (n=525)	520	99.0	5	1.0	0	0.0
Pursat (n=308)	308	100.0	0	0.0	0	0.0
Battambang (n=539)	522	96.8	17	3.2	0	0.0
K. Thom (n=101)	86	85.1	14	13.9	1	0.1
All (n=4 019)	3 963	98.6	52	1.3	4	0.1

Table 3.60. Perceptions on the principal cause of the decline of fisheries, 1995-96.

Province	Overfishing/ Illegal fishing practice		Change of environment		Drying up of rivers and lakes	
	No.	%	No.	%	No.	%
Phnom Penh (n=221)	172	77.8	14	6.3	35	15.8
Kandal (n=932)	918	98.5	6	0.6	8	0.8
K. Cham (n=1 151)	1 090	94.7	25	2.2	36	3.1
K. Chhnang (n=230)	180	78.3	28	12.2	22	9.6
Siem Reap (n=521)	518	99.4	1	0.2	2	0.4
Pursat (n=306)	304	99.3	2	0.7	0	0.0
Battambang (n=539)	537	99.6	1	0.2	1	0.2
K. Thom (n=101)	84	83.2	1	1.0	16	15.8
<i>All (n=4 001)</i>	<i>3 803</i>	<i>95.1</i>	<i>78</i>	<i>1.9</i>	<i>120</i>	<i>3.0</i>

Table 3.61. Support of management/access system (in % of households) for protection of fisheries, 1995-96.

Opinion	Phnom Penh (n=222)	Kandal (n=937)	K. Cham (n=1 132)	K. Chhnang (n=233)	Siem Reap (n=522)	Pursat (n=306)	Battambang (n=536)	K. Thom (n=101)	All (n=3 989)
Stricter enforcement measures by the Dept. of Fisheries	31.5	89.4	94.7	38.2	45.4	28.8	75.2	54.5	71.5
Establish permanent equitable fishing rights for all fishing dependent families in the commune	7.2	1.2	1.0	5.6	5.9	0.0	5.2	5.0	2.9
Transfer management responsibility to the commune authority	5.9	2.5	0.4	9.0	0.0	0.0	0.6	0.0	1.6
Develop and increase awareness about the necessity of fisheries conservation through education, training, extension and motivation	23.0	4.1	2.5	18.5	1.3	71.2	18.7	17.8	12.6
Create supplementary production, income and employment opportunities for fishing dependent families	32.4	2.9	1.4	27.5	47.3	0.0	0.0	22.8	11.3

IV. CONCLUSION

Fish is an important part of the diet in Cambodia. Fishing for household food supply and income is part and parcel of Cambodia's peasant society. Freshwater capture fisheries are by far the largest source of supply of fish. Hence, the sustainable management of freshwater fisheries is of overriding importance to the food security of Cambodia.

Although the majority of the villagers still grow rice, fish in various forms is a staple diet. The present survey reveals an overwhelmingly significant reliance by households on fishing and fishing related activities in communities that have access to the country's vast inland waters. Although about 39% of the households living in fishing dependent communes acknowledged fishing as their main livelihood activity, many more households take part in fishing from time to time and are engaged in related input supply, marketing and processing activities. Moreover, both fishing and non-fishing households have a high per capita consumption of fish. Thus, within the context of Cambodia's rural economy, fisheries are important not only for those who catch fish directly, but equally for those who are engaged in fishing related activities and those who benefit from the steady supply of animal protein from local production.

Although most households consider themselves rice farmers, it would be a great mistake to think of Cambodia's food security in terms of rice alone. For many generations, fish and many other aquatic products (plant and animal) have supplied a sizeable portion of protein and nutrition to Cambodians. The degree of dependence on fishing and farming varies according to the topographic situation and endowment of land and water resources within each locality. Historically, Cambodian rice farmers have barely made a living from the meager size of land that produced only one crop a year. Hunting and gathering of food and materials provide the needed food and income security to peasant farmers and fishers. Thus, development policy must consider the role of natural resources such as fisheries in ensuring a sustainable livelihood and food security to Cambodia's growing population.

Government statistics show an annual catch of about 70 000 t in the thirteen districts where commercial fishing (middle-scale and large-scale) takes place. But observations from the current survey and evidence from other studies (e.g. van Zalinge and Tana 1996) suggest that the actual commercial catch could be at least double. The present study showed that catch from middle-scale fishing alone amounts to 85 000 t per year. The subsistence catch, which is currently not recorded at all, could be even much higher. The current dualistic approach that allows large-scale intensive harvesting to generate revenue along with subsistence fishing apparently leads to many conflicts. Commercial fishers, particularly the fishing lot operators, harvest as much as they can, primarily to maximize profit without discrimination about size and species. Since most of the costs are fixed costs, the operators have a tendency to harvest and market as much as they can (Ahmed et al 1996). Compliance with and support toward the existing regulations that are aimed to protect the public resource from overfishing and destructive fishing practices have been very poor. A sizeable portion of the households surveyed stated their lack of awareness of some of the important fisheries regulations. The government must strengthen its awareness campaign and, perhaps, consider a community-based approach to manage the fisheries for sustainable food security. This will require a change in the current dualistic policies on management that gives little incentives for self-regulation and responsible fishing.

Management policies in the future need to be directed towards ensuring a sustainable livelihood for the people who depend on fisheries. They include fishers, farmers and consumers. To ensure community

participation, the nature and distribution of access rights must be very well considered. Mysliwiec (1987) pointed out those policies and initiatives that create local self-reliance and build local human and natural resources will serve Cambodia's interest best.

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Appendix A

Tables

Table 1. Distribution of commercial fishing gears in Cambodia, 1994.

Provinces	No. of fishing lots	Industrial-scale fishing gears used in fishing lots					Middle-scale fishing gears				
		Barrage (Thnuos)	Fish day (Daytrei)	Shrimp bagnet (Day bang kong)	Seed collection (Day kon treypra)	Bamboo fence trap (Noruth chhung)	Gillnet (Mong)	Seine Net (Uon)	Deep bagnet (Niem)	Big pushnet (Chon)	Big cone shaped net (Chayra)
A. Great Lake											
1. Kampong Thom	7	8	0	0	0	11	700 000	70	4	0	0
2. Kampong Chhnang	20	61	0	0	0	0	93 600	213	0	24	41
3. Pursat	7	0	0	0	0	7	29 600	92	0	0	0
4. Battambang	12	8	0	0	0	3	7 250	18	0	15	0
5. Banteay Meanchey	4	8	0	0	0	0	0	10	0	0	0
6. Siem Reap	7	0	0	0	0	7	130 200	30	0	0	0
Subtotal	57	85	0	0	0	28	960 650	433	4	39	41
B. Mek. Bassac											
Tonle Sap											
1. Phnom Penh	23	2	22	0	0	0	32 550	3	111	28	19
2. Kandal	94	121	49	0	0	0	43 210	725	73	3	25
3. Takeo	20	5	7	13	0	0	1 600	40	88	0	0
4. Prey Veng	50	101	7	0	0	0	1 720	12	13	6	4
5. Kampong Cham	33	40	0	0	0	0	94 570	38	6	1	14
6. Kratie	21	8	0	0	0	0	80 000	60	0	1	1
7. Stung Treng	0	0	0	0	0	0	3 200	12	0	0	0
Subtotal	241	277	85	13	0	0	256 850	890	291	39	63
Total	298	362	85	13	0	28	1 217 500	1323	295	78	104

Source: Department of Fisheries 1995. Report of fishery Sector 1994 and Plan for 1995, Phnom Penh, Cambodia.

Table 2. Distribution of important types of family fishing gear in Cambodia, 1994.

Provinces	Family-scale fishing gears						
	Cast net (Sam nanh)	Small trap (Tru)	Trap (Lop)	Vertical slit trap (Say oeun)	Handled- scooping basket (Chhnieng)	Shaped dip-net (Thnorng)	Hook (Santouch)
A. Great Lake							
1. Kampong Thom	1 700	8 000	3 500	-	500	1 500	38 850
2. Kampong Chhnang	1 400	600	2 130	740	220	-	7 000
3. Pursat	232	190	255	-	-	380	16 300
4. Battambang	122	0	506	-	450	252	1 440
5. Banteay Meanchey	11 700	1 600	430	-	50	310	-
6. Siem Reap	70	80	150	-	-	150	9 500
Subtotal	15 224	10 470	6 971	740	1 220	2 592	73 090
B. Mek. Bassac Tonle Sap							
1. Phnom Penh	52	0	0	-	-	-	-
2. Kandal	22	1 850	4 050	180	391	3 586	43 850
3. Takeo	650	820	2 100	-	-	-	7 500
4. Prey Veng	20	3 500	4 000	1 000	200	600	6 000
5. Kampong Cham	1 300	150	0	250	120	1 400	20 000
6. Kratie	245	450	1 100	180	120	500	6 000
7. Stung Treng	350	0	0	40	-	-	3 500
Subtotal	2 639	6 770	11 250	1 650	831	6,086	86 850
Total	17 863	10 501	18 221	2 390	2 051	8 678	159 940

Source: Department of Fisheries 1995. Report of Fishery Sector 1994 and Plan for 1995, Phnom Penh, Cambodia

Table 3^a. Population, area and fishing ground by district, in Kandal, 1994.

Name of district	No. of communes	Population	No. of families	Area (km ²)	Agricultural (km ²)	Forest		Type of fishing ground				
						Upland	Innundated (km ²)	Principal rivers/lakes	Other lakes/rivers	Small lakes/streams/Rivers	Inundated forest	Floodland/ricefield (km ²)
1. Koh Thom	11	108 657	19 559	503.05	157.46	0.80		Bassac	Y	Y	Y	Y
2. Saang	16	149 459	26 257	514.97	266.64	61.47		Bassac	Y	Y	Y	Y
3. Takhmao	6	37 886	7 850	31.79	15.16	0.08		Bassac	N	Y	Y	Y
4. Keansvay	12	112 687	22 528	382.11	109.88	75.09		Mekong	Y	Y	Y	Y
5. Levear Em	15	58 578	10 809	260.92	104.25	17.46		Mekong	Y	Y	Y	Y
6. Khsach Kandal	18	111 519	20 331	353.24	198.86	6.50		Mekong	Y (kropeu)	Y	Y	Y
7. Mouk Kompoul	9	60 289	11 790	275.00	100.26	17.65		Mekong	N	Y	Y	Y
8. Ponhea Leu	14	80 615	13 777	315.47	160.93	113.02		Tonle Sap	N	Y	Y	Y
9. Leuk Dek	7	42 461	7 824	372.16	80.49	5.60		Mekong	N	Y	Y	Y
10. Kandal Steung	23	67 582	14 083	250.64	130.76	0.69		N	N	Y	N	Y
11. Ang Snoul	16	76 107	13 837	296.07	118.83	6.87		N	N	Y	N	Y
Total	147	905 840	168 645	3 555.42	1 443.52	305.23						

Table 3.^b Population, area and fishing ground by district, in Kampong Cham, 1994.

Name of district	No. of communes	Population	No. of families	Area (km ²)	Agricultural (km ²)	Forest		Type of fishing ground			
						Upland	Innundated (km ²)	Principal rivers/lakes	Other lakes/ rivers	Small lakes/streams/ rivers	Inundated forest
1. Krauchmar	12	85 479	14 162	769.20	154.37	1.87		Mekong	•Chrolouk	•Svay Dam Nak •Prek cham •Puth Srey •Kampong Roth •Peamchileang •Kandeng •Kropeu •Kauk •Cheas	28.00
2. Stung Treng	14	82 019	15 707	988.20	145.47	9.98		Mekong	•Phkam	•Prek Sangke •Hanchey •Prek Bac •Prek Kok •Prek Rolau •Veng •Procheas	18.00
3. Thbaung	24	196 256	33 782	971.32	325.65	2.67		Mekong	•Ansoung	•Peam •Chileang •Prek Chek •Reng Rung	17.00
4. Kampong Siem	15	89 233	14 392	372.23	126.67	3.60		Mekong	•Krochap Treng •Beung Thom •Beung Chukk	•Hanchey •Kien Chrey •Borbos •San Kor	16.00
5. Kampong Cham	4	33 973	5 791	15.37	2.16	0.01		Mekong	•B. Snay •B. Bassac	•Doeium Chann •Beung Kok	0.50
6. Koh Sotin	8	73 190	12 517	194.30	75.97	0.67		Mekong	•Kropeth •Kang •Krochap •Kroyea	•Tonle Tauch •Angko •Pongro •Roka Kong •Rothmany •B. Taset	6.60

Table 3.^b Kampong Cham (Continued)

Name of district	No. of communes	Population	No. of families	Area (km ²)	Agricultural (km ²)	Forest		Type of fishing ground				
						Upland	Innundated (km ²)	Principal rivers/lakes	Other lakes/rivers	Small lakes/streams/rivers	Inundated forest	Floodland/ ricefield (km ²)
7. Kang Meas	11	84 783	14 970	389.80	93.35	3.55		Mekong	•Beung Tho	•Krobao •Kong Year •Peam •Chileang •Angkor Ban •Prek Koy •Anlung Koky Trao Phsorth		29.00
8. Srey Santhor	14	100 667	16 675	340.50	140.84	0.05		Mekong		•Takrong •Prek Dambauk •Prek Por •O Rang •O Veng •Sdao •Beung Veng •Baray Y		22.00
9. Prey Chhor	15	136 385	20 526	421.80	236.60	0.52		N	•Beung Tho •Beung Teuk Chhrau			15.00
10. Cheung Prey	10	68 482	12 063	397.80	147.84	1.15		N	•Dey Krohom	•Steung Chrey		15.00
11. Batheay	12	83 255	14 842	711.80	191.66	3.18		N	•B. Phsa	•Kampong Preah •Ko-he Y		25.00
12. Orang Au	8	85 027	15 139	520.70	214.37	NA		N	•Kropet			6.00
13. Chamkar Leu	10	108 724	20 235	728.50	259.27	1.50		N	•Knok			
14. Memot	17	81 832	15 463	1 601.30	166.27	10.22		N		N	N	N
15. Ponhear Krek	10	112 946	20 361	773.70	254.25	2.23		N		N	N	N
16. Damber	7	41 749	7 567	602.10	144.94	4.04		N		N	N	N
Total	191	1 464 000	254 192	9 798.62	2 679.68	45.22						

Table 3^c. Population, area, and fishing ground by district, in Kampong Chhnang, 1994.

Name of district	No. of communes	Population	No. of families	Area (km ²)	Agricultural (km ²)	Forest		Type of fishing ground				
						Upland	Innundated (km ²)	Principal rivers/lakes	Other lakes/ rivers	Small lakes/streams/ rivers	Inundated forest	Floodland/ ricefield (km ²)
1. Boribo	11	36 070	7 278	45.40			58.24	Tonle Sap	Y	Y	Y	Y
2. Roleaphear	13	67 773	14 501	69.50				Tonle Sap	N	•Chrey Bak	Y	Y
3. Kampong Leng	9	28 111	5 452	91.83			69.59	Tonle Sap	Y	Y	Y	Y
4. Tralach	10	62 482	11 817	45.33			N.A.	Tonle Sap	Y	Y	Y	Y
5. Chulkiry	5	20 883	3 734	33.74			10.90	Tonle Sap	Y	Y	Y	Y
6. Kampong Chhnang	4	29 115	5 070	2.64			197.00	Tonle Sap	Y	Y	Y	Y
7. Teuk Pos	8	32 025	6 906	166.60			N.A.	N	N	N	N	N
8. Samaki Mean Chey	9	47 947	9 366	11.05			N.A.	N	N	N	N	N
Total	69	324 406	64 124	466.10								

Table 3^d. Population, area, and fishing ground by district, in Phnom Penh, 1994.

Name of district	No. of communes	Population	No. of families	Area (km ²)	Agricultural (km ²)	Forest		Type of fishing ground				
						Upland	Innundated (km ²)	Principal rivers/lakes	Other lakes/ rivers	Small lakes/streams/ rivers	Inundated forest	Floodland/ ricefield (km ²)
1. Reusei Keo	12	119 008	20 282	88.00	22.72	N	8.66	Tonle Sap Mekong	•Prayap	•Chhdo Khampong •Sanday Youn •Totung Tngay	Y	Y
2. Meanchey	8	99 401	16 583	44.72	59.30	N	0.40	Bassac Mekong	N	•Prathom •Tompun	Y	Y
3. Dong Ko	15	76 780	14 925	181.00	78.02	N	2.50	N	•Cheung Ek	•Sombo •Krobey	Y	Y
4. Cham Kamon	12	149 831	24 483	9.50	N	N	N	N	N	N		
5. Pram Pima Kara	8	94 977	15 765	2.06	N	N	N	N	N	N		
6. Don Penh	11	214 630	35 457	7.65	N	N	N	N	N	N		
7. Toul Kok	10	123 593	19 636	10.37	N	N	N	N	N	N		
Total	76	878 220	147 131	343.30	160.04		11.56					

List of Provincial Supervisors:

Phnom Penh:	Vuthy
Kandal:	Chhnorn Chamnan
Kampong Cham:	In Monirith
Kampong Chhnang:	Prak Leang Hour
Siem Reap:	Pen Marandi
Pursat:	Nu Sary
Battambang:	Minh Bonich
Kampong Thom:	Un Kanika

Table 3. Population, area, and fishing ground by district, in Battambang, 1994.

Name of district	No. of communes	Population	No. of families	Area (km ²)	Agricultural (km ²)	Forest		Type of fishing ground				
						Upland	Innundated (km ²)	Principal rivers/lakes	Other lakes/ rivers	Small lakes/streams/ rivers	Inundated forest	Floodland/ ricefield (km ²)
1. Ek Phnom	7	63 058	12 161	635.16	126.91	N	420.20	Y	Y	•Song Ke	Y	37.44
2. Battambang	10	113 287	21 345	680.06	496.89	N	105.62	N	Y	Y	Y	120.00
3. Song Ke	10	99 505	18 350	1 280.00	687.00	N	593.00	Y	Y	•Song Ke	Y	34.07
4. Mong Rusei	11	115 246	22 443	3 050.55	714.00	12.38	671.00	Y	Y	•Chok •Mong Chok	Y	16.39
5. Svay Pao	10	130 251	23 456	110.00	58.05	N	N	N	N	•Song Ke	N	N
6. Ba Nan	8	71 484	13 230	795.73	321.44	334.43	N	N	N	•Song Ke •Mong Kol	N	N
7. Bavil	6	80 039	15 385	1 945.15	219.85	865.14	N	N	N	•Borei	N	N
8. Ratanak Mondol	4	25 991	5 253	3 355.00	150.00	3 000.00	N	N	N	•Song Ke •Mong Kol Borei	N	N
Total	66	698 861	131 6	11 851.65	2 774.14	4 211.95	1 789.82					207.90

Table 3. Population, area, and fishing ground by district, in Pursat, 1994.

Name of district	No. of communes	Population	No. of families	Area (km ²)	Agricultural (km ²)	Forest		Type of fishing ground				
						Upland	Innundated (km ²)	Principal rivers/lakes	Other lakes/rivers	Small lakes/streams/rivers	Inundated forest	Floodland/ricefield (km ²)
1. Krakor	11	59 949	11 893	2 570.89	122.04	2 240.62		Y	N	•K. Prak •Nakta Sdach Khmeng	Y	Y
2. Kandieng	9	50 272	9 837	585	191.64	329.12		•Pursat • K b a l Peam •Toch	N	•Saleth •Kanda	Y	Y
3. Bakan	10	114 876	21 615	1 542	500.17	825.94		•Kandeang •Svay Don Keo •Beung Khna •Otapoung	N	N	Y	Y
4. Sampaov	7	51 719	9 298	439	145.2	277		•Pursat	•Thmor Kouch •Kroyong Sor	N	Y	Y
5. Phnom Kravanh	7	46 036	9 097	7 138.16	130.85	6 542.36		•Kampong Preah • P u n l e y Oung	N	N	N	N
Total	44	322 852	61 740	12 275.05	1 089.90	10 215.04						

Table 3^a. Population, area, and fishing ground by district, in Kampong Thom, 1994.

Name of district	No. of communes	Population	No. of families	Area (km ²)	Agricultural (km ²)	Forest		Type of fishing ground				
						Upland	Innundated (km ²)	Principal rivers/lakes	Other lake rivers	Small lakes/streams/rivers	Inundated forest	Floodland/ricefield (km ²)
1. Staung	13	96 295	16 625	340.00	30.12	22.67	Y	Y	Y	•Stung Staung	Y	Y
2. Kampong Svay	9	70 352	11 834	89.30	25.13	N.A.	18.92	Y	Y	•Stung Kol	Y	Y
3. Stung Sen	11	64 956	11 692	50.61	24.20	2.40	7.00	N	Y	•Stung Sen	Y	Y
4. Baray	18	152 421	26 836	136.00	27.00	16.61	Y	N	Y	•Prey Prosh	Y	Y
5. Santuk	9	54 255	9 561	309.35	27.00	202.30	12.49	N	Y	•Stung Chinit	Y	Y
6. Sandan	9	33 811	6 499	289.90	8.87	273.88	N	N	Y	•Stung Rot	N	Y
7. Prasat Sanbo	5	39 021	7 186	90.76	6.95	78.64	2.20	N	Y	•Stung Kombot	Y	Y
8. Prasat Balang	7	35 680	5 848	153.43	29.82	119.50	2.76	N	Y	•Tang Krorsang	Y	Y
										•Stung Chinit		
										•Stung Sen		
										•Stung Staung		
										•Srakum Aun		
Total	81	546 791	96 081	1 459.35	179.09	716.00	43.37					
Grand Total	782	5 778 419	1 037 100	55 019.49								

Table 3^a. Population, area, and fishing ground by district, in Siem Reap, 1994.

Name of district	No. of communes	Population	No. of families	Area (km ²)	Agricultural (km ²)	Forest		Type of fishing ground				
						Upland	Innundated (km ²)	Principal rivers/lakes	Other lake rivers	Small lakes/streams/rivers	Inundated forest	Floodland/ricefield (km ²)
1. Kra Lanh	10	56 228	9 962	544.00	208.50	10.62		Chikreng	Y	Y	Y	Y
2. Pouk	16	101 200	18 176	1 279.00	277.55	17.59		Y	•Prek Sromouch	•Chipor	Y	Y
3. Siem Reap	10	84 579	14 751	306.00	95.30	10.72		Y	N	•Ampil	Y	Y
4. Prasat Bakong	9	50 181	8 455	415.00	120.35	6.79		Y	N	•Tropeang Reang	Y	Y
5. Sothnikum	10	87 268	15 488	768.00	205.40	19.95		Y	Y	Y	Y	Y
6. Chikreng	12	96 570	17 602	1 472.00	347.50	181.04		Y	Y	•Krapeu Slah	Y	Y
7. Srey Snam	6	24 146	4 307	551.00	106.40			Y	N	•Chamkak Tamean	N	Y
8. Chong Kal	4	12 652	2 296	840.00	51.50			Y	N	•Kamping Pouy Thom	N	Y
9. Sam Rong	4	17 051	3 312	2 032	55.00			N	N	Y	N	Y
10. Varin	5	15 587	2 917	1 786.00	61.80			N	N	Y	N	Y
11. Angkor Chum	7	45 467	7 828	648.00	172.40			N	N	Y	N	Y
12. Banteay Srey	6	22 761	4 141	591.00	59.70			N	N	Y	N	Y
13. Angkor Thom	4	15 162	2 627	388.00	22.40			N	N	Y	N	Y
14. Sray Leu	5	8 599	1 702	3 650.00	57.50			N	N	Y	N	Y
Total	108	367 451	113 564	15 270.00	1 841.30	45.72						

Table 4. List of fishing district, population and number of communes in each of the selected provinces in Cambodia, 1994.

Name of fishing district	Population	No. of communes		
		Fishing	Non-fishing	Total
I. PHNOM PENH				
1. Reusei Keo	119 008	8	4	12
2. Mean Chey	99 401	6	2	8
3. Dong Ko	76 780	2	13	15
<i>Total</i>	<i>295 189</i>	<i>16(46)</i>	<i>19(54)</i>	<i>35(100)</i>
II. KANDAL				
1. Koh Thom	108 657	11	0	11
2. Saang	149 459	16	0	16
3. Ta Khmao	37 886	4	2	6
4. Kean Svay	112 687	12	0	12
5. Lovear Em	58 578	15	0	15
6. Khsach Kandal	111 519	14	4	18
7. Mouk Kompoul	60 289	9	0	9
8. Ponhealeu	80 615	7	7	14
9. Leuk Dek	42 461	7	0	7
<i>Total</i>	<i>762 151</i>	<i>95(88)</i>	<i>13(12)</i>	<i>108(100)</i>
III. KAMPONG CHAM				
1. Krauchmar	85 479	10	2	12
2. Stung Trang	82 019	6	8	14
3. Tbaung Khmum	196 256	5	19	24
4. Kampong Siem	89 233	11	4	15
5. Kampong Cham	33 973	4	0	4
6. Koh Sotin	73 190	8	0	8
7. Kang Meas	84 783	11	0	11
8. Srey Santhor	100 667	9	5	14
9. Prey Chhor	136 385	2	13	15
10. Cheung Prey	68 482	2	8	10
11. Batheay	83 255	2	10	12
12. Orang Au	85 027	2	6	8
<i>Total</i>	<i>1 118 749</i>	<i>72(49)</i>	<i>75(51)</i>	<i>147(100)</i>
IV. KAMPONG CHHNANG				
1. Boribo	36 070	7	4	11
2. Rolearphear	67 773	7	6	13
3. Kampong Leng	28 111	9	0	9
4. Chulkiry	20 883	5	0	5
5. Kampong Tralach	62 482	8	2	10
6. Kampong Chhnang	29 115	2	2	4
<i>Total</i>	<i>244 434</i>	<i>38(73)</i>	<i>14(27)</i>	<i>52(100)</i>

Table 4 (Continued)

Name of fishing district	Population	No. of communes		
		Fishing	Non-fishing	Total
V. SIEM REAP				
1. Kra Lanh	56 228	3	7	10
2. Pouk	101 200	9	7	16
3. Siem Reap	84 579	5	5	10
4. Prasat Bakong	50 181	6	3	9
5. Sothnikum	87 268	4	6	10
6. Chikreng	96 570	6	6	12
<i>Total</i>	476 026	33(49)	34(51)	67(100)
VI. PURSAT				
1. Krakor	59 949	7	4	11
2. Kandieng	50 272	6	3	9
3. Bakan	114 876	9	1	10
4. Sampaov Meas	51 719	1	6	7
<i>Total</i>	276 816	23(62)	14(38)	37(100)
VII. BATTAMBANG				
1. Ek Phnom	62 949	5	2	7
2. Moug Reussey	102 373	6	5	11
3. Sangke	99 672	6	4	10
4. Battambang	113 281	4	6	10
5. Svay Pao	130 251	3	7	10
6. Banan	71 479	1	7	8
<i>Total</i>	580 005	25(45)	31(55)	56(100)
VIII. KAMPONG THOM				
1. Staung	96 295	5	8	13
2. Kampong Svay	70 352	5	4	9
3. Stung Sen	64 956	6	5	11
4. Baray	152 421	5	13	18
5. San Tuk	54 255	5	4	9
<i>Total</i>	438 279	26(43)	34(57)	60(100)
<i>Grand Total</i>	4 191 649	328(58%)	234(42%)	562(100%)

Figures in parentheses indicate percentage.

Table 5°. List of fishing communes by district, in Kampong Cham, 1994.

Name of commune	No. of villages	Population	No. of families	Type of fishing ground							Floodland/ ricefield (km ²)	Type of fishing practice		
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream			Inundated forest (km ²)	
I. Kroch Chmar														
1. Chum Nik	3	8 800	1 604	N	Mekong	N	N	•Kandeang	N	•Svaydam Nak	2.83		[4]	
2. Rokar Khnor	7	10 369	1 685	N	Mekong	N	N	N	N	•S.damnak	2.40		[4]	
3. Poech 1	5	6 746	1 229	N	Mekong	N	•Chrolouk	•Kropech Kok	N	Y	11.00		[4]	
4. Poech 2	4	5 425	721	N	Mekong	N	N	N	N	Y	8.70		[4]	
5. Svay Khlang	6	8 045	1 292	N	Mekong	N	N	N	N	•Prekcham	14.50		[4]	
6. Krauchmar	7	9 067	1 504	N	Mekong	N	N	N	N	Y	8.00		[4]	
7. Trea	8	6 383	1 158	N	Mekong	N	N	N	Y	N	14.90		[3]	
8. Prek Achy	6	5 615	2 964	N	Mekong	N	N	N	Y	•Prek Achy	30.00		[4]	
9. Kampong Treas	6	6 772	1 114	N	Mekong	•Peam Chileang	N	•Achper	N	Y	2.00		[3]	
10. Koh II	4	2 612	411	N	Mekong	N	N	N	N	N	N		[2]	
Subtotal	56	69 834	13 682								94.33			
II. Stung Treng														
1. Prek Kok	12	11 764	2 150	N	Mekong	N	N	N	Y	N	•Prek kok	NA	7.40	[4]
2. Kopop Tanguon	6	5 449	882	N	Mekong	N	N	N	N	N	•Kopop Tangoung	NA		[1]
3. Peam Koh Sna	9	10 575	1 827	N	Mekong	N	N	N	Y	N	•Sangker	NA		[1]
4. Toul preah Kleang	6	3 825	2 010	N	Mekong	N	N	N	Y	N		NA		[2]
5. Preah Angdaung	3	2 419	429	N	Mekong	N	N	N	Y	N		NA		[2]
6. Prek Bac	4	8 139	1 419	N	Mekong	N	•Pkam	N	Y	•Rolouch	NA	1.20	[3]	
Subtotal	40	42 171	8 717									8.60		

Note:

[1]=Family fishing & fishing lot

[2]=Mainly family fishing

[3]=Middle-scale & fishing lot & family fishing

[4]=Middle-scale & family fishing.

Table 5^a. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)		
III. Tbaung Khmum													
1. Tonle Bet	12	12 185	2 239	N	Mekong	N	•Treng •Ansoung •Tra	Y	N	•Prek Chik	16.70	-	[3]
2. Chiro 1	9	5 160	980	N	Mekong	N	•Krochap	Y	N	Y	2.00	3.80	[4]
3. Chiro 2	10	9 186	1 903	N	N	N	•Krochap	Y	N	•Wat khmoung	4.30	6.00	[2]
4. Peam Chileang	9	7 775	1 449	N	Mekong	•Peam- chileang	N	Y	N	Y	-	3.10	[3]
5. Beung proul	10	6 484	1 238	N	Mekong	N	N	Y	N	•Beung proul	-	-	[3]
Subtotal	50	40 790	7 809								23.00	12.90	
IV. Kampong Seam													
1. Hanchey	4	5 091	778	N	Mekong	N	N	•Chhuk	N	•Hangchy			[4]
2. Rumchek	4	3 911	642	N	Mekong	N	N	•Sangkor	N	N			[2]
3. Ro Ang	8	6 683	1 215	N	Mekong	N	N	Y	N	Y			[3]
4. Kienchrey	6	3 846	720	N	Mekong	N	N	•Borbos	N	•Kienchrey			[2]
5. Krola	13	7 723	1 100	N	N	N	Y	Y	N	N			[2]
6. Koh Mith	10	9 092	1 273	N	Mekong	N	N	N	N	Y	N		[4]
7. Vihear Thom	9	5 475	971	N	N	N	•B.Thom	N	N	N	N		[2]
8. Korkor	4	3 870	568	N	Mekong	N	N	Y	N	Y			[2]
9. Koh Tuntim	5	3 782	666	N	Mekong	N	N	N	N	Y			[4]
10. Koh Roka	6	6 204	967	N	Mekong	N	N	Y	N	Y	0.30	4.50	[4]
11. Koh Somrong	8	7 396	1 114	N	Mekong	N	N	N	N	Y			[1]
Subtotal	77	63 073	10 014										

Note:

[1]=Family fishing & fishing lot

[2]=Mainly family fishing

[3]=Middle-scale & fishing lot & family fishing

[4]=Middle-scale & family fishing.

Table 5^a. (Continued)

Name of commune	No. of villages	Population	No. of families	Great lake	Type of fishing ground							Floodland/ ricefield (km ²)	Type of fishing practice
					Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)		
V. Kampong Cham													
1. Kampong Cham	9	5 765	962	N	Mekong	N	N	N	N	N	N	N	[4]
2. Veal Vong	6	11 340	1 993	N	Mekong	N	•Snay	•Bassac	N	N	N	N	[2]
3. Beung Kok	7	6 002	1 055	N	Mekong	N	N	•B.kok	N	Y			[4]
4. Sambour Meas	9	10 866	1 781	N	Mekong	N	N	Y	N	•Damchan			[4]
Subtotal	31	33 973	5 791										
VI. Koh Sotin													
1. Koh Sotin	14	12 660	2 095	N	Mekong	N	N	N	N	Y			
2. Peam Proth Nas	13	12 709	2 297	N	Mekong	•Tonle Touch	N	Y	N	Y	0.50		[4]
3. Pong Ror	8	4 867	807	N	N	•Tonle Touch	•B.Kang	Y	N	•Pongro	-		[4]
4. Moha Leap	10	7 087	1 188	N	N	•Tonle Touch	•Krapeth	•B.Taset	N	•Rothmany •Rakakong	3.90 -		[1]
5. Kampong Reap	8	7 430	1 299	N	Mekong	N	•Krochap	Y	N	Y	12.40		[3]
6. Lve	10	10 333	1 761	N	N	•Tonle Touch	•Kroyear	Y	N	Y	15.20		[1]
7. Prek Tanung	13	9 477	1 593	N	Mekong	N	N	Y	N	Y	-		[2]
8. Mohar Khnong	9	8 627	1 477	N	Mekong	N	N	Y	N	Y	-		[2]
Subtotal	85	73 190	12 517										

Note:

[1]=Family fishing & fishing lot

[2]=Mainly family fishing

[3]=Middle-scale & fishing lot & family fishing

[4]=Middle-scale & family fishing.

Table 5°. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)	
VII. Kang Meas												
1. Rokakoy	7	8 767	1 529	N	Mekong	N	N	•Kroyear	N	Y	5.60	[4]
2. Prek Krobao	11	6 759	1 222	N	N		•B.Thom	Y	N	•Krobao		[1]
3. Peam Chikang	7	6 590	1 324	N	Mekong	N	N	N	N	•Peam Chikang	6.50	[4]
4. Angkor Ban	9	10 251	1 834	N	Mekong	N	N	•Phsorth	N	•Angkorban	10.20	[4]
5. So Korng	11	9 826	1 736	N	Mekong	N	N	Y	N	Y	17.80	[4]
6. Ke Hao	10	8 746	1 539	N	Mekong	N	N	Y	N	Y		[4]
7. Kang Taneang	9	7 757	1 172	N	Mekong	N	N	Y	N	Y	2.80	[4]
8. Prek Koy	7	7 198	1 263	N	N	N	N	•Takrong	N	•Prekkoy		[1]
9. Roka Ar	9	6 987	1 214	N	Mekong	N	N	Y	N	Y		[4]
10. Sdao	6	4 561	787	N	Mekong	N	N	•Takrong	N	•Anlung Koky		[1]
11. Reay pay	8	7 341	1 350	N	N	N	•B.Thom	Y	N	Y		[2]
Subtotal	94	84 783	14 970									
VIII. Srey Santhor												
1. Koh Andeth	4	5 668	1 002	N	Mekong	N	N	•O Rang	N	Y	0.23	[2]
2. Prek Rundeng	13	12 025	1 987	N	Mekong	N	N	•O Veng	N	Y		[4]
3. Reusey Srok	4	6 382	1 066	N	Mekong	N	N	Y	N	Y	0.95	[4]
4. Prek Dambauk	9	11 827	1 853	N	Mekong	N	N	Y	N	Y	0.36	[4]
5. Svay Such Phnom	4	5 782	825	N	Mekong	N	N	Y	N	Y	0.17	[1]
6. Phtea Kandal	4	7 186	1 194	N	Mekong	N	N	Y	N	Y	1.40	[4]
7. Prek Por	12	13 439	2 185	N	Mekong	N	N	•Sdau	N	•Prek Por	-	[3]
8. Mean Chey	7	8 022	1 348	N	Mekong	N	N	•B.Veng	N	Y	0.21	[4]
9. Baray	4	8 323	1 339	N	N	N	N	•Baray	N	Y	0.02	[4]
Subtotal	61	78 654	12 799								2.23	[2]
											5.57	

Table 5^a. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Floodland/ ricefield (km ²)	Type of fishing practice	
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)			
IX. Prey Chhor														
1. Mean	19	12 006	2 028	N	N	N	•B.Thom	N	N	N		25.00		[1]
2. Tong Rong	9	5 468	887	N	N	N	•B.Teuk	N	N	Y		0.70		[2]
Subtotal	28	17 474	2 915											
X. Cheung Prey														
1. Pdau Chum	4	5 398	919	N	N	N	•Chhram	N	N	N		0.80		[2]
2. Prey Chha	6	4 978	859	N	N	N	•Dey Krohorm	N	N	Y		0.43		[1]
Subtotal	10	10 376	1 778											
XI. Batheay														
1. Tang Kreng	8	7 103	1 153	N	N	N	N		Y	N	•K.Preah	40.37		[1]
2. Chbar Ampeuv	4	4 220	835	N	N	N	N		Y	N	•Koher			[1]
Subtotal	12	11 323	1 988											
XII. Orang Au														
1. Mean	14	10 405	1 925	N	N	N	•Krapeth		Y	N	N	0.95		[1]
2. Preah Theath	18	9 825	1 807	N	N	N	•Knor		Y	N	N			[2]
Subtotal	32	20 230	3 732											
Grand total	576	545 871	96 712											

Note:

[1]=Family fishing & fishing lot

[2]=Mainly family fishing

[3]=Middle-scale & fishing lot & family fishing

[4]=Middle-scale & family fishing.

Table 5^b. List of fishing communes by district, in Phnom Penh, 1994.

Name of commune	No. of villages	Population	No. of families	Type of fishing ground									Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)			
I. Reusei Keo														
1. Chroy Chong Var	5	12 133	2 101	N	Tonle Sap Mekong	N	N		•Toteung-Tngay	N		0.07	Y	[4]
2. Prek Tasek	5	3 994	738	N	Tonle Sap	N			•Chhdo Khampong •Sandai Youn	N	Prek Tasek	1.50	Y	[3]
3. Svay Pak	3	7 339	1 257	N	Tonle Sap	N	N		N	N	N	N	Y	[3]
4. Chrang Chamres I	4	7 074	1 106	N	Tonle Sap	N	N		N	N	N	N	N	[3]
5. Chrang Chamres II	4	9 367	1 561	N	Tonle Sap	N	N		Y	N	N	N	Y	[3]
6. Kilomet No.6	3	10 838	1 758	N	Tonle Sap	N		•Payap	Y	N	N	N	Y	[3]
7. Reusei Keo	4	12 839	2 210	N	Tonle Sap	N		•Payap	Y	N	N	N	Y	[3]
8. Prek Leap	4	6 744	1 250	N	Mekong	N		N	N	N	N	Y	Y	[4]
Subtotal	32	70 328	11 981											
II. Mean Chey														
1. Prek Pra	4	9 797	1 486	N	Bassac	N	N		•Pra Thom	N	N	0.40	Y	[4]
2. Nirod	4	9 350	1 586	N	Mekong	N	N		Y	N	N	N	Y	[4]
3. Chba Ampeuv II	3	15 504	2 624	N	Bassac	N	N		N	N	N	N	N	[4]
4. Chak Angre Leu	2	11 064	1 853	N	Bassac	N		•Cheung Ek	•Tompun	N	N	N	N	[4]
5. Chak Angre Krom	2	13 638	2 241	N	Bassac	N		•Cheung Ek	N	N	N	N	Y	[4]
6. Beung Tum Pun	5	14 865	2 716	N	N	N	N		•Tompun	N	N	N	Y	[2]
Subtotal	20	74 218	12 506											

Table 5^b. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground							Floodland/ ricefield (km ²)	Type of fishing practice	
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream			Inundated forest (km ²)
III. Dong Kor													
1. Cheung Ek	5	4 344	893	N	N	N	•Cheung ek	N	N	N	2.50	Y	[2]
2. Dong Kor	6	8 543	1 844	N	N	N	N	•Krobey	N	N	N	Y	[2]
Subtotal	11	12 887	2 737					•Sombo					
Total	63	157 433	27 224										

Note:

[1]=Family fishing & fishing lot

[2]=Mainly family fishing

[3]=Middle-scale & fishing lot & family fishing

[4]=Middle-scale & family fishing.

Table 5^c List of fishing communes by district, in Kandal, 1994.

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Type of fishing practice	
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)		Floodland/ ricefield (km ²)
I. Mok Kompoul													
1. Koh Dach	5	10 021	1 822	N	Mekong	N	•Beung Kompok •Beung Veng •Chrok •Tanung	Y	N	Y			[4]
2. Bak Kheng	3	4 716	921	N	Mekong	N	•Domrei Chlorn •Sara Youn I •Muk Boun	Y	N	Y			[1]
3. Prek Anchanh	7	8 211	1 487	N	Mekong	N	•Reang •Pech Sena	Y	N	Y			[1]
4. Prek Dombong	5	9 963	1 845	N	Mekong	N	•Komping Pouy •Omoung •Krobei Khleach	Y	N	Y			[1]
5. Reusei Chhroy	7	7 036	1 363	N	Mekong	Y	•Chunlen •Reahu •Vealthom	Y	N	Y			[3]
6. Roka Koung I	4	7 558	1 399	N	Mekong	N	•Krang •Kok	Y	N	Y			[3]
7. Roka Koung II	4	5 695	1 103	N	Mekong	•Roka koung	•Otamom	Y	N	Y			[4]
8. Svay Amphear	5	5 883	1 140	N	N	N	•Melong •Omao •Sork Heng	Y	N	Y			[1]
9. Sambomeas	7	1 206	223	N	N	N	•Smao Poppear •Rang •Chong Kour •Chamnei Sat	Y	N	Y			[1]
Subtotal	47	60 289	11 303										

Table 5: (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground							Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream		
II. Saang												
1. Prek Ambil	9	20 240	3 556	N	Bassac	N	•Kanlang chok	Y	N	Y		[1]
2. Teuk Vill	8	8 611	1 414	N	Bassac	N	•Molech	Y	N	Y		[1]
3. Koh Khsach-Tonlea	5	5 137	9 028	N	Bassac	N	•Tropang rang	N	Y	N	Y	[1]
4. Khpop	10	10 129	1 875	N	Bassac	N	•Sambok sat	Y	N	Y		[3]
5. Taloun	9	10 326	1 894	N	Bassac	N	N	Y	N	Y		[1]
6. Treuy Sla	9	14 953	2 670	N	Bassac	N	•Kropeu	Y	N	Y		[3]
							•Romeas					
							•Ta Phlout					
7. Svay Proteal	9	11 222	1 996	N	Bassac	N	•Ta Kov	Y	N	Y		[3]
							•Tran					
							•Tropang					
							•Thmor					
8. Prasat	5	867	160	N	N	N	•Saray Thom	Y	N	Y		[3]
							•Lech Prasat					
							•Thom					
9. Svay Rolum	5	6 429	1 127	N	Bassac	N	•Beung Thom	Y	N	Y		[1]
							•Mung Domrei					
10. Koh Anlong Chen	4	4 032	905	N	Bassac	N	•Otaduk	Y	N	Y		[1]
							•Oveng					
							•Okhpop					
							•Anchanh					
11. Seat Thbo	4	5 756	1 143	N	Bassac	N	•Chey Mongkol	Y	N	Y		[1]
							•Sroul					
							•Thnout					
12. Roka Khpous	5	8 034	1 426	N	Bassac	N	•Matang bakdob	Y	N	Y		[3]
							•Toteung					
							Tngay					

Table 5c. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)		
13. Prek Koy	7	10 333	1 838	N	Bassac	N	N	Y	N	Y			[1]
14. Saang Phnom	9	9 846	1 803	N	Bassac	N	•Theang Chek •O Khmum	Y	N	Y			[1]
15. Krang Yov	15	12 074	2 211	N	N	N	N	Y	N	Y			[1]
16. Koh Khel	6	11 470	2 100	N	Bassac	N	•Dong Tung	Y	N	Y			[1]
Subtotal	119	149 459	35 146										
III. Lovear Em													
1. Arey Khsat	4	6 949	1 789	N	Mekong	N	•Romeas •Kampong	Y	N	Y			[3]
2. Sarika Keo	3	5 852	1 083	N	Mekong	N	•Thom	Y	N	N			[1]
3. Peam Oknha Ong	5	7 225	1 333	N	Mekong	N	•Veal Samnap	Y	N	Y			[1]
4. Koh Ras	2	2 265	481	N	Mekong	N	•Veal Samnap	Y	N	N			[1]
5. Thmor Kor	2	3 053	563	N	Mekong	N	N	Y	N	N			[1]
6. Teuk Khlang	3	3 050	635	N	Mekong	N	•Bang Kok	Y	N	N			[1]
7. Bang Krom	2	3 916	722	N	Mekong	N	•Bang krum •Ta Chom	Y	N	Y			[3]
8. Lovear Sor	3	2 292	424	N	Mekong	N	N	Y	N	Y			[1]
9. Koh Keo	2	2 300	432	N	Mekong	N	•Doun Cheat	Y	N	Y			[1]
10. Sam Bour	3	5 214	962	N	Mekong	N	N	Y	N	Y			[1]
11. Prek Reusei	5	6 919	1 281	N	N	N	N	Y	N	Y			[1]
12. Phnom Thom	2	1 553	287	N	N	N	•Dorcheay	Y	N	Y			[1]
13. Prek Rei	3	2 841	524	N	N	N	•Bang Kok	Y	N	Y			[1]
14. Prek Khmeng	2	2 051	275	N	N	N	•Veal Samnap •Bak Khlouk •Anlong Kochroy	Y	N	Y			[3]
15. Barong	2	3 098	571	N	N	N	•Barong	Y	N	Y			[3]
Subtotal	43	58 578	11 362										

Table 5^c. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground							Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reserv- oir	Stream		
IV. Koh Thom												
1. Koh Thom I	6	6 387	1 133	N	Bassac	N	•Beung Thom	Y	N	Y		[2]
2. Koh Thom II	5	7 009	1 273	N	Bassac	N	N	Y	N	Y		[1]
3. Prek Thmey	12	14 231	2 589	N	Bassac	N	N	Y	N	Y		[2]
4. Prek Sdei	9	17 810	3 060	N	Bassac	N	•Seng Chour	Y	N	Y		[2]
5. Sambao Poun	8	13 867	2 521	N	Bassac	N	•Sroul •Beung Sroul •Touch	Y	N	Y		[2]
6. Poban	9	8 614	1 566	N	Bassac	N	N	Y	N	Y		[1]
7. Kampong Kong	11	11 006	2 003	N	Bassac	N	•Chey	Y	N	Y		[1]
8. Leuk Dek	11	10 916	2 283	N	N	Leuk Dek	•Kvak Sroul •Rolang Ok	Y	N	Y		[3]
9. Chroy Takeo	9	8 478	1 542	N	Bassac	N	•Beung Vealchork	Y	N	Y		[4]
10. Chheu Khmao	8	8 893	1 617	N	Bassac	N	•Ta Koy	Y	N	Y		[4]
11. Prek Chhrey	4	1 446	263	N	Bassac	N	•Krohomb	Y	N	Y		[3]
Subtotal	92	108 657	19 850									
V. Leuk Dek												
1. Kampong Phnom	4	8 994	1 659	N	Mekong	N	N	Y	N	Y		[1]
2. Prek Tonlap	4	11 040	2 044	N	Mekong	N	•Saray	Y	N	Y		[3]
3. Prek Dach	4	6 240	1 151	N	Mekong	N	•Proleut •Salong •Anlung Robap	Y	N	Y		[3]
4. Peam Rang	3	5 386	997	N	Mekong	N	•Long Taprom •Domrei Slab •Beung Kdol	Y	N	Y		[3]

Table 5. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground							Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream		
5. Kpob Ateav	3	3 869	716	N	Mekong	N	•Poun Bon Thom	Y	N	Y		[3]
6. Son Da	3	3 078	592	N	Mekong	N	•Hal Pra	Y	N	Y		[3]
7. Khaom Samnor	3	3 852	716	N	Mekong	N	•Lang Ok •Beung Veng •Beung Moung	Y	N	Y		[3]
Subtotal	24	42 459	7 875									
VI. Kean Svay												
1. Banteay Dek	3	9 286	1 773	N	Mekong	N	•Trav •Trocheak Krobei •Prek Barang	Y	N	Y		[2]
2. Samrong Thom	6	15 739	3 086	N	Mekong	N	N	Y	N	Y		[1]
3. Koky Thom	4	9 473	1 821	N	Mekong	N	N	Y	N	Y		[1]
4. Kampong Svay	3	6 902	1 302	N	Bassac	N	N	Y	N	Y		[2]
5. Chheu Teal	4	5 610	1 001	N	Bassac	N	•Beung Thom	Y	N	Y		[2]
6. Prek Thmei	3	10 332	2 248	N	Bassac	N	•Kda •Chba Keng •Chok Krohorm •Kok	Y	N	Y		[2]
7. Veal Sbov	4	5 367	1 117	N	Mekong	Y	•Pra thom •Kok •Khvang Tronung	Y	N	Y		[2]
8. Prek Eng	6	7 958	1 560	N	Mekong	Y	•Proleut	Y	N	Y		[2]
9. Kbal Koh	3	11 038	2 122	N	Mekong	Y	N	Y	N	Y		[4]
10. Phnom Thom	3	8 585	1 619	N	Mekong	Y	N	Y	N	Y		[2]

Table 5. (Continued)

Name of commune	No. of villages	Population	No. of families	Great lake	Large river	Small river	Big lake	Small lake	Reserv- oir	Stream	Inundated forest (km ²)	Floodland/ ricefield (km ²)	Type of fishing practice
11. Koky	4	10 682	2 094	N	Mekong	N	•Koky	Y	N	Y			[2]
12. Dey Eath	3	11 715	2 210	N	Mekong	N	N	Y	N	Y			[2]
Subtotal	46	112 687	21 953										
VII. Ponhear Leu													
1. Koh Chen	11	7 817	1 347	N	Tonle Sap	N	•Domrei Slab •Phtoul	Y	N	Y			[3]
2. Kampong Loung	8	9 062	1 562	N	Tonle Sap	N	N	Y	N	Y			[1]
3. Prek Phnov	5	8 911	1 236	N	Tonle Sap	N	•Koh Reusei •Paung Peay	Y	N	N			[3]
4. Sam Rong	4	4 312	746	N	Tonle Sap	N	N	N	N	N			[1]
5. Prek Taten	3	5 907	1 054	N	Tonle Sap	N	•Tros	Y	N	N			[1]
6. Ponhear Leu	3	2 677	482	N	Tonle Sap	N	•Roung Touk •Sbeang Thom	Y	N	N			[1]
7. Kampong Os	5	5 160	921	N	Tonle Sap	N	•Chamnei Sat •Smao Popear	Y	N	N			[3]
Subtotal	39	43 846	7 348										
VIII. Takhmao													
1. Kg Samnah	3	5 245	1 031	N	N	N	N	Y	N	N			[2]
2. Prek Reusei	3	5 208	1 080	N	N	Y	N	Y	N	Y			[1]
3. Ta Kdol	3	3 053	633	N	Bassac	N	N	Y	N	Y			[1]
4. Prek Ho	3	3 652	731	N	N	Y	N	Y	N	Y			[1]
Subtotal	12	17 158	3 475										

Table 5. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)		
IX. Khsach Kandal													
1. Ta Ek		2 917	533	N	Mekong	Y	•Kbal Krobei	Y	N	Y		[4]	
2. Koh Churam		14 986	2 765	N	Mekong	Y	•Sor	Y	N	Y		[4]	
3. Svay Romeat		4 490	847	N	Mekong	N	•Sor	Y	N	Y		[2]	
4. Prek Prosop		7 234	1 344	N	Mekong	N	N	Y	N	Y		[2]	
5. Prek Tamak		9 545	1 741	N	Mekong	N	•Khchom	Y	N	Y		[2]	
6. Pok Reusei		9 231	1 684	N	Mekong	N	•Chhear	Y	N	N		[2]	
7. Prek Ampil		8 923	1 643	N	Mekong	•Prek ampil	•Bobos	Y	N	Y		[2]	
8. Prek Lournng		3 667	684	N	Mekong	•Prekloung	•Bang Khnong	Y	N	Y		[2]	
9. Prek Takao		4 412	805	N	Mekong	N	•Bang Prear	Y	N	Y		[2]	
10. Svay Chrom		3 220	593	N	Mekong	N	N	Y	N	N		[2]	
11. Koh Ocnha Tei		4 109	791	N	Mekong	N	N	Y	N	N		[1]	
12. Sitho		5 931	1 098	N	N	•Tonle Touch	•Sambou	Y	N	Y		[4]	
13. Bak Dav		3 321	633	N	N	•Tonle Touch	•Chrouk	Y	N	N		[3]	
14. Kampong Chamlong		4 038	747	N	N	•Tonle Touch	N	Y	N	N		[2]	
Subtotal		86 024	15 908										
Total	422	679 157	134 220										

Note:

[1]=Family fishing & fishing lot

[2]=Mainly family fishing

[3]=Middle-scale & fishing lot & family fishing

[4]=Middle-scale & family fishing

Table 5^d. List of fishing communes by district, in Kampong Thom, 1994.

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)		
I. Staung													
1. Piem Bang	1	920	177	Y	N	N	Y	Y	N	Y	Y	N	[3]
2. Kampong Chin Cheung	6	6 066	960	N	N	•Stung Staung	Y	Y	N	N	Y	Y	[4]
3. Chomna Krom	10	9 638	1 656	N	N	N	Y	Y	N	N	Y	Y	[4]
4. Masa Krong	11	7 576	1 378	N	N	N	Y	Y	N	Y	Y	Y	[3]
5. Sam Proch	17	10 013	1 637	N	N	N	Y	Y	N	Y	Y	Y	[3]
Subtotal	45	34 213	5 808										
II. San Tuk													
1. Beung Lvear	6	2 154	419	N	N	•Tang Krasang	Y	Y	N	Y	Y	Y	[2]
2. Kampong Thmor	11	6 922	1 261	N	N	•Chinit	Y	Y	N	Y	N	Y	[1]
3. Phnov	3	2 045	332	N	N	•Chinit	Y	Y	N	Y	Y	Y	[1]
4. Tang Krasang	11	11 273	1 987	N	N	•Tang Krasang	Y	Y	N	Y	Y	Y	[1]
5. Pra Sat	10	8 269	1 292	N	N	•Tang Krasang	Y	Y	N	Y	N	Y	[1]
Subtotal	41	30 663	5 291										
III. Baray													
1. Baray	12	11 153	1 932	N	N	•Chinit	Y	Y	N	Y	Y	Y	[1]
2. Pong Ro	7	7 409	1 314	N	N	•Stung Roth	Y	Y	N	Y	Y	Y	[2]
3. Thnot Choum	9	6 996	1 249	N	N	N	Y	Y	N	Y	N	Y	[1]
4. So Yong	11	6 971	1 340	N	N	N	Y	Y	N	Y	Y	Y	[1]
5. Sro Lao	14	8 009	1 426	N	N	N	Y	Y	N	Y	Y	Y	[1]
Subtotal	53	40 538	7 261										

Table 5^d. List of fishing communes by district, in Kampong Thom, 1994.

Name of commune	No. of villages	Population	No. of families	Type of fishing ground									Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reserv- oir	Stream	Inundated forest (km ²)			
IV. Kampong Svay														
1. Phat Sanday	4	2 064	379	Y	N	•Stung Sen	NA	Y	N	Y	Y	Y	[3]	
2. Kampong Ko	5	4 858	849	N	N	•Stung Sen	Y	Y	N	Y	Y	Y	[3]	
3. San Ko	14	14 105	2 359	N	N	N	Y	Y	N	Y	1.6	Y	[2]	
4. Tbeng	15	11 716	1 911	N	N	•Prey Prosh	Y	Y	N	N	Y	Y	[2]	
5. Tro Peang Reusey	17	14 480	2 396	N	N	•Prey Prosh	N	Y	N	N	N	Y	[2]	
Subtotal	55	47 223	7 894											
V. Stung Sen														
1. O Kantho	4	4056	760	N	N	•Stung Sen	Y	Y	N	N	325	Y	[4]	
2. Kampong Krobav	3	4892	802	N	N	•Stung Sen	N	Y	N	N	N	Y	[2]	
3. Kday Dong	4	7977	901	N	N	•Stung Sen	N	Y	N	N	350	Y	[2]	
4. Sro Yoov	13	16759	3205	N	N	N	N	Y	Y	N	3500	Y	[2]	
5. Domrey Chonkla	4	6059	1052	N	N	•Stung Sen	Y	Y	N	N	N	Y	[2]	
6. Kampong Rotes	2	4900	822	N	N	•Stung Sen	Y	Y	N	N	150	Y	[2]	
Subtotal	30	44 643	7 542											
Total	224	197 280	33 796											
GRAND TOTAL	2 305	2 405 442	452 714											

Note:

[1]=Family fishing & fishing lot

[2]=Mainly family fishing

[3]=Middle-scale & fishing lot & family fishing

[4]=Middle-scale & family fishing

Table 5. List of fishing communes by district, in Kampong Chhnang, 1994.

Name of commune	No. of villages	Population	No. of families	Type of fishing ground							Floodland/ ricefield (km ²)	Type of fishing practice	
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream			Inundated forest (km ²)
I. Boribo													
1. Chor	5	2 203	477	N	N	N	•B.Rusey •B.Veng	Y	N	Y			[2]
2. Ponley	6	5 456	1 111	N	N	N	Y	Y	N	Y			[2]
3. Khon Rang	10	4 970	1 178	N	N	N	Y	Y	N	Y			[2]
4. Phsa	7	4 156	824	N	N	N	Y	Y	N	Y			[2]
5. Chhnok Tru	3	1 904	329	Y	Y	Y	•Kg Preah •B.Krel	Y	N	Y	80.10	4.90	[4]
6. Popel	8	4 157	730	N	N	N	Y	Y	N	Y			[2]
7. Pras Koki	4	1 379	225	N	Y	Y	Y	Y	N	Y			[4]
Subtotal	43	24 225	4 874										
II. Rolear Phiear													
1. Chrey Bak	16	7 013	1 513	N	N	N	Y	Y	N	Y			[2]
2. Rolear Phiear	6	6 530	1 366	N	N	•Chrey Bak	Y	Y	N	Y			[2]
3. Andong Snay	7	3 564	789	N	N	N	N	Y	N	N			[2]
4. Teuk Hot	9	4 541	1 250	N	N	Y	•B.Trao •B.Kak	Y	N	Y			[2]
5. Svay Chum	21	10 200	2 110	N	Y	Y	N	Y	N	Y			[4]
6. Pong Ror	12	5 405	1 242	N	N	Y	Y	Y	N	Y			[2]
7. Kok Banteay	8	3 795	838	N	N	Y	Y	Y	N	Y			[2]
Subtotal	79	41 048	9 108										
III. Kampong Leng													
1. Pra Ley Meas	6	1 729	365	N	Y	Y	Y	Y	N	Y	4.89	12.80	[3]
2. Phlau Tuk	3	1 223	220	N	Y	Y	Y	Y	N	Y			[4]
3. Chra Nok	4	4 947	824	N	Y	Y	Y	Y	N	Y			[4]
4. Kampong Hao	6	4 199	724	N	Y	Y	•B.Khasao •B.Anlung •Pradeus	Y	N	Y	10.00	9.68	[3]
5. Svay Rumppear	5	3 757	678	N	N	Y	Y	Y	N	Y			[2]
6. Somrong Sen	2	762	178	N	Y	Y	Y	Y	N	Y			[4]

Table 5^d. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)		
7. Dar	5	4 591	963	N	N	Y	Y	Y	N	Y			[2]
8. Por	6	2 674	553	N	Y	Y	Y	Y	N	Y			[2]
9. Tra Ngel	7	4 229	904	N	N	Y	Y	Y	N	Y			[2]
Subtotal	44	28 111	5 409										
IV. Kampong Tralach													
1. Ta Ches	15	9 006	1 678	N	Y	Y	•Thom •Tadouk	Y	N	Y	196.00	19.50	[4]
2. Oreusey	8	7 015	1 413	N	N	N	Y	Y	N	Y			[2]
3. Kampong Tralach	7	4 227	807	N	Y	Y	•Puok •Vay •Samrith	Y	N	Y	27.30	7.50	[4]
4. Chres	14	6 937	1 360	N	N	Y	N	Y	N	Y			[2]
5. Ampil Teuk	11	8 356	1 487	N	Y	Y	Y	Y	N	Y			[4]
6. Long Vek	8	5 162	1 088	N	Y	Y	Y	Y	N	Y			[4]
7. Seb	12	5 013	893	N	Y	Y	•Roleap Sen •Bompung Kro	Y	N	Y	12.00	9.20	[4]
8. Peami	9	6 386	1 158	N	N	N	Y	Y	N				[2]
Subtotal	84	52 102	9 884										
V. Chul Kiry													
1. Prey Kri	3	2 953	526	N	Y	Y	Y	Y	N	Y			[4]
2. Chulsar	5	3 980	7 120	N	Y	Y	Y	Y	N	Y			[4]
3. Koh Thkeuv	10	5 654	931	N	Y	Y	Y	Y	N	Y			[2]
4. Kg Chhnang	4	2 338	406	N	Y	Y	•Krai •Tram krobey	Y	N	Y	5.00	10.65	[2]
5. Peam Chkoug	4	2 953	526	N	Y	Y	Y	Y	N	Y			[2]
Subtotal	26	17 878	9 509										

Table 5^d. (Continued).

Name of commune	No. of villages	Population	No. of families	Type of fishing ground							Inundated forest (km ²)	Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream			
VI. Kampong Chhnang Town													
1. Phsa Chhnang	8	14 708	2 350	N	•K Chhnang	Y	•Thom	Y	N	Y	0.98	6.74	[4]
2. Damnak Popul	6	6 263	1 198	N	Y	Y	Y	Y	N	Y			[2]
Subtotal	14	20 971	3 548										
Total	290	184 335	42 335										

Note:

[1]=Family fishing & fishing lot

[2]=Mainly family fishing

[3]=Middle-scale & fishing lot & family fishing

[4]=Middle-scale & family fishing

Table 5. List of fishing communes by district, in Siem Reap, 1994.

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)		
I. Kra Lanh													
1. Sam Bour	8	5 455	1 031	Y	N	Y	N	Y	N	N	Y	Y	[3]
2. Kra Lanh	7	5 020	945	N	N	Y	N	•Krapeu Slab •Chamkak Tamean •Kamping Pouy Thom	N	N	N	Y	[4]
3. Sranal	13	7 193	1 408	N	N	N	N	Y	N	N	N	Y	[4]
Subtotal	28	17 668	3 384										
II. Pouk													
1. Krabey Riel	12	5 441	971	Y	N	N	N	Y	N	N	Y	Y	[4]
2. Muk Pen	6	4 236	742	N	N	N	N	Y	N	N	N	Y	[4]
3. Prey Chrouk	12	7 375	1 287	N	N	Y	N	Y	N	N	N	Y	[4]
4. Keo Por	8	4 085	710	Y	N	N	N	Y	Y	•Oknha Kuch •Stung Kambot	Y	Y	[3]
5. Samrong Year	6	3 880	716	N	N	N	N	Y	Y	N	N	Y	[4]
6. Lovear	12	7 573	1 236	N	N	Y	N	Y	N	N	N	N	[4]
7. Sarsar Sdam	14	8 910	1 679	N	N	N	N	Y	N	N	N	Y	[4]
8. Portreay	2	1 406	241	Y	N	Y	Y	Y	N	Y	Y	Y	[3]
9. Pouk	11	9 588	1 668	N	N	Y	N	Y	Y	N	N	Y	[4]
Subtotal	83	52 494	9 250										
III. Siem Reap													
1. Siem Reap	8	9 185	1 593	Y	N	Y	N	Y	N	N	Y	Y	[4]
2. Chreav	7	5 167	958	N	N	Y	N	•Tropeang Rean	Y	N	Y	Y	[4]
3. Srange	7	4 032	627	N	N	N	N	Y	N	N	Y	Y	[4]
4. Sam Bour	5	2 290	451	N	N	N	N	Y	N	N	Y	Y	[4]
5. Chong Khneas	5	2 557	351	Y	N	Y	N	Y	N	N	Y	Y	[3]
Subtotal	32	23 231	3 980										

Table 5. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground							Floodland/ ricefield (km ²)	Type of fishing practice	
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream			Inundated forest (km ²)
IV. Prasat Bakong													
1. Rolous	7	5 867	1 011	Y	N	Y	N	Y	N	Y	Y	Y	[4]
2. Mean Chey	6	4 018	667	Y	N	Y	N	Y	N	N	Y	Y	[4]
3. Kampong Plouk	3	1 888	278	Y	N	N	N	Y	N	•K pluouk	Y	Y	[3]
4. Tropeang Thom	9	6 408	1 070	Y	N	N	N	Y	N	N	Y	Y	[4]
5. Bakong	6	4 600	813	N	N	N	N	Y	N	N	N	Y	[4]
6. Kandek	10	7 068	1 506	N	N	N	N	Y	Y	N	N	Y	[4]
Subtotal	41	29 849	5 345										
V. Sothnikum													
1. Kampong Khleang	10	8 316	1 425	Y	N	N	Y	Y	N	•K Kleang •Prek Chun leay	Y	Y	[3]
2. Dan Run	13	9 808	1 660	Y	N	N	•Beung Prek •Sromouch	Y	Y	N	Y	Y	[4]
3. Kien Sangke	12	8 256	1 425	N	N	N	N	•Chipor •Ampil	Y	•Prek Khleang	Y	Y	[4]
4. Kchas	7	7 195	1 218	N	N	N	N	Y	Y	N	Y	Y	[4]
Subtotal	42	33 575	5 728										
VI. Chikreng													
1. Anlung Samnar	14	7 360	1 312	Y	N	Y	N	Y	N	N	Y	Y	[3]
2. Sang Voeuy	8	8 436	1 367	Y	N	N	N	Y	N	N	Y	Y	[4]
3. Reasey Lourk	8	8 014	1 488	N	N	N	N	Y	N	N	N	Y	[4]
4. Loveng Reusey	13	8 761	1 596	N	N	N	N	Y	N	N	N	Y	[4]
5. Chikreng	14	6 663	1 127	Y	N	•Chikreng	N	Y	Y	N	Y	Y	[4]
6. Spean Thnot	15	7 789	1 360	N	N	N	N	Y	N	N	N	Y	[4]
Subtotal	72	47 023	8 250										
Total	298	203 840	35 937										

Table 5². List of fishing communes by district, in Battambang, 1994.

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)		
I. Ek Phnom													
1. Prey Chas	5	3 171	617	N	N	Song Ke	Y	Y	N	Y	122.77	N	
2. Koh Chiviang	5	6 419	1 154	Y	N	Song Ke	Y	Y	N	Y	157.38	0.20	[3]
3. Prek Narin	10	12 432	2 333	N	N	Song Ke	Y	Y	N	Y	56.06	8.94	[3]
4. Prek Loung	7	8 661	1 641	N	N	Song Ke	Y	Y	N	Y	41.15	4.30	[3]
5. Peam Ek	8	13 376	2 533	N	N	Song Ke	Y	Y	N	Y	33.96	20.00	[3]
Subtotal	35	44 059	8 278								411.32	33.44	
II. Battambang													
1. Ta Men	10	16 453	2 895	N	N	N	Y	Y	N	Y	21.00	36.00	[2]
2. Ta Poug	7	13 064	2 496	N	N	N	Y	Y	N	Y	38.00	38.00	[2]
3. Chroy Sdao	3	10 183	1 666	N	N	N	Y	Y	N	Y	25.00	25.00	[2]
4. Beung Pring	4	9 327	1 564	N	N	N	Y	Y	N	Y	15.00	21.00	[2]
Subtotal	24	49 027	8 621								99.00	120.00	
III. Song Ke													
1. Kampong Preah	6	7 631	1 422	Y	N	N	Y	Y	N	Y	180.00	4.00	[2]
2. Kampong Preang	6	7 859	1 466	Y	N	N	Y	Y	N	Y	160.00	10.00	[2]
3. Onlong Vil	9	14 731	2 709	N	N	N	Y	Y	N	Y	4.00	2.00	[2]
4. Ta Pon	5	11 578	2 227	N	N	N	Y	Y	N	Y	170.00	17.55	[2]
5. Ra Ka	6	7 506	1 423	N	N	N	Y	Y	N	Y	79.00	0.52	[2]
6. No Rea	4	4 967	957	N	N	Y	N	N	N	Y	N	N	[4]
Subtotal	36	54 272	10 204								593.00	34.07	
IV. Mong Reusey													
1. Prey Toch	6	8 421	1 583	N	N	Chork	Y	Y	N	Y	100.00	2.00	[2]
2. Kor Kos	7	11 000	2 205	N	N	Chork	Y	Y	N	Y	100.00	0.50	[2]
3. Chrey	8	10 978	2 247	Y	N	Mong	Y	Y	N	Y	180.00	12.00	[2]
4. To Loas	9	8 393	1 680	Y	N	Mong	Y	Y	N	Y	150.00	1.00	[2]
5. Prey Svay	9	14 195	2 635	N	N	N	Y	Y	N	Y	60.00	N	[2]
6. Riesey Krang	10	14 554	2 686	Y	N	Svay Donkeo	Y	Y	N	Y	81.00	0.29	[4]
Subtotal	49	67 541	13 036								671.00	15.79	

Table 5. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Floodland/ ricefield (km ²)	Type of fishing practice	
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)			
V. Svay Pau														
1. Slaket	3	7 344	1 208	N	N	Song Ke	N	N	N	N	N	N	N	[4]
2. Kdol	7	8 308	1 715	N	N	Song Ke	N	Y	N	N	N	N	N	[2]
3. Wat Kor	6	14 031	2 668	N	N	Song Ke	N	N	N	N	N	N	N	[2]
Subtotal	16	29 683	5 591											
VI. Banon														
1. Ta Kream	7	10 358	1 994	N	N	N	N	N	Y	Y	N	N	N	[2]
Subtotal	7	10 358	1 994											
Total	167	254 940	47 724											

Note:

- [1]=Family fishing & fishing lot
- [3]=Middle-scale & fishing lot & family fishing
- [2]=Mainly family fishing
- [4]=Middle-scale & family fishing

Table 5. List of fishing communes by district, in Pursat, 1994.

Type of Floodland/ ricefield fishing practice	Type of fishing ground											
	No. of villages	Population	No. of Great lake	Large river	Small river	Big lake	Small lake	Reserv- oir	Stream	Inundated forest (km ²)	Floodland/ ricefield (km ²)	
I. Krakor District												
	5	6 464	1 080	Y	N	N	N	N	N	Y	N	
1. Kampong Loung	6	4 541	882	Y	N	N	N	N	N	Y	N	
2. Ansa Chambok	7	4 657	955	Y	N	N	N	N	N	Y	N	
3. Kampong Fur	10	3 687	762	Y	N	N	N	N	N	Y	N	
4. Sna Ansa	11	5 856	1 119	Y	N	N	N	N	N	Y	N	
5. Kbal Trach	7	3 589	764	Y	N	N	N	N	N	Y	N	
6. Sandann	12	7 232	1 455	N	Y	N	N	N	N	Y	N	
7. Anlong Thmor	58	36 026	7 017									
II. Kandieng Districts												
	5	3 431	521	Y	N	N	N	N	N	Y	N	
1. Rang Til	12	7 033	1 478	Y	Y	N	N	N	N	Y	N	
2. Kanh Chor	11	5 516	1 125	Y	Y	N	N	N	N	Y	N	
3. Sya	17	7 829	1 537	Y	N	N	N	N	N	Y	N	
4. Sre Sdok	13	5 518	1 103	N	Y	N	N	N	N	Y	N	
5. Svy Luong	9	4 735	999	N	Y	N	N	N	N	Y	N	
6. Veal	67	34 062	6 763									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y	N	N	N	N	N	Y	N	
6. Beung Bot	13	11 812	2 298	N	Y	N	N	N	N	Y	N	
7. Beung Khna	12	8 780	1 712	N	Y	N	N	N	N	Y	N	
8. Khna Teoung	12	8 962	1 686	N	Y	N	N	N	N	Y	N	
9. Rom Lech	130	104 281	19 583									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y	N	N	N	N	N	Y	N	
6. Beung Bot	13	11 812	2 298	N	Y	N	N	N	N	Y	N	
7. Beung Khna	12	8 780	1 712	N	Y	N	N	N	N	Y	N	
8. Khna Teoung	12	8 962	1 686	N	Y	N	N	N	N	Y	N	
9. Rom Lech	130	104 281	19 583									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y	N	N	N	N	N	Y	N	
6. Beung Bot	13	11 812	2 298	N	Y	N	N	N	N	Y	N	
7. Beung Khna	12	8 780	1 712	N	Y	N	N	N	N	Y	N	
8. Khna Teoung	12	8 962	1 686	N	Y	N	N	N	N	Y	N	
9. Rom Lech	130	104 281	19 583									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y	N	N	N	N	N	Y	N	
6. Beung Bot	13	11 812	2 298	N	Y	N	N	N	N	Y	N	
7. Beung Khna	12	8 780	1 712	N	Y	N	N	N	N	Y	N	
8. Khna Teoung	12	8 962	1 686	N	Y	N	N	N	N	Y	N	
9. Rom Lech	130	104 281	19 583									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y	N	N	N	N	N	Y	N	
6. Beung Bot	13	11 812	2 298	N	Y	N	N	N	N	Y	N	
7. Beung Khna	12	8 780	1 712	N	Y	N	N	N	N	Y	N	
8. Khna Teoung	12	8 962	1 686	N	Y	N	N	N	N	Y	N	
9. Rom Lech	130	104 281	19 583									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y	N	N	N	N	N	Y	N	
6. Beung Bot	13	11 812	2 298	N	Y	N	N	N	N	Y	N	
7. Beung Khna	12	8 780	1 712	N	Y	N	N	N	N	Y	N	
8. Khna Teoung	12	8 962	1 686	N	Y	N	N	N	N	Y	N	
9. Rom Lech	130	104 281	19 583									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y	N	N	N	N	N	Y	N	
6. Beung Bot	13	11 812	2 298	N	Y	N	N	N	N	Y	N	
7. Beung Khna	12	8 780	1 712	N	Y	N	N	N	N	Y	N	
8. Khna Teoung	12	8 962	1 686	N	Y	N	N	N	N	Y	N	
9. Rom Lech	130	104 281	19 583									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y	N	N	N	N	N	Y	N	
6. Beung Bot	13	11 812	2 298	N	Y	N	N	N	N	Y	N	
7. Beung Khna	12	8 780	1 712	N	Y	N	N	N	N	Y	N	
8. Khna Teoung	12	8 962	1 686	N	Y	N	N	N	N	Y	N	
9. Rom Lech	130	104 281	19 583									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y	N	N	N	N	N	Y	N	
6. Beung Bot	13	11 812	2 298	N	Y	N	N	N	N	Y	N	
7. Beung Khna	12	8 780	1 712	N	Y	N	N	N	N	Y	N	
8. Khna Teoung	12	8 962	1 686	N	Y	N	N	N	N	Y	N	
9. Rom Lech	130	104 281	19 583									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y	N	N	N	N	N	Y	N	
6. Beung Bot	13	11 812	2 298	N	Y	N	N	N	N	Y	N	
7. Beung Khna	12	8 780	1 712	N	Y	N	N	N	N	Y	N	
8. Khna Teoung	12	8 962	1 686	N	Y	N	N	N	N	Y	N	
9. Rom Lech	130	104 281	19 583									
Subtotal												
	13	11 886	2 032	Y	N	N	N	N	N	Y	N	
1. Me Teuk	20	14 036	2 784	Y	Y	N	N	N	N	Y	N	
2. Snam Preah	20	18 556	3 381	N	Y	N	N	N	N	Y	N	
3. Tropaeng	9	6 230	1 190	Y	Y	N	N	N	N	Y	N	
4. Svy Donkeo	18	15 040	2 829	Y	Y	N	N	N	N	Y	N	
5. Olapoung	13	8 979	1 671	Y								

Table 5^h. (Continued)

Name of commune	No. of villages	Population	No. of families	Type of fishing ground								Floodland/ ricefield (km ²)	Type of fishing practice
				Great lake	Large river	Small river	Big lake	Small lake	Reservoir	Stream	Inundated forest (km ²)		
IV. Sampaov Meas													
1. Lolork Sor	10	8 217	1 403	N		Y	N	N	N	N	N	Y	[2]
Subtotal	10	8 217	1 403										
Total	265	182 586	34 766										

Note:

[1]=Family fishing & fishing lot

[3]=Middle-scale & fishing lot & family fishing

[2]=Mainly family fishing

[4]=Middle-scale & family fishing

Table 6. List of sample communes and number of sample households in each of the selected provinces in Cambodia, 1995-96.

Name of district	Name of commune	Serial no. of household	No. of questionnaire	Code no.	
I. PHNOM PENH					
	Prek Tasek	0 001 – 0 043	43	1	
	Chroy Chong Var	0 044 – 0 147	104	2	
	Prek Pra	0 148 – 0 226	79	3	
	Cheng Ek	0 227 – 0 272	46	4	
	Subtotal		272		
II. KANDAL					
1.	Ta Khmao	KG. Samnanh	0 273 - 0 322	50	1
2.	Ponhear Leu	Prek Phnov	0 323 – 0 378	56	2
		Ponhear Leu	0 379 – 0 404	26	3
3.	Mouk Kampul	Prek Anchanh	0 405 – 0 459	55	4
		Koh Dach	0 460 – 0 544	85	5
		Prek Khmeng	0 545 – 0 558	14	6
		Koh Ras	0 559 – 0 583	25	7
4.	Lvear Em	Teuk Khlang	0 584 – 0 616	33	8
		Arey Khsat	0 617 – 0 702	86	9
5.	Koh Thom	Leuk Dek	0 703 – 0 806	104	10
		Kos Thom	0 807 – 0 863	57	11
		Prek Sdei	0 864 – 1 020	157	12
6.	Saang	Seat Tbo	1 021 – 1 079	59	13
		Koh Anlong Chen	1 080 – 1 123	44	14
		Teuk Veul	1 124 – 1191	68	15
7.	Kean Svay	Veal Sbov	1 192 – 1 248	57	16
		Bonteay Dek	1 249 – 1 332	84	17
		Prek Thmei	1 333 – 1 409	77	18
	Subtotal		1 137		
III. KAMPONG CHAM					
1.	Kroch Chmar	Chum Nik	1 410 – 1 490	81	1
		Poech I	1 491 – 1 551	61	2
		Kampong Treas	1 552 – 1 609	58	3
2.	Steung Trong	Prek Bak	1 610 – 1 678	69	4
3.	Tbaung Khmum	Tonle Bet	1 679 – 1 796	118	5
4.	Kompong Siem	Kien Chrey	1 797 – 1 832	36	6
		Vihea Thom	1 833 – 1 881	49	7
		Koh Som Rong	1 882 – 1 937	56	8
		Koh Ro Ka	1 938 – 1 988	51	9
5.	Kompong Cham	Beung Kok	1 989 – 2 041	53	10
6.	Koh Sotin	Moha Leap	2 042 – 2 100	59	11
		Kompong Reap	2 101 – 2 170	70	12
7.	Orang Au	Mean	2 171 – 2 265	95	13
8.	Kang Meas	Peam Chikong	2 266 – 2 329	64	14
		Angkor Ban	2 330 – 2 418	89	15
9.	Srey Santhor	Koh Andet	2 419 – 2 467	49	16
		Prek Por	2 468 – 2 514	47	17
		Meanchey	2 515 – 2 573	59	18
	Subtotal		1 164		

Table 6. (Continued)

Name of district	Name of commune	Serial no. of household	No. of questionnaire	Code no.
IV. K. CHNNANG				
1. Boribo	Chok	2 574 - 2 608	35	1
	Chnok Tru	2 609 - 2 638	30	2
2. Rolea Phear	Teuk Hot	2 639 - 2 688	50	3
3. K. Leng	Prolay Meas	2 689 - 2 708	20	4
	Kompong Hav	2 709 - 2 738	30	5
4. Chul Kiry	Kompong Chnang	2 739 - 2 760	22	6
	Kompong Trolach	2 761 - 2 805	45	7
	Ta Ches	2 806 - 2 893	88	9
	Sep	2 894 - 2 938	45	10
5. K. Chnnang Town	Phsa Chnang	2 939 - 3 043	105	11
	Subtotal		470	
V. SIEM REAP				
1. Chikreng	Chi Kreng	3 044 - 3 110	67	1
	Kien Song Ke	3 111 - 3 184	74	2
	Kompong Plok	3 185 - 3 201	17	3
2. Siem Reap	Tropeang Thom	3 202 - 3 256	55	4
	Siem Reap	3 257 - 3 334	78	5
	Chreav	3 335 - 3 380	46	6
	Sra Nge	3 381 - 3 410	30	7
	Sorsor Sdom	3 411 - 3 492	82	8
	Keo Por	3 493 - 3 527	35	9
	Kro Lanh	3 528 - 3 566	39	10
	Subtotal		523	
VI. K. THOM				
1. Stung Sen	Kampong Krobao	3 567- 3 606	40	1
2. Staung	Kgpong Chin Cheung	3 607- 3 655	49	2
	Msa Krong	3 656- 3 719	64	3
3. Baray	Baray	3 720- 3 815	96	4
	Sralav	3 816- 3 892	77	5
4. Kampong Svay	Kampong Ko	3 893- 3 935	43	6
	Phat Sanday	3 936- 3 967	32	7
5. San Tuk	Pra Sat	3 968- 4 037	70	8
	Subtotal		471	
VII. PURSAT				
1. Kro Kor	Kampong Loung	4 038- 4 091	54	1
	O Sandann	4 092- 4 123	32	2
	Ansa Chombok	4 124- 4 166	43	3
2. Kan Deang	Sya	4 167- 4 219	53	4
	Svay Loung	4 220- 4 274	55	5
3. Sampaov Meas	Lolork Sor	4 275- 4 346	72	6
4. Ba Kan	Snam Preah	4 347- 4 494	148	7
	Subtotal		457	

Table 6. (Continued).

Name of district	Name of commune	Serial no. of household	No. of questionnaire	Code no.
VIII. BATTAMBANG				
1. Mong Russey	Ta Pot	4 495-4 576	82	1
2. Sang Ke	Kampong Preang	4 577- 4 638	62	2
	Kampong Preah	4 639- 4 716	78	3
3. Svay Pao	Nor Rea	4 717- 4 767	51	4
	Kdol	4 768- 4 853	86	5
4. Ek Phnom	Prek Luong	4 854- 4 938	85	6
	Kor Chi Vang	4 939- 5 028	90	7
5. Battambang	Chroy Sdao	5 029- 5 117	89	8
	Subtotal		623	
Grand Total			5 117	

Table 7. Marital status of household heads by sex in selected freshwater fisheries provinces of Cambodia.

Marital status	Male		Female		Total	
	No.	%	No.	%	No.	%
Phnom Penh	227	100.0	45	100.0	272	100.0
Married	221	97.4	13	28.9	234	86.0
Single						
Divorced	1	0.4	4	8.9	5	1.8
Widow(er)	5	2.2	28	62.2	33	12.1
Kandal	893	100.0	244	100.0	1 137	100.0
Married	871	97.5	13	5.3	884	77.7
Single	4	0.4	5	2.0	9	0.8
Divorced	3	0.3	2	0.8	5	0.4
Widow(er)	15	1.7	224	91.8	239	21.0
Kampong Cham	986	100.0	178	100.0	1 164	100.0
Married	948	96.1	29	16.3	977	83.9
Single	3	0.3	5	2.8	8	0.7
Divorced	1	0.1	7	3.9	8	0.7
Widow(er)	34	3.4	137	77.0	171	14.7
Kampong Chhnang	380	100.0	90	100.0	470	100.0
Married	365	96.1	19	21.1	384	81.7
Single	2	0.5	2	2.2	4	0.9
Divorced	1	0.3	5	5.6	6	1.3
Widow(er)	12	3.2	64	71.1	76	16.2
Siem Reap	365	100.0	158	100.0	523	100.0
Married	343	94.0	46	29.1	389	74.4
Single	4	1.1	5	3.2	9	1.7
Divorced	1	0.3	9	5.7	10	1.9
Widow(er)	17	4.7	98	62.0	115	22.0
Pursat	379	100.0	78	100.0	457	100.0
Married	367	96.8	2	2.6	369	80.7
Single	3	0.8	2	2.6	5	1.1
Divorced			2	2.6	2	0.4
Widow(er)	9	2.4	72	92.3	81	17.7
Battambang	526	100.0	97	100.0	623	100.0
Married	511	97.1	29	29.9	540	86.7
Single			1	1.0	1	0.2
Divorced	1	0.2	4	4.1	5	0.8
Widow(er)	14	2.7	63	64.9	77	12.4
Kampong Thom	390	100.0	81	100.0	471	100.0
Married	379	97.2	5	6.2	384	81.5
Single			4	4.9	4	0.8
Divorced						
Widow(er)	11	2.8	72	88.9	83	17.6
Total	4 146	100.0	971	100.0	5 117	100.0
Married	4 005	96.6	156	16.1	4 161	81.3
Single	16	0.4	24	2.5	40	0.8
Divorced	8	0.2	33	3.4	41	0.8
Widow(er)	117	2.8	758	78.1	875	17.1

Table 8. Age distribution of household heads by sex in selected freshwater fisheries provinces of Cambodia.

Age group	Male		Female		Total	
	No.	%	No.	%	No.	%
Phnom Penh	227	100.0	45	100.0	272	100.0
16-20 yrs						
21-30 yrs	14	6.2	2	4.4	16	5.9
31-40 yrs	65	28.6	6	13.3	71	26.1
41-50 yrs	84	37.0	14	31.1	98	36.0
51-60 yrs	48	21.1	13	28.9	61	22.4
> 61 yrs	16	7.0	10	22.2	26	9.6
Kandal	893	100.0	244	100.0	1 137	100.0
16-20 yrs	1	0.1			1	0.1
21-30 yrs	53	5.9	7	2.9	60	5.3
31-40 yrs	215	24.1	68	27.9	283	24.9
41-50 yrs	326	36.5	71	29.1	397	34.9
51-60 yrs	235	26.3	42	17.2	277	24.4
> 61 yrs	63	7.1	56	23.0	119	10.5
Kampong Cham	986	100.0	178	100.0	1 164	100.0
16-20 yrs	4	0.4	1	0.6	5	0.4
21-30 yrs	131	13.3	8	4.5	139	11.9
31-40 yrs	246	24.9	38	21.3	284	24.4
41-50 yrs	251	25.5	55	30.9	306	26.3
51-60 yrs	167	16.9	41	23.0	208	17.9
> 61 yrs	187	19.0	35	19.7	222	19.1
Kampong Chhnang	380	100.0	90	100.0	470	100.0
16-20 yrs	1	0.3			1	0.2
21-30 yrs	49	12.9	7	7.8	56	11.9
31-40 yrs	108	28.4	16	17.8	124	26.4
41-50 yrs	113	29.7	26	28.9	139	29.6
51-60 yrs	56	14.7	18	20.0	74	15.7
> 61 yrs	53	13.9	23	25.6	76	16.2
Siem Reap	365	100.0	158	100.0	523	100.0
16-20 yrs						
21-30 yrs	64	17.5	22	13.9	86	16.4
31-40 yrs	142	38.9	36	22.8	178	34.0
41-50 yrs	80	21.9	39	24.7	119	22.8
51-60 yrs	40	11.0	29	18.4	69	13.2
> 61 yrs	39	10.7	32	20.3	71	13.6
Pursat	379	100.0	78	100.0	457	100.0
16-20 yrs	1	0.3			1	0.2
21-30 yrs	72	19.0	3	3.8	75	16.4
31-40 yrs	142	37.5	13	16.7	155	33.9
41-50 yrs	97	25.6	21	26.9	118	25.8
51-60 yrs	39	10.3	20	25.6	59	12.9
> 61 yrs	28	7.4	21	26.9	49	10.7

Table 8. (Continued)

Age group	Male		Female		Total	
	No.	%	No.	%	No.	%
Battambang	526	100.0	97	100.0	623	100.0
16-20 yrs	4	0.8			4	0.6
21-30 yrs	75	14.3	4	4.1	79	12.7
31-40 yrs	165	31.4	17	17.5	182	29.2
41-50 yrs	141	26.8	29	29.9	170	27.3
51-60 yrs	104	19.8	18	18.6	122	19.6
> 61 yrs	37	7.0	29	29.9	66	10.6
Kampong Thom	390	100.0	81	100.0	471	100.0
16-20 yrs	1	0.3			1	0.2
21-30 yrs	65	16.7	1	1.2	66	14.0
31-40 yrs	146	37.4	12	14.8	158	33.5
41-50 yrs	90	23.1	20	24.7	110	23.4
51-60 yrs	54	13.8	24	29.6	78	16.6
> 61 yrs	34	8.7	24	29.6	58	12.3
Total	4 146	100.0	971	100.0	5 117	100.0
16-20 yrs	12	0.3	1	0.1	13	0.3
21-30 yrs	523	12.6	54	5.6	577	11.3
31-40 yrs	1 229	29.6	206	21.2	1 435	28.0
41-50 yrs	1 182	28.5	275	28.3	1 457	28.5
51-60 yrs	743	17.9	205	21.1	948	18.5
> 61 yrs	457	11.0	230	23.7	687	13.4

Table 9. Age distribution of household members by sex in selected freshwater fisheries provinces of Cambodia.

Age group	Male		Female		Total	
	No.	%	No.	%	No.	%
Phnom Penh	669	100.0	855	100.0	1 524	100.0
<10 yrs	293	43.8	283	33.1	576	37.8
11-20 yrs	231	34.5	234	27.4	465	30.5
21-30 yrs	98	14.6	90	10.5	188	12.3
31-40 yrs	30	4.5	110	12.9	140	9.2
41-60 yrs	11	1.6	110	12.9	121	7.9
> 61 yrs	6	0.9	28	3.3	34	2.2
Ave. family size	3.3		3.3		6.6	
Kandal	2 220	100.0	3 070	100.0	5 290	100.0
<10 yrs	737	33.2	854	27.8	1 591	30.1
11-20 yrs	1 095	49.3	923	30.1	2 018	38.1
21-30 yrs	333	15.0	429	14.0	762	14.4
31-40 yrs	40	1.8	451	14.7	491	9.3
41-60 yrs	9	0.4	367	12.0	376	7.1
> 61 yrs	6	0.3	46	1.5	52	1.0
Ave. family size	2.7		2.9		5.7	
Kampong Cham	2 362	100.0	3 344	100.0	5 706	100.0
<10 yrs	994	42.1	969	29.0	1 963	34.4
11-20 yrs	860	36.4	896	26.8	1 756	30.8
21-30 yrs	385	16.3	543	16.2	928	16.3
31-40 yrs	56	2.4	350	10.5	406	7.1
41-60 yrs	23	1.0	418	12.5	441	7.7
> 61 yrs	44	1.9	168	5.0	212	3.7
Ave. family size	2.9		3.0		5.9	
Kampong Chhnang	980	99.5	1 326	100.0	2 306	100.0
<10 yrs	550	56.1	509	38.4	1 059	45.9
11-20 yrs	337	34.4	314	23.7	651	28.2
21-30 yrs	63	6.4	161	12.1	224	9.7
31-40 yrs	15	1.5	151	11.4	166	7.2
41-60 yrs	6	0.6	154	11.6	160	6.9
> 61 yrs	9	0.4	37	2.8	46	2.0
Ave. family size	2.9		3.0		5.9	
Siem Reap	1 162	100.0	1 533	100.0	2 695	100.0
<10 yrs	631	54.3	622	40.6	1 253	46.5
11-20 yrs	360	31.0	366	23.9	726	26.9
21-30 yrs	109	9.4	212	13.8	321	11.9
31-40 yrs	31	2.7	168	11.0	199	7.4
41-60 yrs	12	1.0	128	8.3	140	5.2
> 61 yrs	19	1.6	37	2.4	56	2.1
Ave. family size	2.9		3.2		6.2	
Pursat	898	100.0	1 307	100.0	2 205	100.0
<10 yrs	460	51.2	494	37.8	954	43.3
11-20 yrs	298	33.2	304	23.3	602	27.3
21-30 yrs	101	11.2	160	12.2	261	11.8
31-40 yrs	23	2.6	181	13.8	204	9.3
41-60 yrs	6	0.7	136	10.4	142	6.4
> 61 yrs	10	1.1	32	2.4	42	1.9
Ave. family size	2.8		3.0		5.8	

Table 9. (Continued)

Age group	Male		Female		Total	
	No.	%	No.	%	No.	%
Battambang	1 340	100.0	1 783	100.0	3 123	100.0
<10 yrs	591	44.1	565	31.7	1 156	37.0
11-20 yrs	497	37.1	491	27.5	988	31.6
21-30 yrs	187	14.0	285	16.0	472	15.1
31-40 yrs	33	2.5	225	12.6	258	8.3
41-60 yrs	23	1.7	186	10.4	209	6.7
> 61 yrs	9	0.7	31	1.7	40	1.3
Ave. family size	3.0		3.0		6.0	
Kampong Thom	943	100.0	1 354	100.0	2 297	100.0
<10 yrs	482	51.1	507	37.4	989	43.1
11-20 yrs	331	35.1	321	23.7	652	28.4
21-30 yrs	82	8.7	195	14.4	277	12.1
31-40 yrs	23	2.4	171	12.6	194	8.4
41-60 yrs	16	1.7	115	8.5	131	5.7
> 61 yrs	9	1.0	45	3.3	54	2.4
Ave. family size	2.8		3.0		5.9	
Total	10 574	100.0	14 572	100.0	25 146	100.0
<10 yrs	4 738	44.8	4 803	33.0	9 541	37.9
11-20 yrs	4 009	37.9	3 849	26.4	7 858	31.2
21-30 yrs	1 358	12.8	2 075	14.2	3 433	13.7
31-40 yrs	251	2.4	1 807	12.4	2 058	8.2
41-60 yrs	106	1.0	1 614	11.1	1 720	6.8
> 61 yrs	112	1.1	424	2.9	536	2.1
Ave. family size	2.9		3.0		5.9	

Table 10. Educational status of household heads by sex in selected freshwater fisheries provinces of Cambodia.

Education	Male		Female		Total	
	No.	%	No.	%	No.	%
Phnom Penh	227	100.0	45	100.0	272	100.0
No education	41	18.1	22	48.9	63	23.2
Can read only	68	30.0	9	20.0	77	28.3
Primary	90	39.6	10	22.2	100	36.8
Secondary	22	9.7	4	8.9	26	9.6
Higher secondary	5	2.2			5	1.8
Bachelor's & above	1	0.4			1	0.4
Kandal	893	100.0	244	100.0	1 137	100.0
No education	72	8.1	65	26.6	137	12.0
Can read only	259	29.0	92	37.7	351	30.9
Primary	289	32.4	68	27.9	357	31.4
Secondary	237	26.5	15	6.1	252	22.2
Higher secondary	34	3.8	2	0.8	36	3.2
Bachelor's & above	2	0.2	2	0.8	4	0.4
Kampong Cham	986	100.0	178	100.0	1 164	100.0
No education	176	17.8	83	46.6	259	22.3
Can read only	317	32.2	39	21.9	356	30.6
Primary	324	32.9	45	25.3	369	31.7
Secondary	132	13.4	5	2.8	137	11.8
Higher secondary	35	3.5	5	2.8	40	3.4
Bachelor's & above	2	0.2	1	0.6	3	0.3
Kampong Chhnang	380	100.0	90	100.0	470	100.0
No education	59	15.5	36	40.0	95	20.2
Can read only	130	34.2	34	37.8	164	34.9
Primary	135	35.5	13	14.4	148	31.5
Secondary	52	13.7	6	6.7	58	12.3
Higher secondary	4	1.1	1	1.1	5	1.1
Bachelor's & above						
Siem Reap	365	100.0	158	100.0	523	100.0
No education	63	17.3	75	47.5	138	26.4
Can read only	226	61.9	73	46.2	299	57.2
Primary	46	12.6	6	3.8	52	9.9
Secondary	27	7.4	2	1.3	29	5.5
Higher secondary	3	0.8	2	1.3	5	1.0
Bachelor's & above						
Pursat	379	100.0	78	100.0	457	100.0
No education	54	14.2	41	52.6	95	20.8
Can read only	120	31.7	27	34.6	147	32.2
Primary	114	30.1	8	10.3	122	26.7
Secondary	62	16.4	2	2.6	64	14.0
Higher secondary	29	7.7			29	6.3
Bachelor's & above						
Battambang	526	100.0	97	100.0	623	100.0
No education	84	16.0	41	42.3	125	20.1
Can read only	278	52.9	35	36.1	313	50.2
Primary	106	20.2	14	14.4	120	19.3
Secondary	46	8.7	6	6.2	52	8.3
Higher secondary	12	2.3	1	1.0	13	2.1
Bachelor's & above						

Table 10. (Continued)

Education	Male		Female		Total	
	No.	%	No.	%	No.	%
Kampong Thom	390	100.0	81	100.0	471	100.0
No education	74	19.0	52	64.2	126	26.8
Can read only	131	33.6	17	21.0	148	31.4
Primary	107	27.4	11	13.6	118	25.1
Secondary	67	17.2	1	1.2	68	14.4
Higher secondary	10	2.6			10	2.1
Bachelor's & above	1	0.3			1	0.2
Total	4 146	100.0	971	100.0	5 117	100.0
No education	623	15.0	415	42.7	1 038	20.3
Can read only	1 529	36.9	326	33.6	1 855	36.3
Primary	1 211	29.2	175	18.0	1 386	27.1
Secondary	645	15.6	41	4.2	686	13.4
Higher secondary	132	3.2	11	1.1	143	2.8
Bachelor's & above	6	0.1	3	0.3	9	0.2

Table 11. Educational status of household members (7 years and above) in selected freshwater fisheries provinces of Cambodia.

Education	Male		Female		Total	
	No.	%	No.	%	No.	%
Phnom Penh	531	100.0	665	100.0	1 196	100.0
No education	95	17.9	198	29.8	293	24.5
Can read only	31	5.8	82	12.3	113	9.4
Primary	264	49.7	289	43.5	553	46.2
Secondary	107	20.2	71	10.7	178	14.9
Higher secondary	29	5.5	25	3.8	54	4.5
Bachelor's & above	5	0.9	0	0.0	5	0.4
Kandal	2 041	100.0	2 858	100.0	4 899	100.0
No education	240	11.8	495	17.3	735	15.0
Can read only	147	7.2	764	26.7	911	18.6
Primary	829	40.6	1 022	35.8	1 851	37.8
Secondary	684	33.5	535	18.7	1 219	24.9
Higher secondary	135	6.6	36	1.3	171	3.5
Bachelor's & above	6	0.3	6	0.2	12	0.2
Kampong Cham	1 851	100.0	2 772	100.0	4 623	100.0
No education	327	17.7	797	28.8	1 124	24.3
Can read only	180	9.7	445	16.1	625	13.5
Primary	914	49.4	1 160	41.8	2 074	44.9
Secondary	350	18.9	318	11.5	668	14.4
Higher secondary	65	3.5	48	1.7	113	2.4
Bachelor's & above	15	0.8	4	0.1	19	0.4
Kampong Chhnang	652	100.0	997	100.0	1 649	100.0
No education	121	18.6	225	22.6	346	21.0
Can read only	81	12.4	236	23.7	317	19.2
Primary	380	58.3	453	45.4	833	50.5
Secondary	60	9.2	81	8.1	141	8.6
Higher secondary	9	1.4	2	0.2	11	0.7
Bachelor's & above	1	0.2	0	0.0	1	0.1
Siem Reap	1 152	100.0	1 494	100.0	2 646	100.0
No education	530	46.0	672	45.0	1 202	45.4
Can read only	151	13.1	329	22.0	480	18.1
Primary	399	34.6	425	28.4	824	31.1
Secondary	56	4.9	59	3.9	115	4.3
Higher secondary	14	1.2	8	0.5	22	0.8
Bachelor's & above	2	0.2	1	0.1	3	0.1
Pursat	599	100.0	955	100.0	1 554	100.0
No education	125	20.9	301	31.5	426	27.4
Can read only	33	5.5	194	20.3	227	14.6
Primary	356	59.4	387	40.5	743	47.8
Secondary	72	12.0	64	6.7	136	8.8
Higher secondary	12	2.0	9	0.9	21	1.4
Bachelor's & above	1	0.2	0	0.0	1	0.1

Table 11. (Continued)

Education	Male		Female		Total	
	No.	%	No.	%	No.	%
Battambang	989	100.0	1 418	100.0	2 407	100.0
No education	109	11.0	305	21.5	414	17.2
Can read only	91	9.2	375	26.4	466	19.4
Primary	603	61.0	609	42.9	1 212	50.4
Secondary	158	16.0	117	8.3	275	11.4
Higher secondary	25	2.5	11	0.8	36	1.5
Bachelor's & above	3	0.3	1	0.1	4	0.2
Kampong Thom	669	100.0	1 008	100.0	1 677	100.0
No education	112	16.7	218	21.6	330	19.7
Can read only	84	12.6	258	25.6	342	20.4
Primary	374	55.9	427	42.4	801	47.8
Secondary	72	10.8	93	9.2	165	9.8
Higher secondary	19	2.8	11	1.1	30	1.8
Bachelor's & above	8	1.2	1	0.1	9	0.5
Total	8 484	100.0	12 167	100.0	20 651	100.0
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	43.1
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's & above	41	0.5	13	0.1	54	0.3

Table 12. Percentage of households involved in fishing and non-fishing activities in selected freshwater fisheries provinces of Cambodia.

Occupation	Phnom Penh (n=272)					Kandal (n=1 137)					Kampong Cham (n=1 164)				
	Total*	Household heads			Household members	Total	Household heads			Household members	Total	Household heads			Household members
		Primary	Second-ary	Tertiary			Primary	Second-ary	Tertiary			Primary	Second-ary	Tertiary	
Fishing	40.07	21.32	13.97	2.57	27.94	31.40	1.93	24.89	2.81	11.35	38.23	7.73	16.84	8.76	24.83
Fish selling	20.22	1.10	2.94	1.47	18.01	1.50	0.62	0.53	0.09	1.14	12.46	0.86	2.06	1.29	11.08
Fish culture	6.99	0.37	2.94	3.31	2.94	0.35	0.09	0.18	0.00	0.35	2.41	0.00	0.77	0.60	1.80
Fish processing	2.21	0.00	0.37	0.00	2.21	1.76	0.26	0.88	0.00	1.50	3.78	0.09	0.17	0.17	3.69
Fishing net/trap/ gear making	1.84	0.37	1.10	0.37	0.74	0.09	0.00	0.00	0.09	0.00	2.15	0.17	0.60	0.00	1.98
Bamboo and cane making	1.10	0.00	0.00	0.37	1.10	0.09	0.00	0.00	0.00	0.09	1.20	0.17	0.52	0.17	0.52
Farming	42.28	34.19	5.88	0.37	34.19	76.96	71.42	9.15	0.18	78.28	77.66	64.26	8.16	1.46	73.11
Daily labor	13.60	5.15	0.37	0.37	8.46	12.75	2.37	6.77	1.14	5.54	30.58	5.15	15.98	4.73	21.48
Housekeeping	90.81	6.99	7.72	0.74	86.03	69.83	1.58	9.32	5.10	70.10	79.47	0.34	2.32	1.72	86.43
Cloth handicraft	0.00	0.00	0.00	0.00	0.00	7.39	3.08	1.93	0.00	6.86	5.41	0.69	2.06	0.52	5.24
Petty trading/ shopkeeping	37.13	7.72	2.57	0.00	34.56	24.19	5.80	11.96	1.50	21.81	28.09	5.67	12.46	2.84	28.44
Business	0.00	0.00	0.00	0.00	0.00	2.46	0.79	1.06	0.18	1.41	5.76	1.63	3.18	0.60	2.66
Government service	17.28	7.72	0.74	0.37	9.93	8.80	6.60	0.53	0.00	3.08	7.22	3.87	1.29	0.17	4.47
Ciclo/rowing boat service	0.74	0.74	0.00	0.00	0.00	0.26	0.09	0.00	0.09	0.18	0.52	0.26	0.17	0.00	0.26
Motor taxi/boat driving	12.13	5.15	2.21	0.74	5.15	2.90	1.67	1.14	0.18	0.26	2.84	0.77	1.37	0.52	1.20
Private/NGO service	1.10	0.00	0.00	0.00	1.10	0.97	0.35	0.26	0.00	0.44	0.26	0.09	0.00	0.09	0.26
Money lending	0.37	0.00	0.00	0.00	0.37	0.26	0.18	0.00	0.00	0.09	0.34	0.00	0.17	0.09	0.09
Others	18.75	9.19	5.15	1.47	5.51	8.18	3.17	2.11	0.97	2.11	19.42	8.25	9.02	2.41	9.79

* This total indicates the number of total households whose head or a member is involved in a particular activity. Hence, it may not equal the row total.

Table 12. (Continued).

Occupation	Kampong Chhnang (n=470)					Siem Reap (n=523)					Pursat (n=457)				
	Household heads					Household heads					Household heads				
	Total*	Primary	Secondary	Tertiary	Household members	Total	Primary	Secondary	Tertiary	Household members	Total	Primary	Secondary	Tertiary	Household members
Fishing	54.26	20.21	21.70	9.15	47.45	39.77	6.12	27.72	4.97	10.90	48.36	6.35	18.60	13.79	32.82
Fish selling	5.11	1.91	1.28	0.43	3.83	6.88	1.15	2.68	1.53	4.59	22.32	0.44	3.94	5.03	21.88
Fish culture	3.20	0.00	1.71	1.28	2.35	3.82	0.19	2.87	0.57	2.49	0.22	0.00	0.22	0.00	0.22
Fish processing	6.81	0.64	2.55	2.13	5.96	4.02	0.19	1.15	1.91	3.06	4.16	0.44	0.00	0.00	4.16
Fishing net/trap/ gear making	0.64	0.00	0.00	0.43	0.21	0.76	0.00	0.19	0.19	0.76	0.22	0.22	0.00	0.00	0.22
Bamboo and cane making	2.56	0.21	1.49	0.43	1.28	5.74	0.38	2.68	1.34	3.63	2.19	0	1.75	0.22	1.32
Farming	69.79	58.94	8.72	0.43	64.26	87.38	80.31	5.35	0.19	77.44	82.71	77.02	3.50	0.00	81.62
Daily labor	10.85	2.13	6.17	1.49	8.09	15.68	2.10	8.80	1.91	6.31	18.38	1.31	11.38	2.19	10.94
Housekeeping	46.17	0.43	7.23	12.55	22.55	65.58	0.19	2.10	0.96	63.48	83.37	1.09	5.69	9.85	82.49
Cloth handicraft	5.74	0.00	3.62	1.06	4.04	1.72	0.00	1.15	0.19	1.15	0.44	0.00	0.00	0.00	0.44
Petty trading/ shopkeeping	17.23	4.26	7.45	1.70	13.40	15.30	2.10	9.94	2.49	7.84	15.54	0.66	9.41	0.88	13.79
Business	6.60	2.55	1.91	0.85	3.62	2.10	0.38	0.96	0.57	1.15	7.88	0.66	3.72	1.75	3.50
Government service	11.70	4.47	4.26	0.43	8.94	8.80	3.44	3.63	1.53	2.29	9.19	0.44	5.03	0.22	0.66
Ciclo/rowing boat service	0.21	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Motor taxi/boat driving	3.40	1.49	1.49	0.00	2.34	2.49	0.96	1.15	0.00	0.38	1.53	0.44	0.66	0.22	0.00
Private/NGO service	0.21	0.21	0.00	0.00	0.21	0.38	0.19	0.19	0.00	0.19	0.66	0.22	0.44	0.00	0.00
Money lending	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.22	0.00	0.22
Others	20.64	1.70	11.70	5.32	11.91	11.66	2.29	7.07	1.72	4.02	17.94	0.66	13.57	2.84	6.13

Table 12. (Continued)

Occupation	Battambang (n=623)					Kampong Thom (n=471)					Total (n=5 117)				
	Household heads				Household members	Household heads				Household members	Household heads				
	Total*	Primary	Second-ary	Tertiary		Total	Primary	Second-ary	Tertiary		Total	Primary	Second-ary	Tertiary	Household members
Fishing	46.39	16.37	22.15	7.54	40.61	21.44	10.40	10.40	0.64	17.41	38.79	9.32	20.25	6.31	24.60
Fish selling	30.66	0.48	2.09	0.80	30.50	21.87	0.42	2.12	3.82	21.02	13.15	0.82	1.93	1.49	12.16
Fish culture	6.10	0.16	4.82	0.80	5.78	5.10	0.21	3.40	0.85	5.10	2.91	0.10	1.74	0.66	2.31
Fish processing	34.99	0.16	0.64	0.64	34.83	21.44	0.00	1.06	1.06	21.44	9.01	0.21	0.78	0.61	8.74
Fishing net/trap/ gear making	0.80	0.00	0.16	0.16	0.64	0.00	0.00	0.00	0.00	0.00	0.86	0.08	0.23	0.12	0.68
Bamboo and cane making	1.44	0	0	0.16	1.44	5.1	0	1.06	3.61	4.88	2.01	0.1	0.78	0.61	1.43
Farming	77.69	70.79	5.62	0.96	74.48	81.53	73.89	6.37	0.42	80.04	76.71	68.22	7.13	0.61	73.38
Daily labor	23.92	2.09	15.57	3.85	11.08	34.82	3.82	24.84	0.42	12.74	20.87	3.11	11.82	2.38	11.45
Housekeeping	90.53	0.16	21.51	12.20	86.68	95.97	0.00	5.73	7.22	85.14	76.67	0.98	7.54	5.84	74.13
Cloth handicraft	1.28	0.00	0.00	0.00	1.28	1.06	0.21	0.00	0.00	1.06	3.87	0.86	1.35	0.23	3.50
Petty trading/ shopkeeping	19.74	4.17	10.43	4.01	16.69	30.36	2.97	14.01	0.00	28.45	23.47	4.44	10.73	1.95	21.07
Business	2.41	0.32	0.96	0.16	1.93	3.40	1.70	1.27	0.00	0.64	3.99	1.07	1.80	0.49	1.97
Government service	8.35	4.33	2.73	0.80	0.80	7.22	5.52	0.00	0.00	2.76	8.99	4.56	1.99	0.37	3.69
Ciclo/rowing boat service	0.32	0.00	0.16	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.27	0.12	0.06	0.02	0.14
Motor taxi/boat driving	3.69	0.32	2.09	1.28	0.16	3.40	0.64	2.55	0.21	0.00	3.40	1.19	1.49	0.39	0.88
Private/NGO service	0.64	0.16	0.16	0.16	0.16	0.21	0.21	0.00	0.00	0.00	0.55	0.20	0.14	0.04	0.27
Money lending	0.48	0.00	0.16	0.16	0.48	0.00	0.00	0.00	0.00	0.00	0.25	0.04	0.08	0.04	0.14
Others	8.19	0.48	4.33	3.05	1.12	0.00	0.00	0.00	0.00	0.00	12.92	3.58	6.33	2.13	5.18

Table 13. Percentage of fishing and non-fishing households reporting type of dwelling by province.

Dwelling type	Total no. of households		Phnom Penh		Kandal		Kampong Cham		Kampong Chhnang	
	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing
N	1 836	3 273	103	169	337	799	388	775	240	229
Built on land	87.4	98.0	97.1	100.0	99.1	99.6	97.4	98.7	75.4	96.5
Villa, flat building type	1.5	1.5	2.9	6.5	1.8	1.4	0.8	1.4	4.2	3.9
Wooden house on land	35.2	46.3	60.2	69.2	39.8	50.9	62.1	63.1	17.1	25.8
Bamboo & cane w/ palm leaves or thatched roof house on land	50.6	50.2	34.0	24.3	57.6	47.3	34.5	34.2	54.2	66.8
Built on boat	3.8	1.3	1.0	0.0	0.9	0.4	2.3	1.3	4.2	0.9
Small floating house on boat made of cane/bamboo and palm leaves	3.1	0.8			0.9	0.4	1.3	0.3	3.8	0.4
Big floating house on boat made of wood and tin roof	0.7	0.5	1.0				1.0	1.0	0.4	0.4
Built over water	8.8	0.6	1.9	0.0			0.3	0.0	20.4	2.6
With fish cage	0.8	0.2	1.0				0.3		2.1	0.4
- Floating house on water made of wood and tin roof, w/ fish cage below	0.3	0.1							0.8	
- Floating house on water made of cane/bamboo & palm leaf roof, w/ fish cage below	0.4	0.1	1.0				0.3		1.3	0.4
Without fish cage	8.1	0.5	1.0						18.3	2.2
- Floating house on water made of wood and tin roof, w/o fish cage below	1.8	0.2							2.9	1.7
- Floating house on water made of cane/bamboo & palm leaf roof, w/o fish cage below	6.3	0.3	1.0						15.4	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 13. (Continued)

Dwelling type	Total no. of households		Phnom Penh		Kandal		Kampong Cham	
	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing
N	203	316	177	280	287	336	101	368
Built on land	90.1	99.4	89.8	92.1	67.9	96.7	73.3	98.1
Villa, flat building type	0.5	0.6			1.7	1.5		
Wooden house on land	25.6	26.9	16.4	22.1	25.8	49.1	13.9	35.9
Bamboo & cane w/ palm leaves of thatched roof house on land	64.0	71.8	73.4	70.0	40.4	46.1	59.4	62.2
Built on boat	0.5	0.0	7.3	5.7	9.1	2.4	6.9	0.8
Small floating house on boat made of cane/bamboo and palm leaves	0.5	0.0	6.8	5.0	7.0	0.6	6.9	0.8
Big floating house on boat made of wood and tin roof			0.6	0.7	2.1	1.8		
Built over water	9.4	0.6	2.8	2.1	23.0	0.9	19.8	1.1
With fish cage			2.3	1.8	1.0			
- Floating house on water made of wood and tin roof, w/ fish cage below			0.6	0.7	1.0			
- Floating house on water made of cane/bamboo & palm leaf roof, w/ fish cage below			1.7	1.1				
Without fish cage	9.4	0.6	0.6	0.4	22.0	0.9	19.8	1.1
- Floating house on water made of wood and tin roof, w/o fish cage below	0.0	0.3			8.0	0.3	3.0	0.0
- Floating house on water made of cane/bamboo & palm leaf roof, w/o fish cage below	9.4	0.3	0.6	0.4	13.9	0.6	16.8	1.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 14. Sources of drinking water of households by fishing and non-fishing households in selected freshwater fisheries provinces of Cambodia (% of households).

Water source	Total Households			Phnom Penh			Kandal			Kampong Cham			Kampong Chhnang		
	Total	Fishing	Non-fishing	Total	Fishing	Non-fishing	Total	Fishing	Non-fishing	Total	Fishing	Non-fishing	Total	Fishing	Non-fishing
N	5 109	1 835	3 274	272	102	170	1 137	337	800	1 163	388	775	469	240	229
River/lake/ pond water	57.3	62.3	54.5	77.2	79.4	75.9	74.0	78.6	72.0	47.9	48.5	47.6	49.9	68.8	30.1
Bottled water	0.3	0.3	0.3	0.4	0.0	0.6	0.4	0.6	0.4	0.3	0.3	0.4	0.2	0.4	0.0
Own deepwell	7.1	5.7	7.9	1.8	1.0	2.4	0.3	0.6	0.1	4.1	2.6	4.9	9.4	5.0	14.0
Own hand tubewell	2.1	2.1	2.1	1.5	2.0	1.2	1.4	0.9	1.6	1.7	1.0	2.1	4.1	2.9	5.2
Jointly owned Deepwell	14.9	15.7	14.4	3.7	2.0	4.7	2.9	1.5	3.5	26.2	29.9	24.4	6.4	3.8	9.2
Commune deepwell/ hand tubewell	3.5	3.4	3.6	2.6	2.0	2.9	0.3	0.3	0.3	1.6	1.8	1.5	13.0	11.7	14.4
Neighbor's well	9.7	6.6	11.4	7.7	7.8	7.6	0.8	0.3	1.0	17.4	15.5	18.3	16.6	7.1	26.6
Others	5.0	3.8	5.7	5.1	5.9	4.7	20.0	17.2	21.1	0.7	0.5	0.8	0.4	0.4	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 14. (Continued)

Water source	Siem Reap			Pursat			Battambang			Kampong Thom		
	Total	Fishing	Non- fishing	Total	Fishing	Non- fishing	Total	Fishing	Non- fishing	Total	Fishing	Non- fishing
N	519	203	316	457	177	280	623	287	336	469	101	368
River/lake/Pond water	24.7	28.6	22.2	50.3	52.5	48.9	81.1	76.7	84.8	47.8	73.3	40.8
Bottled water	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.6	0.2	0.0	0.3
Own deepwell	21.8	20.7	22.5	5.9	8.5	4.3	2.4	2.4	2.4	23.2	14.9	25.5
Own hand tubewell	3.1	3.0	3.2	0.0	0.0	0.0	5.0	5.9	4.2	0.4	0.0	0.5
Jointly owned deepwell	32.8	34.5	31.6	29.8	29.4	30.0	6.3	10.5	2.7	7.9	5.0	8.7
Commune deepwell/ hand tubewell	5.0	3.9	5.7	9.0	4.5	11.8	3.9	3.1	4.5	0.0	0.0	0.0
Neighbor's well	12.7	9.4	14.9	4.8	5.1	4.6	0.3	0.3	0.3	20.5	6.9	24.2
Others	0.0	0.0	0.0	0.2	0.0	0.4	0.6	0.7	0.6	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 15. Type and average area of land owned by fishing and non-fishing households in selected freshwater fisheries provinces of Cambodia.

Province Name	No. of households ^a		Homestead		Agricultural		Orchard m ²		Fishpond		Others		Total	
	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing	Fishing	Non-fishing
Phnom Penh	97	163	787.7	538.0	3 617.6	2 068.3	133.4	150.1	50.5	2.8	30.9	122.7	4 618.7	2 881.9
Kandal	333	798	697.0	699.3	2 565.2	3 501.2	709.6	1 097.8	1.3		1.9	3.3	3 975.1	5 306.0
Kampong Cham	384	775	564.2	668.8	4 547.7	4 312.3	15.8	26.0	0.2	0.4	0.0	10.1	5 127.9	5 017.6
Kampong Chhnang	199	223	1 261.0	1 346.6	7 586.4	5 531.0	324.6	287.1	0.0	5.6	60.0	17.9	9 232.0	7 188.1
Siem Reap	201	317	1 219.5	1 174.9	10 192.4	9 375.4	69.8	60.8	2.0	0.7	0.0		11 502.7	10 611.9
Pursat	153	249	956.6	1 323.4	13 499.8	15 267.9	406.2	527.2	0.0		13.1	12.5	14 875.7	17 131.0
Battambang	287	336	910.6	1 349.9	13 457.1	18 400.9	129.1	343.9	0.7	1.5	0.0	12.5	14 497.5	20 140.8
Kompong Thom	84	365	740.2	912.1	6 504.8	9 144.9	83.3	245.1	0.0		0.0		7 328.3	10 302.1
Total	1 738	3 226	857.9	915.4	7 470.6	7 439.6	253.3	415.6	3.5	0.9	10.1	16.3	8 595.8	8 791.1

^a Number accounts for households who own one or more of the listed type of land.

Table 16. Likely effects of restrictions on use of common property resources on the livelihood opportunities (% of households), by province, Cambodia.

Province	No effect		Little effect		Significant effect		Total number of households	
	No.	%	No.	%	No.	%	No.	%
Phnom Penh	64	28.4	120	53.3	41	18.2	225	100.0
Kandal	40	4.2	482	50.3	437	45.6	959	100.0
Kampong Cham	379	33.2	453	39.7	309	27.1	1141	100.0
Kampong Chhnang	62	17.4	164	45.9	131	36.7	357	100.0
Siem Reap	32	8.2	305	78.2	53	13.6	390	100.0
Pursat	38	8.8	254	58.9	139	32.3	431	100.0
Battambang	56	9.0	428	69.0	136	21.9	620	100.0
Kampong Thom	121	33.4	204	56.4	37	10.2	362	100.0
Total	792	17.7	2410	53.7	1283	28.6	4485	100.0

Table 17. Percentage of households reporting trend of availability of products and benefits from common resources, by province, Cambodia.

Province	Inundated Forest				Big River/Lakes				Flooded Ricefield			
	Increasing	Decreasing	Constant	N	Increasing	Decreasing	Constant	N	Increasing	Decreasing	Constant	N
Phnom Penh	2.8	95.8	1.4	212	24.8	69.7	5.5	218	20.5	50.0	29.5	176
Kandal	3.4	88.4	8.2	925	2.6	58.9	38.5	426	4.9	67.9	27.2	224
Kampong Cham	1.8	97.9	0.4	1 083	8.8	78.2	13.1	1 141	86.5	9.1	4.5	1 100
K. Chhnang	0.7	92.9	6.4	282	1.3	96.2	2.5	238		100.0		98
Siem Reap	0.5	99.2	0.3	395		100.0		204	2.9	78.8	18.2	307
Pursat		100.0		245		100.0		255	23.4	8.2	68.5	428
Battambang		99.8	0.2	465	0.2	99.1	0.7	447	0.0	98.7	1.3	396
Kampong Thom	1.7	90.1	8.3	121		93.1	6.9	116	0.4	33.9	65.7	248
Total	1.7%	95.3%	3.0%	3 728	5.6%	83.2%	11.2%	3 045	37.2%	40.0%	22.8%	2 977

Table 17. (Continued)

Province	Bank/bed of river/lake				Irrigation canals/dike/small river			
	Increasing	Decreasing	Constant	N	Increasing	Decreasing	Constant	N
Phnom Penh	15.4	23.1	61.5	13	8.6	6.9	84.5	58
Kandal		53.6	46.4	69		46.7	53.3	45
Kampong Cham	18.8	66.2	15.0	1 099	9.1	70.3	20.6	767
K. Chhnang	0.8	98.4	0.8	125		93.8	6.3	16
Siem Reap	0.8	97.7	1.5	132		78.6	21.4	84
Pursat		99.4	0.6	311		64.0	36.0	261
Battambang	0.8	98.7	0.5	613	37.4	59.2	3.3	601
Kompong Thom		83.1	16.9	148	3.2	34.0	62.8	94
Total	8.6%	81.9%	9.5%	2 510	15.7%	62.3%	22.0%	1 926

Table 18. Percentage of households reporting their number one reason for the decrease of availability of products and benefits derived from common property resources, by province, Cambodia, 1995-96.

Reasons	Phnom Penh		Kandal		Kampong Cham		Kampong Chhnang		Siem Reap		Pursat		Battambang		Kampong Thom		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Overexploitation	87	60.0	694	78.1	891	78.7	217	64.8	369	92.3	221	59.1	546	90.2	109	52.4	3 134	76.7
Change of environment	13	9.0	14	1.6	34	3.0	37	11.0	7	1.8	137	36.6	7	1.2	42	20.2	291	7.1
Destruction of habitat	21	14.5	22	2.5	20	1.8	5	1.5	14	3.5	14	3.7	1	0.2	20	9.6	117	2.9
Increasing population pressure	5	3.4	145	16.3	25	2.2	46	13.7	6	1.5	1	0.3	50	8.3	6	2.9	284	6.9
Use of pesticides/poison in the ricefield	3	2.1	2	0.2	10	0.9	3	0.9	2	0.5	1	0.3	1	0.2	16	7.7	38	0.9
Conversion of common land/ water into crop land for private use	13	9.0	9	1.0	150	13.3	24	7.2	2	0.5					15	7.2	214	5.2
Other reasons	3	2.1	3	0.3	2	0.2	2	0.6									10	0.2
Total	145	100.0	889	100.0	1 132	100.0	334	99.7	400	100.0	374	100.0	605	100.0	208	100.0	4 088	100.0

Table 19. Restrictions governing accessibility and use of common property resources for non-fisheries (% of households), Cambodia, 1995-96.

Province	Need to buy licenses		Need permission from head of commune		Pay lease for seasonal use of land & water		Free and unlimited access		Total number households	
	N*	%	N*	%	N*	%	N*	%	N*	%
Phnom Penh					1	0.5	212	99.5	213	100.0
Kandal	61	18.2	35	10.4	16	4.8	224	66.7	336	100.0
Kampong Cham	18	1.8	15	1.5	32	3.2	928	93.5	993	100.0
Kampong Chhnang	14	7.7	10	5.5	4	2.2	155	84.7	183	100.0
Siem Reap	1	0.3	2	0.5	1	0.3	373	98.9	377	100.0
Pursat										
Battambang	1	0.3	2	0.6		0.0	344	99.1	347	100.0
Kampong Thom	30	7.5	25	6.2	5	1.2	341	85.0	401	100.0
Total	125	4.4	89	3.1	59	2.1	2 577	90.4	2 850	100.0

* N is the total number of reporting cases.

Table 20. Average annual consumption of various processed fish per household in selected fisheries provinces of Cambodia.

Province	Fishpaste (kg)		Fermented fish (kg)		Fish sauce (liters)		Smoked fish(kg)		Salted dried fish(kg)	
	Total no. of households	Ave. consumption.	Total no. of households	Ave. consumption	Total no. of households	Ave. consumption	Total no. of households	Ave. consumption.	Total no. of households	Ave. consumption.
Phnom Penh	260	21.0	220	19.2	265	40.3	130	18.7	195	14.7
Kandal	1 122	16.0	833	14.1	1 129	31.7	802	14.5	833	20.9
Kampong Cham	1 131	21.6	1 041	28.7	1 141	37.3	379	21.2	439	17.9
Kampong Chhnang	449	39.1	161	27.2	366	52.9	176	31.7	252	31.5
Siem Reap	474	14.7	264	14.7	412	17.9	402	25.5	424	27.3
Pursat	455	28.7	137	14.2	453	28.1	337	16.2	354	21.2
Battambang	621	18.0	319	13.1	565	24.2	563	18.6	594	19.2
Kampong Thom	463	28.5	400	19.8	468	35.8	435	21.7	434	23.8
Total	4 975	22.1	3 375	20.2	4 799	33.1	3 224	19.6	3 525	21.8

Table 21. Number of households engaged in large scale fishing in various fishing grounds in selected freshwater fisheries provinces of Cambodia, 1995-96.

Province name	Commune	Total	Riverine/ lake lot	Fish dai lot	River bank lot	Shrimp dai lot	Others
Phnom Penh	1	2	1	1			
	2	0					
	3	0					
	4	1	1				
Total		3	2	1	0	0	0
Kampong Cham	1	1			1		
	2	0					
	3	1			1		
	4	0					
	5	1	1				
	6	3	3				
	7	0					
	8	2			2		
	9	0					
	10	0					
	11	1	1				
	12	0					
	13	0					
	14	0					
	15	0					
	16	0					
	17	0					
	18	0					
Total		9	5	0	4	0	0
Kampong Chhnang	1	0					
	2	0					
	3	0					
	4	0					
	5	0					
	6	0					
	7	0					
	7	0					
	8	0					
	9	0					
10	5	4				1	
Total		5	4	0	0	0	1
Kampong Thom	1	0					
	2	0					
	3	0					
	4	2	2				
	5	0					
	6	0					
	7	0					
	8	0					
Total		2	2	0	0	0	0
Grand total		19	13	1	4	0	1

Note: For Kandal, Siem Reap, Pursat, and Battambang, no household is involved in large-scale fishing.

Table 22. Number of households engaged in middle-scale fishing in various fishing grounds in selected freshwater fisheries provinces of Cambodia, 1995-96.

Province name	Commune	Total	License holder (principal owner w/ one cosharer	License holder w/ more than one cosharer	License holder w/ no cosharer/ partner	Fishing as a cosharer w/another licensed fishermen	Others
Phnom Penh	1	19	2		10		7
	2	30			30		
	3	7	1		6		
	4	2	1		1		
Total		58	4	0	47	0	7
Kandal	2	1					1
	3	5			3		2
	6	2			1		1
Total		8	0	0	4	0	4
Kampong Cham	1	10	2	1	1		6
	2	36	13		4	4	15
	3	15	9		2	1	3
	4	3					3
	5	15	8		1		6
	6	0					
	8	2					2
	9	1				1	
	11	0					
	12	3					3
	13	3			1		2
	14	4		1			3
	15	19		7		4	8
	17	1				1	
18	5		4			1	
Total		117	44	1	14	6	52
Kampong Chhnang	2	9	8		1		
	3	2	1				1
	5	6	1				5
	6	1					1
	7	2		1			1
	8	8		1			7
	9	1					1
Total	10	39	21	1	1	0	16
Siem Reap	3	5	3	1		1	
Pursat	1	18	15		2		1
	3	5	5				
	4	6	2				4
	5	1	1				
Total		30	23	0	2	0	5
Battambang	7	15			15		
Kampong Thom	4	2		1		1	
	7	26	13		13		
Total		28	13	1	13	1	0
Grand Total		280	105	3	81	7	84

Table 23. Number of households engaged in family fishing in various fishing grounds during open season in selected freshwater fisheries provinces of Cambodia, 1995-96.

Province	Com- mune	Total N	Great Lake	Tonle Sap	Flooded ricefield	Mekong River	Bassac River	Small rivers/lakes	Inundated forest	Others
Phnom Penh	1	37		13	4			6	1	
	2	27			1			1	1	
	3	11			1			5		
	4	20			15			15	14	
Total		95	0	13	21	0	0	27	16	0
Kandal	1	8			1			7	1	
	2	6		2				2		
	3	8		3			1	4		
	4	11			3		2	10	4	
	5	14			2		7	5		
	6	5			1			3	2	
	7	13						10		
	8	14			5	1	1	5	5	
	9	14					2	9		
	10	59			24		1	58	26	
	11	1								
	12	27			1		1	26	1	
	13	44			9		4	42	6	
	14	12				9	4	1		
	15	34					1	32		
	16	6			1		1	4	1	
	17	39			9			29	18	
	18	25			20	1	5	21		
Total		340	0	5	76	11	30	268	64	0
Kampong Cham	1	42		3	16	24	2	24	9	
	2	37			5	19		14	2	
	3	30		6	6	7		4	4	
	4	32		9		4	5	15		
	5	50		2	9	15		12	3	
	6	23		1	8	5		17	4	
	7	14			1			12	1	
	8	28		7	3	14	1	1		
	9	6			1	1		5	1	
	10	7		4		2	1	1		
	11	21			3			6		
	12	27		2	2	11	2	6		
	13	37		1	10			22	6	
	14	16		1			5	2		
	15	34			2	8		9		
	16	15				3		10	1	
	17	7				4	1			
	18	21		1	5	9		9	2	
Total		447	0	37	71	131	12	169	33	0

Table 23. (Continued)

Province	Com- mune	Total N	Great Lake	Tonle Sap	Flooded ricefield	Mekong River	Bassac River	Small rivers/lakes	Inundated forest	Others
K. Chhnang	1	8		1	4			5	1	
	2	37		30	10			10	10	
	3	17		9	2			9	4	
	4	16		14				7	2	
	5	25	4	20	6			1	11	
	6	18		12	2			14	8	
	7	33		26	8	1		22	8	
	8	39		12	15			25	8	
	9	18		2	2			16	8	
	10	46		24	9		2	13	7	
Total		257	4	150	58	1	2	122	67	0
Siem Reap	1	29	13	1	14		2	24	13	
	2	36	5		28			36	19	
	3	16	11		1			4	4	
	4	18	2	1	12			15	6	
	5	21	2	5	8			13	6	
	6	28		1	10	1	1	22	11	
	7	8			4			6	5	
	8	26			10		1	17	10	
	9	11		1	3			4	3	
	10	10		3	6		1	6	4	
Total		203	33	12	96	1	5	147	81	0
Pursat	1	23	2							
	2	25					2	18	8	
	3	23						13		
	4	45			2			31	5	
	5	46			3			42	16	
	6	31			11			29		
	7	45						24	1	
Total		238	2	0	16	0	2	157	30	0
Battambang	1	51			41			42	42	1
	2	6			6			1	2	
	3	41			39			21	37	
	4	15			1			15		
	5	26			1			25	3	
	6	20			13			19	13	
	7	85						81	79	
	8	43			40			41	21	
Total		287	0	0	141	0	0	245	197	1

Table 23. (Continued)

Province	Com- mune	Total N	Great Lake	Tonle Sap	Flooded ricefield	Mekong River	Bassac River	Small rivers/lakes	Inundated forest	Others
Kampong Thom	1	5	1					3		
	2	10	1		9			9	4	
	3	12	1		3		1	9	1	
	4	6			3			5	1	
	5	15			8			15	8	
	6	21	1		13			21	14	
	7	28	2					1	1	
	8	7			3			7		
Total		104	6	0	39	0	1	70	29	0
Grand Total		1 971	45	217	518	144	52	1205	517	1

Table 24. Number of households engaged in family fishing in various fishing grounds during the closed season in selected fisheries provinces of Cambodia, 1995-96.

Province	Com- mune	Total N	Great Lake	Tonle Sap	Flooded ricefield	Mekong River	Bassac River	Small rivers/lakes	Inundated forest	Others
Phnom Penh	1	37		16	21		3	16	11	
	2	27		12	1	6		1	1	
	3	11			4	2	1	2		1
	4	20			17			17	15	
Total		95	0	28	43	8	4	36	27	1
Kandal	1	8			1			8	1	
	2	6		2	1			3	1	
	3	8		1			1	3		
	4	11			2		1	9	4	
	5	14			3		6	6		
	6	5						1	1	
	7	13						10		
	8	14			5	1	1	6	6	
	9	14					2	9		
	10	59			23			58	25	
	11	1								
	12	27						26	1	
	13	44			7		4	37	5	
	14	12					9	3	1	
	15	34						1	32	
	16	6			1			1	4	1
	17	39							30	11
	18	25			17	1	4	21		
Total		340	0	3	60	11	24	264	56	0
Kampong Cham	1	42		1	22	20	2	20	11	
	2	37			8	12		17	7	
	3	30		3	10	9	1	8	3	
	4	32		7	3	2	7	15	2	
	5	50		1	13	23		19	4	
	6	23		1	12	4		21	6	
	7	14			2			13	1	
	8	28		6	5	13	1	6		
	9	6			2			2	1	
	10	7		2			1	1		
	11	21			9	1	1	17	1	
	12	27		3	2	6	1	8		

Table 24. (Continued)

Province	Com- mune	Total N	Great Lake	Tonle Sap	Flooded ricefield	Mekong River	Bassac River	Small rivers/lakes	Inundated forest	Others
	13	37			15			35	7	
	14	16		1	1	9		5		
	15	34		1	2	19	1	8	1	
	16	15			1	4		8	1	
	17	7			1	3	1	1		
	18	21		1	9	7		12	5	
Total		447	0	27	117	133	16	215	50	0
K. Chhnang	1	8		2	5			4	1	
	2	37		31	12			11	14	
	3	17		7	2			10	3	
	4	16		12	3			6	2	
	5	25	4	18	9			5	13	
	6	18		10	2			15	8	
	7	33		27	7			21	9	
	8	39		7	20			23	9	
	9	18		1	3			13	7	
	10	46		21	13		2	16	11	
Total		257	4	136	76	0	2	124	77	0
Siem Reap	1	29	10		15		2	16	9	
	2	36	4		32			31	20	
	3	16	14		1			5	12	
	4	18	1	2	11			12	9	
	5	21	1	3	7			6	4	
	6	28	1	1	19	1	1	18	17	
	7	8			6			4		
	8	26			4			1		
	9	11	1		5				3	
	10	10	3		7		1	3	3	
Total		203	35	6	107	1	4	93	80	0
Pursat	1	23	4		12			5	7	
	2	25			24		2	1	2	
	3	23			23			1	5	
	4	45			37			35	4	
	5	46			44			43	15	
	6	31			31			30		
	7	45			33			10		
Total		238	4	0	204	0	2	125	33	0

Table 24. (Continued)

Province	Com- mune	Total N	Great Lake	Tonle Sap	Flooded ricefield	Mekong River	Bassac River	Small rivers/lakes	Inundated forest	Others
Battambang	1	51			16			14	7	
	2	6			3			1	4	
	3	41			29			22	24	
	4	15			1			15		
	5	26			1			25	1	
	6	20			20			19	13	
	7	85						81	80	
	8	43			41			40	19	
Total		287	0	0	111	0	0	217	148	0
Kampong Thom	1	5	1					2		
	2	10	1		8			9	5	
	3	12	1		3		1	11	1	
	4	6			3			5	1	
	5	15			10			15	8	
	6	21	1		15			21	15	
	7	28	2					2	1	
	8	7			3			7		
Total		104	6	0	45	0	1	72	31	0
Grand Total		1 971	49	193	763	153	53	1 149	502	1

Table 25. Average number of the different types of gear/equipment used by households by type of fishing involvement in selected fisheries provinces of Cambodia, 1995-96.

Fishing involvement/type of gear/equipment	Phnom Penh		Kandal		Kampong Cham	
	No. of households	Ave. no. of gear/eqpt.	No. of households	Ave. no. of gear/eqpt.	No. of households	Ave. no. of gear/eqpt.*
Family fishing						
Open season (Oct 93-May 94)						
Harpooned gear	0	0	2	1.0	21	1.4
Bamboo/rattan/traps	4	5.5	43	25.7	60	6.8
Cast net	8	1.0	69	1.0	47	1.2
Scooping net (Thnong chnouk)	1	1.0	3	3.3	62	1.2
Gillnet (Mornng)	30	1.6	292	3.3	198	2.2
Small handled dragnet	8	1.0	5	1.0	3	1.0
Single hooked line	3	17.7	42	34.7	77	72.7
Others	1	2.0	56	13.2	7	1.2
Closed season (Jun-Sep 94)						
Harpooned gear	3	1.0	2	1.5	17	1.4
Bamboo/rattan/traps	9	8.4	38	22.2	73	6.7
Cast net	12	1.2	67	1.0	46	1.2
Scooping net (Thnong chnouk)	1	1.0	2	4.5	83	1.2
Gillnet (Mornng)	61	1.9	270	2.7	214	2.2
Small handled dragnet	13	7.7	6	2.8	2	1.0
Single hooked line	3	1.3	42	34.6	102	85.5
Others	1	2.0	53	13.7	2	1.5
Middle-scale fishing						
Bamboo fence trap (Lop norrav)	2	1.0				
Bamboo trap (Lop/sayoeun/pong/tom/trou)	3	5.3			1	2
Castnet (Sam nanh/chayra)	8	1.0	3	1.0	12	1.1
Scoop/lift net (Thnong/chhnouc/pruam/chourn)			1	2.0	6	1.0
Gillnet (Mogn)	49	4.8	13	4.7	79	3.2
Seine net (Uorn)	9	1.0	1	1.0	17	1.1
Dragged bag net (Neam)	8	1.5	1	1.0	2	1.0
River pelagic trawl (Manh)	0	0.0	0	0.0	6	1.0
Hook long lines (Santuch ro nornng)	5	1.0	5	1.6	13	4.2
Cast single hook-line (Santuch buos)						
Others (Kansom kompeus)	1	1.0			1	1.0
Large-scale fishing						
Arrow shaped bamboo fence trap (Nor rut chung)	0	0.0			0	0.0
Bamboo barage trap (Thnuos)	1	5.0			5	2.2
Set bag net (Dai)	1	1.0			0	0.0
Seine nets	1	1.0			7	1.3
Fish cage	0	0.0			1	2.0
Rowing boat	1	2.0			3	1.7
Engine boat	0	0.0			6	2.3
Others	0	0.0			0	0

* Average for those who own the gear.

Table 25. (Continued)

Fishing involvement/type of gear/equipment	Phnom Penh		Kandal		Kampong Cham	
	No. of households	Ave. no. of gear/eqpt.	No. of households	Ave. no. of gear/eqpt.	No. of households	Ave. no. of gear/eqpt.*
Family fishing						
Open season(Oct 93-May 94)						
Harpooned gear	2	30.0	13	3.8	3	1.0
Bamboo/rattan/traps	36	10.8	78	5.2	27	14.4
Cast net	18	1.2	81	1.1	123	1.0
Scooping net (Thnong chnouk)	3	2.0	10	1.9	3	1.0
Gillnet (Morng)	175	3.7	56	7.4	116	1.6
Small handled dragnet	0	0.0	4	1.0	1	2.0
Single hooked line	44	198.3	31	87.5	71	1.5
Others	2	1.0	2	0.5	4	1.0
Closed season (Jun-Sep 94)						
Harpooned gear	2	30.0	12	1.3	2	1.0
Bamboo/rattan/traps	34	14.3	59	5.0	118	5.7
Cast net	15	1.0	45	1.1	128	1.0
Scooping net (Thnong chnouk)	4	1.8	9	2.0	5	1.0
Gillnet (Morng)	168	3.2	68	6.9	123	1.6
Small handled dragnet	0	0	2	1.0	2	1.5
Single hooked line	46	187.8	47	70.1	76	1.5
Others	1	1.0	2	25.5	5	1.2
Middle-scale fishing						
Bamboo fence trap (Lop norrav)	1	4.0	2	1.0	1	1.0
Bamboo trap (Lop/sayoeun/pong/tom/trou)	2	4.5			3	14.0
					1	1.0
Castnet (Sam nanh/chayra)	2	1.0				
Scoop/lift net (Thnong/chhnouc/pruam/chourn)	2	0.0				
	2	1.0				
Gillnet (Mogn)	30	5.5	4	8.8	30	1.5
Seine net (Uorn)	4	1.5	3	1.0	1	2.0
Dragged bag net (Neam)	2	1.0				
River pelagic trawl (Manh)	0	0.0				
Hook long lines (Santuch norng)	9	1.8	2	1.5	6	3.2
Cast single hook-line (Santuch buos)	0	0.0				
Others	2	2.5			1	200.0
Large-scale fishing						
Arrow shaped bamboo fence trap (Nor rut chung)	1	1.0				
Bamboo barage trap (Thnuos)	5	3.2				
Set bag net (Dai)	3	2.3				
Seine nets	5	1.4				
Fish cage	5	2.0				
Rowing boat	5	5.4				
Engine boat	4	2.5				
Others	2	2.0				

* Average for those who own the gear.

Table 25. (Continued)

Fishing involvement/type of gear/equipment	Phnom Penh		Kandal		Kampong Cham	
	No. of households	Ave. no. of gear/eqpt.	No. of households	Ave. no. of gear/eqpt.	No. of households	Ave. no. of gear/eqpt.*
Family fishing						
Open season (Oct 93-May 94)						
Harpooned gear	27	1.2	8	1.4	76	2.5
Bamboo/rattan/traps	156	8.9	15	10.2	419	10.2
Cast net	176	1.1	11	1.1	533	1.1
Scooping net (Thnong chnouk)	9	1.0	1	1.0	92	1.3
Gillnet (Mornng)	164	3.5	63	3.0	1094	3.2
Small handled dragnet	2	2.0	2	1.0	17	1.2
Single hooked line	20	37.4	21	146.1	314	72.8
Others	41	2.2	0	0	116	7.7
Closed season (Jun-Sep 94)						
Harpooned gear	21	1.3	7	1.4	66	2.2
Bamboo/rattan/traps	134	9.1	16	9.1	481	8.8
Cast net	141	1.1	10	1.0	464	1.1
Scooping net (Thnong chnouk)	10	1.0	1	1.0	115	1.3
Gillnet (Mornng)	146	3.7	63	3.0	1113	2.9
Small handled dragnet	2	1.5	2	1.0	16	2.1
Single hooked line	15	42.5	20	128.5	361	72.1
Others	31	2.3			98	8.8
Middle-scale fishing						
Bamboo fence trap (Lop norrav)	4	1.0	12	4.7	23	5.5
Bamboo trap (Lop/sayoeun/pong/tom/trou)	2	4.5	1	10.0	12	5.7
Castnet (Sam nanh/chayra)			1	1.0	27	1.8
Scoop/lift net (Thnong/chhnouc/pruam/chourn)	6	1.2			13	1.2
Gillnet (Mogn)	1	2.0	22	4.7	228	3.9
Seine net (Uorn)	4	1.0	2	1.0	41	1.2
Dragged bag net (Neam)					13	1.3
River pelagic trawl (Manh)	1	1.0			7	1.0
Hook long lines (Santuch ro norng)			1	2.0	41	12.2
Cast single hook-line (Santuch buos)			2	3.5	2	5.0
Others					5	41.4
Large-scale fishing						
Arrow shaped bamboo fence trap (Nor rut chung)			0	0	1	1
Bamboo barage trap (Thnuos)			1	1.0	12	2.8
Set bag net (Dai)			0	0.0	4	2.0
Seine nets			2	1.0	15	1.3
Fish cage			0	0.0	6	2.0
Rowing boat			2	1.5	11	3.4
Engine boat			1	1.0	11	2.3
Others			0	0	2	2.0

* Average for those who own the gear.

Table 26. Different forms of product when fish is sold by the households (% ave.), Cambodia, 1995-96.

Province	Fresh		Salt dried		Smoked		Fish paste (prahoc)		Fermented		Dried for non-human consumption		Others	
	No.	% Ave.	No.	% Ave.	No.	% Ave.	No.	% Ave.	No.	% Ave.	No.	% Ave.	No.	% Ave.
Phnom Penh	92	96.62	0	0.00	1	50.00	0	0.00	1	70.00	1	30.00	0	0.00
Kandal	288	87.71	26	15.58	26	16.35	37	19.00	55	20.18	4	22.50	36	29.17
Kampong Cham	260	94.66	3	11.67	2	22.5	78	19.15	24	14.17	3	16.67	1	70.00
Kampong Chhnang	184	79.31	24	36.04	38	60.92	39	25.77	12	32.25	2	7.50	2	17.5
Siem Reap	140	88.51	19	29.9	12	45.67	14	25.07	7	18.57	0	0.00	1	1.00
Pursat	151	78.71	3	21.67	45	12.11	59	18.39	66	31.82	0	0.00	0	0.00
Battambang	238	66.39	59	20.42	15	20.13	130	17.54	157	28.71	4	10.00	0	0.00
Kampong Thom	98	79.69	17	41.77	16	19.38	22	19.55	43	19.67	1	100.00	0	0.00
Total	1 451	83.68	151	2 5.52	155	29.29	379	19.39	365	26.00	15	21.67	40	28.9

Table 27. Number and percentage of households practicing different kinds of preservation techniques to keep fish fresh before selling in selected fisheries provinces of Cambodia, 1995-96.

Province	Total no. of households	Iced		Salted		Transported live in cage		Transported live in boat		Others	
		No.	%	No.	%	No.	%	No.	%	No.	%
Phnom Penh	75		0.0		0.0	13	17.3	50	66.7	12	16.0
Kandal	200		0.0	17	8.5	23	11.5	149	74.5	11	5.5
Kampong Cham	42		0.0		0.0	5	11.9	27	64.3	10	23.8
Kampong Chhnang	25		0.0	1	4.0	4	16.0	19	76.0	1	4.0
Siem Reap	0		0.0		0.0		0.0		0.0		0.0
Pursat	140	3	2.1	23	16.4	6	4.3	21	15.0	87	62.1
Battambang	160	3	1.9	8	5.0		0.0	104	65.0	45	28.1
Kompong Thom	113		0.0	33	29.2	1	0.9	78	69.0	1	0.9
Total	755	6	0.8	82	10.9	52	6.9	448	59.3	167	22.1

Table 28. Number and percentage of households who are aware of the different regulations imposed by the government to ensure sustainable production in selected fisheries provinces of Cambodia, 1995-96.

Regulation	Phnom Penh		Kandal		Kampong Cham		K. Chhnang		Siem Reap		Pursat		Battambang		Kampong Thom		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Ban on fishing during June-Sep. except for family fishing	216	79.4	691	60.8	1 152	99.0	227	48.3	363	69.4	306	67.0	428	68.7	110	23.4	3 493	68.3
2. Ban on catching/selling/transporting fingerlings/ eggs of certain species	203	74.6	692	60.9	1 152	99.0	232	49.4	363	69.4	306	67.0	419	67.3	116	24.6	3 483	68.1
3. Prohibition on using larger size net and gear than allowed for family fishing w/o license from authority	198	72.8	692	60.9	1 155	99.2	228	48.5	363	69.4	306	67.0	374	60.0	77	16.3	3 393	66.3
4. Ban on use of small mesh net (<1.5 cm)	196	72.1	730	64.2	1 152	99.0	232	49.4	369	70.6	306	67.0	365	58.6	86	18.3	3 436	67.1
5. Ban of catching endangered species (catlo carpio; Giant Mekong-catfish)	201	73.9	730	64.2	1 154	99.1	230	48.9	368	70.4	306	67.0	385	61.8	111	23.6	3 485	68.1
6. Ban on putting brush shelter (SAMRAS)	207	76.1	730	64.2	1 153	99.1	232	49.4	368	70.4	306	67.0	394	63.2	115	24.4	3 505	68.5
7. Ban on use of eletricity/explosives/poisons to catch fish	208	76.5	730	64.2	1 156	99.3	232	49.4	368	70.4	306	67.0	434	69.7	115	24.4	3 549	69.4
8. Ban on cutting/burning of inundated forest	213	78.3	730	64.2	1 155	99.2	231	49.1	369	70.6	306	67.0	433	69.5	116	24.6	3 553	69.4
9. Ban on construction of dikes across small lake/river/stream for catching fish/ag'l needs	202	74.3	729	64.1	1 155	99.2	228	48.5	369	70.6	306	67.0	404	64.8	106	22.5	3 499	68.4
10. Ban on pumping, bailing or drying any part of the fishery domain	190	69.9	726	63.9	1 154	99.1	232	49.4	368	70.4	305	66.7	404	64.8	104	22.1	3 483	68.1
11. Others	15	5.5	3	0.3	6	0.5			2	0.4	182	39.8	294	47.2	65	13.8	568	11.1
Total no. of households	272	100.0	1 137	100.0	1 164	100.0	470	100.0	523	100.0	457	100.0	623	100.0	471	100.0	5 117	100.0

Table 29. Number and percentage of households stating different opinions to the kind of management/access system that will lead to better protection of the fisheries in selected fisheries provinces of Cambodia, 1995-96.

Opinion	Phnom Penh		Kandal		Kampong Cham		K. Chhnang		Siem Reap		Pursat		Battambang		Kampong Thom		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Stricter enforcement measures by the Dept of Fisheries	70	31.5	838	89.4	1 072	94.7	89	38.2	237	45.4	88	28.8	403	75.2	55	54.5	2 852	71.5
2. Establish permanent equitable fishing rights for all fishing dependent families in the commune	16	7.2	11	1.2	11	1.0	13	5.6	31	5.9	0	0.0	28	5.2	5	5.0	115	2.9
3. Transfer management responsibility to the commune authority	13	5.9	23	2.5	5	0.4	21	9.0	0	0.0	0	0.0	3	0.6	0	0.0	65	1.6
4. Develop and increase awareness about the necessity of fisheries conservation through education, training extension and motivation	51	23.0	38	4.1	28	2.5	43	18.5	7	1.3	218	71.2	100	18.7	18	17.8	503	12.6
5. Create supplementary production, income and employment opportunities for fishing dependent families	72	32.4	27	2.9	16	1.4	64	27.5	247	47.3	0	0.0	0	0.0	23	22.8	449	11.3
6. Others	0	0.0	0	0.0	0	0.0	3	1.3	0	0.0	0	0.0	2	0.4	0	0.0	5	0.1
Total	222	100.0	937	100.0	1 132	100.0	233	100.0	522	100.0	306	100.0	536	100.0	101	100.0	3 989	100.0

Appendix B

Questionnaire on the
Household Socioeconomic Survey

Management of Freshwater Capture Fisheries of Cambodia, Phase I

**HOUSEHOLD SOCIOECONOMIC SURVEY IN FISHING COMMUNITIES
QUESTIONNAIRE**

SECTION I

Col. Nos.

1. Identity of the household
 CODE: [Cols. 1=Province, 2=District, 3-4=Serial No. of Commune and 5-7=Serial No. of Family] 1-7
2. Name of the household head:
 Village: _____ Commune: _____
 District: _____ Province: _____
3. Name of the respondent and relationship with household heads:

SECTION II. TYPOLOGY OF HOUSEHOLD AND FARM

- A. Profile of the household head:
1. Age: 8-9
2. Marital status:
 Code:[Married=1, Single=2, Divorced=3 and Widow(er)=4] 10
3. Sex: (Male=1, Female=2) 11
4. Place of birth:
 Code: [Same Commune=1; Different commune, but same province=2; Different province=3; Others _____=4] 12
5. If place of birth is different from the present commune, how many years ago did you settle in this commune? 13-14
6. Ethnic origin:
 Khmer=1, Chinese=2, Vietnamese=3
 Cham=4, Others (specify) _____=5 15
7. Education 16
 [No education=1, Can read only=2, Primary=3
 Secondary=4, Higher Secondary=5, Bachelor's and above=6]

8. If no education, why? □ **Col. Nos.**
 [No school in the area=1, Poverty=2, Education not needed=3,
 No desire=4, Others (specify)_____ =5] 17

9. Occupation

a. Principal Occupation: □ □ [18-19]

b. Secondary Occupation □ □ □ □ [20-21; 22-23]
 (record two important ones):

Occupation code for questions 8 and 9:

Fishing	01	Fish selling	02
Fish Culture	03	Fish processing	04
Fishing net/gear/trap making	05	Bamboo and cane works	06
Farming	07	Daily labor	08
Housekeeping	09	Cloth handicraft	10
Petty trading/Shopkeeping	11	Business	12
Govt. service	13	Circle/rowing boat driving	14
Motor taxi/cart/boat driving	15	Private/NGO service	16
Money lending	17	Others (specify)_____	18

B. Profile of the members of the household:

10. Sex and age distribution of the members:

<i>Age Group</i>	<i>Male (no.)</i>	<i>Female (no.)</i>	
Up to 10 years	□	□	[24][30]
11-20 years	□	□	[25][31]
21-30 years	□	□	[26][32]
31-40 years	□	□	[27][33]
41-60 years	□	□	[28][34]
Above 60 years	□	□	[29][35]

11. Level of education of the eligible members of the household (7 years and above)

<i>Level of education</i>	<i>Male (no.)</i>	<i>Female (no.)</i>	
No education	□	□	[36][42]
Can read only	□	□	[37][43]
Primary	□	□	[38][44]
Secondary	□	□	[39][45]
Higher secondary	□	□	[40][46]
Bachelor's and above	□	□	[41][47]

12. How many members of your family are schooling at present?

<i>Level of education</i>	<i>Male (no.)</i>	<i>Female (no.)</i>	Col. Nos.
Primary	<input type="text"/>	<input type="text"/>	[47][53]
Secondary	<input type="text"/>	<input type="text"/>	[49][54]
Higher secondary	<input type="text"/>	<input type="text"/>	[50][55]
Bachelor's and above	<input type="text"/>	<input type="text"/>	[51][56]
Others (specify) _____	<input type="text"/>	<input type="text"/>	[52][57]

13. Involvement in production and income generating activities by the members of the household (age between 10 and 64 years):

<i>Occupation</i>	<i>Male (no.)</i>	<i>Female (no.)</i>
Fishing	<input type="text"/>	<input type="text"/>
Fish selling	<input type="text"/>	<input type="text"/>
Fish culture	<input type="text"/>	<input type="text"/>
Fish processing	<input type="text"/>	<input type="text"/>
Fishing net/gear making	<input type="text"/>	<input type="text"/>
Bamboo and cane works	<input type="text"/>	<input type="text"/>
Farming	<input type="text"/>	<input type="text"/>
Daily labor	<input type="text"/>	<input type="text"/>
Housekeeping	<input type="text"/>	<input type="text"/>
Cloth Handicraft	<input type="text"/>	<input type="text"/>
Petty trading/shopkeeping	<input type="text"/>	<input type="text"/>
Business	<input type="text"/>	<input type="text"/>
Govt. Service	<input type="text"/>	<input type="text"/>
Motor taxi/cart/engine boat driving	<input type="text"/>	<input type="text"/>
Ciclo/rowing boat/driving	<input type="text"/>	<input type="text"/>
Private/NGO service	<input type="text"/>	<input type="text"/>
Moneylending	<input type="text"/>	<input type="text"/>
Others (specify) _____	<input type="text"/>	<input type="text"/>

C. If fishing is one of your occupations please answer the following:

14. Have you inherited fishing as an occupation? (yes=1, no=0) [94]

15. If the answer above is no, how long (years) ago did you take up this occupation? [95-96]

Col. Nos.

16. Why did you choose catching fish in preference to any other work?

Hereditary profession

[97]

More profitable source of income

[98]

Only alternative available for food and income

[99]

Part of traditional food collection during season for family food supply

[100]

Cheaper to catch fish than buying from market

[01]/2

Others (specify)

[02]

SECTION III: HOUSING AND BASIC FACILITIES

1. Type of dwelling

a. Villa, flat, building type

= 1

[03]

b. Wooden house on land

= 2

c. Bamboo and cane with palm leaves or thatched roof house on land

= 3

d. Small floating house on boat made of cane/bamboo and palm leaf

= 4

e. Big floating house on boat made of wood and tin roof

= 5

f. Floating house on water made of wood and tin roof with fish cage below

= 6

g. Floating house on water made of wood and tin roof without fish cage below

= 7

h. Floating house on water made of cane/bamboo and palm leaf roof, with cage below

= 8

i. Floating house on water made of cane/bamboo and palm leaf roof without cage below

= 9

2. Area of the dwelling house (m²)

[04-06]

3. How many years ago did you build/rebuild your house?

[07-09]

4. What is the average annual maintenance and repair cost of your house ('000 riel)?

[10-13]

5. Is the space in your house adequate for your family? [yes=1, no=0]

[14]

6. What is the type of your latrine? Col. Nos. [15]
- Bamboo/palm leaf made open latrine on/above the ground = 1
 Wooden compartment, cement/brick-made sealed latrine with no flushing (manual watering) = 2
 Sanitary (modern) latrine with flushing = 3
 No proper latrine = 4
 Others = 5
7. What water do you usually drink? [16]
- River/lake/pond water = 1
 Bottled water = 2
 Own deepwell = 3
 Own hand tubewell = 4
 Jointly owned deepwell = 5
 Commune deep well/hand tubewell = 6
 Neighbor's well = 7
 Others = 8
8. Do you use purifier/boil water before drinking? [17]
 [yes=1, no=0]
9. Where do you usually go when you or any member of your family have(has) major sickness? [18]
- Code:
 go to a private quack = 1 go to government hospital = 2
 go to NGO hospital = 3 private clinic = 4
 others = 5
10. How far (km) is the nearest hospital from your home? [19-20]
11. Is there electricity in your village? [yes=1, no=0] [21]
12. Do you have electricity in your house? [yes=1, no=0] [22]
13. If yes, what is the source of power? [23]
- generator = 1
 supplied by the electricity department = 2
 supplied by private electricity generating company = 3
 others = 4

SECTION IV. OWNERSHIP OF LAND, LIVESTOCK AND TREES

Col. Nos.

1. Land owned:

Type of land

Area (m²)

- | | | |
|--|----------------------|---------|
| a) homestead (include dwelling house and pond) | <input type="text"/> | [24-27] |
| b) agricultural land | <input type="text"/> | [28-32] |
| c) orchard | <input type="text"/> | [33-37] |
| d) fish pond outside homestead | <input type="text"/> | [38-40] |
| e) others (specify) _____ | <input type="text"/> | [41-44] |

2. Do you have fish pond in your homestead? [yes=1, no=0] [45]

3. If you have fish pond(s) in your homestead what is the size (m²)? [46-49]

4. Land currently under use by the household

Type of Land

- | | | |
|----------------------|----------------------|---------|
| a) Agricultural land | <input type="text"/> | [50-54] |
| b) orchard | <input type="text"/> | [55-59] |
| c) fish pond | <input type="text"/> | [60-62] |
| d) others | <input type="text"/> | [63-66] |

5. Leased in and leased out land

- | | | |
|--------------------------------------|----------------------|---------|
| a) leased in land | <input type="text"/> | [67-70] |
| b) leased out land (m ²) | <input type="text"/> | [71-74] |

6. Do you have a trap-pond(s)/ditch within your ricefield? [yes=1, no=0] [75]

7. Do you raise fish in cage(s) [yes=1, no=0] [76]

8. Livestock holdings:

Type of Livestock

No.

Approx. value ('000 riel)

- | | | | |
|------------------------|----------------------|----------------------|----------------|
| a) Bullock/buffalo/cow | <input type="text"/> | <input type="text"/> | [77-78][79-83] |
| b) Calves/sheep/goat | <input type="text"/> | <input type="text"/> | [84-85][86-89] |

c) Chicken/duck/pigeon	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	[90-82][93-96]
d) Pig	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	[97-98][99-02/3]
e) Others	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	[03-04][05-08]

9. (Big trees (in homestead/orchard/ricefield))

Type of Tree	No.	Approx. value ('000 riel)	
a) Mango	<input type="text"/>	<input type="text"/>	[09-11][12-15]
b) Jackfruit	<input type="text"/>	<input type="text"/>	[16-18][19-22]
c) Coconut	<input type="text"/>	<input type="text"/>	[23-25][26-29]
d) Palm tree	<input type="text"/>	<input type="text"/>	[30-32][33-36]
e) Betel nut	<input type="text"/>	<input type="text"/>	[37-39][40-43]
f) Bamboo thicket	<input type="text"/>	<input type="text"/>	[44-46][47-50]
g) Longan	<input type="text"/>	<input type="text"/>	[51-53][54-57]
h) Others	<input type="text"/>	<input type="text"/>	[58-60][61-64]

SECTION V: ACCESS TO COMMON PROPERTY RESOURCES

1. Do you have access to common property resources located within/outside your commune? [65]
 [yes=1, no=0]

2. If yes, what type of common property resources?

a) inundated forest		<input type="checkbox"/>	[66]
b) big river/lakes	<input type="checkbox"/>	<input type="checkbox"/>	[67]
c) flooded ricefield	<input type="checkbox"/>	<input type="checkbox"/>	[68]
d) bank/bed of rivers/lake	<input type="checkbox"/>	<input type="checkbox"/>	[69]
e) irrigation canals/dike/small river	<input type="checkbox"/>	<input type="checkbox"/>	[70]
f) others	<input type="checkbox"/>	<input type="checkbox"/>	[71]

3. What kind of product and benefits do you get from these common property resources?

	Inundated forest (a)	River/lake (b)	Flooded riceland (c)	River bank (d)	Irrigation canals/dike (e)	Others (f)	
a. Firewood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[72-77]
b. Grass/fodder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[78-83]
c. Bamboo/canes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[84-89]
d. Fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[90-95]
e. Wild animals/birds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[96-01/04]
f. Irrigation water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[02-07]
g. Transportation facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[08-13]
h. Cow/buffalo grazing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[14-19]
i. Land for vegetables collection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[20-25]
j. Fruits/vegetables collection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[26-31]
k. Snails/crab collection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[32-37]
l. Materials for mat making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[38-43]
m. Duck grazing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[44-49]
n. Fish-cage culture facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[50-55]
o. Others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[56-61]

4. How large is the area of common property resources within your commune to which you or your family go for the above products and benefits?

	Area (ha)				
a. Inundated forest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[62-65]
b. Big river/lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[66-69]
c. Flooded ricefield	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[70-73]
d. River/lake banks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[74-77]
e. Irrigation canal/dyke/small rivers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[78-81]
f. Others (specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[82-85]

5. What portion (%) of the families in your commune depend on these common property resources like you?

<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------

6. If access to the above common property resources become restricted, how will it affect your livelihood opportunities? [88]
- "No effect," because current benefits are very small = 1
 - Will affect only little, but can easily manage without these = 2
 - Will significantly affect the livelihood, because alternatives are limited = 3
 - Others = 4

7. What has been the trend of availability of products and benefits from the common property resources in recent years (last 10 years)?

[increasing = 1; decreasing = 2 remained constant = 3]

- a. Inundated forest [89]
- b. Big river/lake [90]
- c. Flooded ricefield [91]
- d. River/lake banks [92]
- e. Irrigation canal/dike/small rivers [93]
- f. Others (specify) _____ [94]

8. If the availability of products and benefits from common property resources for your family are decreasing over time, what are the main reasons? [rank in order of importance, if applicable; put zero otherwise]

- a. Overexploitation [95]
- b. Change of environment [96]
- c. Destruction of habitat (e.g., loss of inundated forest) [97]
- d. Increasing pressure of population in the commune [98]
- e. Use of pesticides/poisons in ricefields [99]
- f. Conversion of common land/waters into crop lands for private use [100]
- g. Others (specify) _____ [01/5]

9. What kind of regulations or restrictions do you need to follow to access and use the common property resources (mentioned in question 2 above) for non-fishery purposes? [if applicable put 1; zero otherwise]

- a. Need to buy licenses for cutting wood and bamboo
- b. Need permission from head of commune
- c. Pay lease for seasonal use of land and water
- d. Free and unlimited access
- e. Others (specify) _____

VI. OWNERSHIP OF ASSET AND PROFESSIONAL EQUIPMENT

1. Household durable assets

	No.	Age	Present value (‘000 riel)	
a. TV	<input type="text"/>	<input type="text"/>	<input type="text"/>	[07][08-09][10-13]
b. Radio	<input type="text"/>	<input type="text"/>	<input type="text"/>	[14][15-16][17-20]
c. Radio cassette player	<input type="text"/>	<input type="text"/>	<input type="text"/>	[21][22-23][24-27]
d. Sewing machine	<input type="text"/>	<input type="text"/>	<input type="text"/>	[28][29-30][31-34]
e. Bicycle	<input type="text"/>	<input type="text"/>	<input type="text"/>	[35][36-37][38-41]
f. Motorbike	<input type="text"/>	<input type="text"/>	<input type="text"/>	[42][43-44][45-48]
g. Boat	<input type="text"/>	<input type="text"/>	<input type="text"/>	[49][50-51][52-55]
h. Engine boat	<input type="text"/>	<input type="text"/>	<input type="text"/>	[56][57-58][59-62]
i. Generator	<input type="text"/>	<input type="text"/>	<input type="text"/>	[63][64-65][66-69]
j. Battery	<input type="text"/>	<input type="text"/>	<input type="text"/>	[70][71-72][73-76]
k. Deepwell	<input type="text"/>	<input type="text"/>	<input type="text"/>	[77][78-79][80-83]
l. Hand tubewell	<input type="text"/>	<input type="text"/>	<input type="text"/>	[84][85-86][87-90]
m. Hand phone	<input type="text"/>	<input type="text"/>	<input type="text"/>	[91][92-93][94-97]
n. Clock	<input type="text"/>	<input type="text"/>	<input type="text"/>	[98][99-100][01-04/8]
o. Others (_____)	<input type="text"/>	<input type="text"/>	<input type="text"/>	[05][06-07][08-11]

2. Furniture

	No.	Age	Present value (‘000 riel)	
a. Table	<input type="text"/>	<input type="text"/>	<input type="text"/>	[12][13-14][15-17]
b. Chair	<input type="text"/>	<input type="text"/>	<input type="text"/>	[18][19-20][21-23]
c. Sofa set	<input type="text"/>	<input type="text"/>	<input type="text"/>	[24][25-26][27-29]
d. Cupboards	<input type="text"/>	<input type="text"/>	<input type="text"/>	[30][31-32][33-35]
e. Bed	<input type="text"/>	<input type="text"/>	<input type="text"/>	[36][37-38][39-41]
f. Others (_____)	<input type="text"/>	<input type="text"/>	<input type="text"/>	[42][43-44][45-47]

3. Fishing Equipment (Type and size of gear owned by the family):

Type of fishing equipment	No.	Age	Present value ('000 riel)	
a. Harpoon	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[48][49-50][51-53]
b. Bamboo/rattan traps	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[54][55-56][57-59]
c. Castnet (samnah)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[60][61-62][63-65]
d. Scoop/liftnet	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[66][67-68][69-71]
e. Gillnet (morng)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[72][73-74][75-77]
f. Seine/drag net (uorn/neam/anh chourn)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[78][79-80][81-83]
g. River pelagic trawl (magn)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[84][85-86][87-89]
h. Hooked line (santouch)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[90][91-92][93-95]
i. Bamboo barrage (thnos)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[96][97-98][99-01/7]
j. Arrow-fence (nor rut chung)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[02][03-04][05-07]
k. fish bagnet (dai tray)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[08][09-10][11-13]
l. shrimp bagnet (dai Bangkok)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[14][15-16][17-19]
m. Others (_____)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[20][21-22][23-25]
	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	

4. Fish Processing Equipment

	No.	Age	Present value ('000 riel)	
a. Barrel (thung tram)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[26][27-28][29-31]
b. Freezing barrel	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[32][33-34][35-37]
c. Smoke griller	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[38][39-40][41-43]
d. Jar	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[44][45-46][47-49]
e. Others	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[50][51-52][53-55]

5. Farm Equipment

(i) Traditional Equipment

	No.	Age	Present value ('000 riel)	
a. Plough	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[56][57-58][59-61]
b. Ox-cart	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[62][63-64][65-38]
c. Water wheel	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[69][70-71][72-74]
d. Palm sugar pan	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[75][76-77][78-80]
e. Tobacco kiln	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	[81][82-83][84-88]
f. Others (_____)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[89][90-91][92-95]

(ii) Modern Equipment

	No.	Age	Present value ('000 riel)	
a. Tractor	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	[96][97-98][99-03/8]
b. Power tiller	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	[04][05-06][07-10]
c. Mechanical thresher	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	[11][12-13][14-17]
d. Low lift pump	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	[18][19-20][21-23]
e. Rice mill	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	[24][25-26][27-31]
f. Others (_____)	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	[32][33-34][35-38]

6. Other Professional Equipment

	No.	Age	Present value ('000 riel)	
a. Brick kiln	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	[39][40-41][42-46]
b. Handicraft	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	[47][48-49][50-53]
c. Miscellaneous	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	[54][55-56][57-60]

PART 2

SECTION VII. PRODUCTION AND INCOME DURING THE YEAR 1994

A. Production from Private Property

1. Homestead land and water

	<i>Quantity produced</i>	<i>Quantity sold</i>	<i>Price/unit ('000 riel)</i>
(i) Fruits			
a. Mango (dozens)			
b. Banana (bunches)			
c. Coconut (no.)			
d. Pineapple (dozens)			
e. Jackfruit (no.)			
f. Papaya (no.)			
g. Sapotila (kg.)			
h. Longan (kg.)			
i. Others (specify) _____			

	<i>Quantity produced</i>	<i>Quantity sold</i>	<i>Price/unit ('000 riel)</i>
(ii) Poultry/Livestock			
a. Chicken/duck (no.)			
b. Eggs (dozens)			
c. Sheep/goat (no.)			
d. Pig (no.)			
e. Piglets (no.)			
f. Cow/buffalo (no.)			
g. Calves (no.)			
h. Others (specify) _____			

	<i>Quantity produced</i>	<i>Quantity sold</i>	<i>Price/unit ('000 riel)</i>
(iii) Pond/cage culture			
a. Fish (kg)			

2. Agricultural land:

	<i>Area (m²)</i>	<i>Production (kg)</i>	<i>Total value ('000 riel)</i>
(i) Cereals			
a. Rice			
b. Corn			
c. Bean			
d. Peanut			
e. Soybean			
f. Others			

	<i>Area (m²)</i>	<i>Production (kg)</i>	<i>Total value ('000 riel)</i>
(i) <i>Vegetables/fruits</i>			
a. Potato (kg)			
b. Tomato (kg)			
c. Water melon (no.)			
d. Beet/raddish (kg)			
e. Gourd/pumpkin/squash (dozens)			
f. Cucumber			
g. Sugarcane (no.)			
h. Others _____			

3. Palm products

	<i>Quantity produced</i>	<i>Quantity sold</i>	<i>Price/unit ('000 riel)</i>
a. Juice (liter)			
b. Wine (liter)			
c. Sugar (kg)			
d. Palm fruits (dozens)			
e. Palm leaf (bundles)			

4. Orchard

	<i>Quantity produced</i>	<i>Quantity sold</i>	<i>Price/unit ('000 riel)</i>
a. Fruits (dozens)			
b. Firewood (bundles)			
c. Grass/fodder (bundles)			
d. Others			

B. From common property resources

	<i>Amount produced</i>				<i>Total value ('000 riel)</i>			
a. Wild fish catch (kg)								
b. Firewood (bundles)								
c. Cage cultured fish (kg)								
d. Duck grazing (no.)								
e. Snails/crabs (kg)								
f. Water lily (kg)								
g. Water spinach (kg)								
h. Bamboo (no.)								
i. Cane (no.)								
j. Grass/fodder (bundle)								
k. Birds (no.)								
l. Animals _____ (no.)								
m. Others _____								

C. Other sources of income

	<i>Annual income ('000 riel)</i>			
a. Business income				
b. Wages/salaries				
c. Non-farm (e.g., handicraft)				
d. Remittance by relatives				
e. Gift (kind)				

1. Is the yearly supply of rice from your land sufficient for whole year consumption for your family?

- More than sufficient and have surplus to sell or lend out = 1
- Just adequate = 2
- Good for 7-10 months (not sufficient) = 3
- Good for less than 3-6 months (not sufficient) = 4
- Good for less than 3 months (not sufficient) = 5
- Entirely dependent on buying rice = 6

2. If the supply of own rice was not sufficient last year, how did you meet your family's requirements for additional rice last year? [1 if applicable, 0 otherwise]

- Borrow from neighbors with extra payment as interest
- Borrow from relatives with no extra payment as interest
- Buy from the market
- Food for works programme
- Free relief from the government/NGO
- Others (specify) _____

3. If you need to borrow/buy rice, how much rice did you borrow/buy last year?

4. How much fresh fish is consumed by your household per week (kg)?

Open season (Oct-May)

Closed season (June-Sept)

5. How much processed fish are consumed by your household per month?

- | | Dry season (Nov-May) | Wet season (June-Oct) |
|---|---|---|
| a. Fish paste (prahoc) (kg) | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> |
| b. Fermented fish (pa-oc/mam) (kg) | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> |
| c. Fish sauce (tek trai) (litre) | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> |
| d. Smoked fish (trai chhar) (kg) | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> |
| e. Salted dried fish (trai ngeith) (kg) | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> |

6. What are the sources of supply of fish and fish products for your family consumption? [rank in order of importance; put zero if not applicable]

- Surplus from commercial catch
- Family fishing in the rivers/lakes
- Family fishing in the flooded ricefields
- Own pond/cage culture
- Purchased fresh fish from the market
- Purchased processed fish (paste/fermented/dried, etc.)
- Homemade fish paste (prahoc) during season
- Given by relatives/friends
- Others (specify) _____

7. How much of the following animal protein is consumed by your family per month?

Type of animal protein	Own production	Purchased	Total
Beef (kg)	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Pork (kg)	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Chicken (kg)	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Eggs (no.)	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Duck (kg)	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
Others (specify) _____	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

8. How much cash expenditure is incurred by your family per month on the following items?

Items	Expenditure ('000 riel)
a. Food	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
b. Clothing and supplies	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
c. Children's education	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
d. Medicare/medicine	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
e. Fuel/firewood (for cooking/lighting/transport)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
f. Electricity & water	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
g. Others (specify) _____	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

SECTION IX. BORROWING AND LENDING ACTIVITIES

1. Do you lend money or rice to your neighbors/others?
yes=1, no=0

Money lending:

Rice lending:

2. If yes, how much money or rice did you lent last year?

	Amount Borrowed	Interest (%) per month/season	
Money ('000 riel)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	per month
Rice (kg)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	per season

3. Do you have debts in money or rice? yes=1, no=2

Money lending:

Rice lending:

4. If yes, how much money or rice do you owe to the lender(s) till today?

	Amount borrowed	Interest (%) per month/season	
Money ('000 riel)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	per month
Rice (kg)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	per season

5. What are the sources of your borrowing? [put 1 if applicable, zero otherwise]

Friends/relatives without interest

Local moneylenders

Government bank

Private bank

NGO

Others

6. What were the purposes of borrowing money?
[put 1 if applicable, zero otherwise]

Buy rice

Make prahoc for family consumption

Buy boats/net for fishing

Buy inputs for farming

Buy cattle for farming

Medical treatment/emergency

Spending children to school

Spending during wedding/festival

Financing business investment

Others

PART 3. FISHING AND RELATED ACTIVITIES OF HOUSEHOLD

SECTION X. FISHING ACTIVITIES

1. What type of fishing involvement do you and/or members of your family have during the open season?

<i>Type of Involvement</i>	<i>Yourself</i>	<i>Family Members No.</i>
a. Family fishing	<input type="checkbox"/>	<input type="checkbox"/>
b. License holder in middle-scale fishing	<input type="checkbox"/>	<input type="checkbox"/>
c. Shareholder in middle-scale fishing	<input type="checkbox"/>	<input type="checkbox"/>
d. Leaseholder of fishing lot	<input type="checkbox"/>	<input type="checkbox"/>
e. Shareholder of a fishing lot	<input type="checkbox"/>	<input type="checkbox"/>
f. Sub-lease holder in fishing lots	<input type="checkbox"/>	<input type="checkbox"/>
g. Skilled fishing worker in lots	<input type="checkbox"/>	<input type="checkbox"/>
h. Ordinary fishing worker in lots	<input type="checkbox"/>	<input type="checkbox"/>
i. Fishing workers in middle-scale	<input type="checkbox"/>	<input type="checkbox"/>
j. Others	<input type="checkbox"/>	<input type="checkbox"/>

2. Species composition of catch:

a. Please name the species in your last fishing year's catch
[choose from the list]
[yes=1; no=0]

<i>Species list</i>	<i>Open season (Oct 93-May 94)</i>	<i>Closed season (June 94-Sept 94)</i>
1. Kompeus (small shrimp)	<input type="checkbox"/>	<input type="checkbox"/>
2. Bang Kong (freshwater prawn)	<input type="checkbox"/>	<input type="checkbox"/>
3. Kang Kep (frog)	<input type="checkbox"/>	<input type="checkbox"/>
4. Kdam (crab)	<input type="checkbox"/>	<input type="checkbox"/>
5. Leas/khchav/khchang (snail/mollusc)	<input type="checkbox"/>	<input type="checkbox"/>
6. Antung (freshwater eel)	<input type="checkbox"/>	<input type="checkbox"/>
7. Chlogn (spotted spined eel)	<input type="checkbox"/>	<input type="checkbox"/>
8. Kranh (climbing perch)	<input type="checkbox"/>	<input type="checkbox"/>
9. Kanh chose (Bocourt's river catfish)	<input type="checkbox"/>	<input type="checkbox"/>
10. Chhlang (yellow mystus)	<input type="checkbox"/>	<input type="checkbox"/>

Species list (continued)

**Open season
(Oct 93-May 94)**

**Closed season
(June 94-Sept 94)**

43. Kagn chrouk (red tail botia)	<input type="checkbox"/>	<input type="checkbox"/>
44. Amdat chke (freshwater tongue fish)	<input type="checkbox"/>	<input type="checkbox"/>
45. Kcheung (armed spiny eel)	<input type="checkbox"/>	<input type="checkbox"/>
46. Tronel (truncated estuarine catfish)	<input type="checkbox"/>	<input type="checkbox"/>
47. Khman (transvers bar barb)	<input type="checkbox"/>	<input type="checkbox"/>
48. Kros (<i>Osteochilus hasselti</i>)	<input type="checkbox"/>	<input type="checkbox"/>
49. Kbork ()	<input type="checkbox"/>	<input type="checkbox"/>
50. Bandol ampov (<i>Clupeoides borneensis</i>)	<input type="checkbox"/>	<input type="checkbox"/>
51. Others (specify) _____	<input type="checkbox"/>	<input type="checkbox"/>

- b. Rank 5 (five) important species (in terms of catch quantity) form amongst those you have identified above. [Use the serial no. in the species list for code]

<i>Rank</i>	<i>Species [code]</i>
1st	
2nd	<input type="checkbox"/>
3 rd	<input type="checkbox"/>
4 th	<input type="checkbox"/>
5 th	<input type="checkbox"/>

3. Was the fish catch better than the previous year?
(better=1; not much different=2; less=3)

If you are a lease/shareholder in a fishing lot, answer questions 4-11:

4. Type and Location of Lot:

- a. Type of Lot:

[Riverine/Lake Lot=1; Fish Dai Lot=2; River Bank Lot=3;
Shrimp Dai Lot=4; Others _____=5

- b. Location (Province) of Lot:

[Codes: Phnom Penh=1; Kendal=2; Kg. Cham=3
Kg. Chhnang=4; Siem Reap=5, Others=6

- c. Lot No.

5. What is the approximate area ('000 m²) of your fishing lot?

6. How many years have you been operating the present fishing lot?

7. How many years have you been involved in fishing lot operations?

8. How many people do you employ for fishing in your lot?

	Male (No.)	Female (No.)
During fishing preparation	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
During fishing operation	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
During post-fishing operation	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

9. What kind of gear/equipment do you use?

Name of equipment	No. of units	Length (km)	Purchase/ construction cost ('000 riel)			Expected life (yrs)	
a. Arrow shaped bamboo fence trap (nor rut chung)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. Bamboo barrage trap (thnuos)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
c. Set bag net (dai)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
d. Seine nets	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
e. Fish cage	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
f. Rowing boat	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
g. Engine boat	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
h. Others	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

10. What was your total catch last open season (October 1993-May 1994) (kg)?

11. How much did you pay as lease/sub-lease fee for the last open season ('000 riel)?

If you are owner/shareholder in middle-scale fishing, please answer questions 12-25:

12. What is your status in middle-scale fishing?

- a. License holder (principal owner with one cosharer) = 1
- b. License holder with more than one cosharer = 2
- c. License holder with no cosharer/partner = 3
- d. Fishing as a cosharer with another licensed fishermen = 4
- e. Others (specify) _____ = 5

13. Where is your fishing ground located?

Location of fishing ground:

Province:

- | | |
|--|-----------------|
| a. Tonle Sap River = 1 | Phnom Penh = 1 |
| b. Great Lake = 2 | Kendal = 2 |
| c. Mekong Upper = 3 | Kg. Cham = 3 |
| d. Mekong Lower = 4 | Kg. Chhnang = 4 |
| e. Bassac River = 5 | Siem Reap = 5 |
| f. Small river/lake connected to Tonle Sap = 6 | Others = 6 |
| g. Small river or lake connected to Great Lake = 7 | |
| h. Small river/lake connected to Mekong (upper/lower)/Bassac = 8 | |
| i. Others (specify) _____ = 9 | |

14. How many years have you been operating in this fishing ground?

15. How many years have you been practising middle-scale fishing?

16. How many members do you have in your team?

Type of members

No.

Family members (including yourself)

Cosharers

Relatives

Hired workers

Others

17. Do you participate in actual fishing operations? yes=1, no=0

22. Major operating cost during fishing season (based on last fishing season's expenditure)

Items	Cost ('000 riel)			
a. Fuel/oil				
b. Food expenditure				
c. Salary/wage of hired workers				
d. License fee				
e. Repairs/maintenance				
f. Others				

23. What was your approximate total catch during the last fishing season (October 1993-May 1994)

Total catch (kg)

--	--	--	--

24. How do you share benefits with your co-sharers?

- Proportionate share of net revenue for contribution to labor/capital = 1
- Fixed contract of cash = 2
- Others = 3

25. How do you compensate the hired workers?

- Cash wage and free food = 1
- Only cash wage = 2
- Share of catch = 3
- Others = 4

If you are involved in family fishing, please answer questions 26-35:

26. In which season do you operate family fishing gear?

- [Only in open season = 1; Only in closed season = 2; Both seasons = 3]

27. Where do you catch fish?

	During open season	During closed season
Flooded ricefield	<input style="width: 30px; height: 20px;" type="text"/>	<input style="width: 30px; height: 20px;" type="text"/>
Tonle Sap River	<input style="width: 30px; height: 20px;" type="text"/>	<input style="width: 30px; height: 20px;" type="text"/>
Great Lake	<input style="width: 30px; height: 20px;" type="text"/>	<input style="width: 30px; height: 20px;" type="text"/>
Mekong	<input style="width: 30px; height: 20px;" type="text"/>	<input style="width: 30px; height: 20px;" type="text"/>
Bassac	<input style="width: 30px; height: 20px;" type="text"/>	<input style="width: 30px; height: 20px;" type="text"/>
Small rivers/lakes	<input style="width: 30px; height: 20px;" type="text"/>	<input style="width: 30px; height: 20px;" type="text"/>
Inundated forest	<input style="width: 30px; height: 20px;" type="text"/>	<input style="width: 30px; height: 20px;" type="text"/>
Others	<input style="width: 30px; height: 20px;" type="text"/>	<input style="width: 30px; height: 20px;" type="text"/>

28. How many family members participate in fishing?

During open season

During closed season

29. What gear do you or members of your family use for fishing?

Type of gear

Open season

Closed season

- a. Harpooned gear
- b. Bamboo/rattan/traps
- c. Cast ne
- d. Scooping net (thnong/chnouk)
- e. Gillnet (morng)
- f. Small handled dragnet
- g. Single hooked line
- h. Others

30. How do you acquire your fishing equipment?

[all made by family members=1; all purchased from the market = 2
 mostly made by family members=3; mostly purchased from market=4;
 Others (specify) _____=5]

31. Do you use a fishing boat for family fishing? [yes=1; no=0]

During open season

During closed season

32. If you use boats for family fishing activities, give the following information about the boats:

Type of boat

<i>No.</i>	<i>Total length (meters)</i>	<i>Total - capacity (tons)</i>	<i>Total cost ('000 riel)</i>	<i>Average life (yrs)</i>
------------	------------------------------	--------------------------------	-------------------------------	---------------------------

- a. Motorized
- b. Non-motorized
- c. Others

33. If you have mechanized boat(s) give the following information about the engine:

No. of engines

Total horse power (HP)

Total cost ('000 riel)

Expected life (yrs)

34. Major operating cost during fishing season (based on last fishing season's expenditure)

Item	Cost ('000 riel)				Cost ('000 riel)			
	Open season				Closed season			
a. Fuel/oil								
b. Food expenditure								
c. Repairs/maintenance								
d. Others								

35. Please make an assessment of your total catch during the last fishing seasons:

Fishing seasons	Quantity caught (kg)				Proportion sold (%)	
	a. Open season (Oct 93-May 94)					
b. Closed season (June 94-Sept 94)						

SECTION XI: FISHING RELATED ACTIVITIES

1. Indicate the type of fishing related activities in which you and or your family members are involved:

	No. of male members	No. of female members
a. Bamboo fence/trap making	<input type="text"/>	<input type="text"/>
b. Net making/repairing	<input type="text"/>	<input type="text"/>
c. Fish processing (prahoc, pha-ork, smoked fish, fish sauce, dried fish)	<input type="text"/>	<input type="text"/>
d. Fish oil extraction	<input type="text"/>	<input type="text"/>
e. Fish transport (by boat, moto-cart, etc.)	<input type="text"/>	<input type="text"/>
f. Labor in fish landing/processing site	<input type="text"/>	<input type="text"/>
g. Selling food/materials at fish landing/processing site	<input type="text"/>	<input type="text"/>
h. Selling fishing equipment/fish baskets/containers etc.	<input type="text"/>	<input type="text"/>
i. Wholesale fish buying and selling	<input type="text"/>	<input type="text"/>
j. Retail fish selling	<input type="text"/>	<input type="text"/>
k. Others (specify) _____	<input type="text"/>	<input type="text"/>

2. If you and/or your family members are engaged in fishing fence/trap/net making, what is the main purpose?
 [Code: own/family use=1; for sale=2; for both=3; others (specify) _____=4]
3. If you and/or your family members are engaged in fish processing, for what purpose the products are mainly used?
 [Code: own/family use=1; for sale=2; for both=3; others (specify) _____=4]

SECTION II: FISH MARKETING SYSTEM

1. How do you market your fish? (rank if applicable; zero otherwise)
- a. Directly carry to the market and sell to the consumers
 - b. Bring to the landing site and sell to vendors/wholesale buyers
 - c. Wholesale buyers collect from fishing ground/lot site
 - d. Others (specify) _____
2. Do you borrow money for fishing operations? [yes=1; no=0]
3. If the answer to the above is yes, who is your lender? [put 1 if relevant, zero otherwise]
- Fishing partner or cosharer
 - Local moneylender
 - Fish trader/wholesale buyer
 - Friends and relatives
 - Private bank
 - Government bank
 - Others
4. Are you obliged to sell fish to your moneylender? [yes=1; no=0]
5. If you are obliged to sell fish to your lender, do you get a competitive price? [yes=1; no=0]

6. In what form do you sell your fish?

Form of product

%

- | | | |
|------------------------------------|----------------------|----------------------|
| a. Fresh | <input type="text"/> | <input type="text"/> |
| b. Salt dried | <input type="text"/> | <input type="text"/> |
| c. Smoked | <input type="text"/> | <input type="text"/> |
| d. Fish paste (prahoc) | <input type="text"/> | <input type="text"/> |
| e. Fermented | <input type="text"/> | <input type="text"/> |
| f. Dried for non-human consumption | <input type="text"/> | <input type="text"/> |
| g. Others (specify) _____ | <input type="text"/> | <input type="text"/> |

7. What kind of preservation techniques do you follow for keeping fish fresh before selling?

- | | |
|---------------------------------|----------------------|
| a. Iced | <input type="text"/> |
| b. Salted | <input type="text"/> |
| c. Transported live in the cage | <input type="text"/> |
| d. Transported live in the boat | <input type="text"/> |
| e. Others | <input type="text"/> |

SECTION XIII. SUSTAINABILITY AND MANAGEMENT ISSUES

1. Are you aware of the following regulations imposed by the government in order to ensure sustainable production? [yes=1; no=0]

- | | |
|--|----------------------|
| a. Ban on fishing during June-September, except for family fishing | <input type="text"/> |
| b. Ban on catching/selling/transporting fingerlings/eggs of certain species | <input type="text"/> |
| c. Prohibition on using larger size net and gear than allowed for family fishing without license from the authority | <input type="text"/> |
| d. Ban on use of small mesh net (<1.5 cm) | <input type="text"/> |
| e. Ban on catching endangered species (<i>Catlo carpio</i> ; Giant Mekong-catfish) | <input type="text"/> |
| f. Ban on putting brush shelter (samras) | <input type="text"/> |
| g. Ban on use of electricity/explosives/poisons to catch fish | <input type="text"/> |
| h. Ban on cutting/burning of inundated forest | <input type="text"/> |
| i. Ban on construction of dikes across small lake/river/stream for catching fish/agricultural needs (e.g., irrigation) | <input type="text"/> |
| j. Ban on pumping, bailing or drying any part of the fishery domain | <input type="text"/> |

- k. Others (specify) _____
2. Do you think all these regulations are important for the sustainability of the fisheries?
 [Code: yes; all of them=1; yes but not all of them are important=2;
 not important at all=3; others (specify) _____=4]
3. if the answer to question no. 2 above is: yes, but not all of them are important (2); give
 an example of unimportant regulation (use serial no. question 1)
4. If your answer to question 2 above is: not important at all (3), state your reason:
 [Code: resources are unlimited, hence no need to regulate=1
 Regulations are not followed in practice=2
 Non-fishery interventions are harming the fisheries more than overfishing=3
 Others (specify) _____=4]
5. Do you consider these regulations by the fishery authority as unfair to you?
 [yes=1, no=0]
6. If the answer to question no. 5 above is yes, why is it so?
 [choose the most relevant one]
- a. It limits your family's livelihood opportunities=1
 b. You cannot compete with the influential people to obtain license for a better
 fishing ground/site=2
 c. The government uses the regulation to earn money at the expense of poor
 fishermen=3
 d. Do not have money to buy license=4
 e. Others (specify) _____=5
7. What options do you have if fishing opportunity and fish catch get reduced?
 [use 1 to indicate, zero otherwise]
- | |
|--|
| |
| |
| |
| |
- a. Can supplement by aquaculture
 b. Change your occupation
 c. Cannot think of any alternative
 d. Others (specify) _____
- a. Overfishing and illegal fishing practice=1
 b. Change of environment=2
 c. Drying up of rivers and lakes=3
 d. Others (specify) _____
9. Do you think it is necessary to protect fisheries from exploitation and harmful effects of
 non-fishery development for long term benefit? [yes=1; no=0]

10. If the answer is yes, in your opinion what kind of management/access system will lead to better protection of the fisheries? (choose one)

- a. Stricter enforcement measures by Department of Fisheries=1
- b. Establish permanent and equitable fishing rights for all fishing dependent families in the commune=2
- c. Transfer management responsibility to the commune authority=3
- d. Develop and increase awareness about the necessity of fisheries conservation through education, training, extension and motivation=4
- e. Create supplementary production, income and employment opportunities for fishing dependent families=5
- f. Others (specify) _____

Date of interview:

Name and signature of data collector:

Name and signature of supervisor: