



Report on Commune and Village Profiles

Kampong Speu, Kampot, Prey Veng and Takeo Provinces

For

**Freshwater Aquaculture Improvement and Extension
Project (FAIEX)**

By

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Abstract

This report describes profiles of 16 communes, where target earthen ponds have been selected to start small-scale aquaculture development and 4 villages, where target fish refuge ponds have been selected to be managed by community or villagers in the FAIEX project. The profiles include information of geographical location and condition, some basic socio-economic characteristics and current situation of aquaculture development in the target communes and villages of the FAIEX project provinces, Kampong Speu, Kampot, Prey Veng and Takeo. A standard questionnaire was developed, pre-test, revised and used for the survey during August and November 2005. The questionnaire survey format was attached as Appendix 1.

Acknowledgements

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I would like to acknowledge commune leaders, village leaders, commune council members, local fish seed producers, as well as to villagers from Kampong Speu, Kampot, Prey Veng and Takeo provinces who gave their time and support to the field survey.

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Last but not least, my sincere thanks to Miss Aya Yamaguchi (Rural Development Specialist of JICA- FAIEX project) and Mr. Satoshi Chikami (Chief Advisor of JICA-FAIEX project) for providing useful comments to improve this report, and Miss Mineko Sato for help with administrative and accounting aspects.

List of abbreviations

AD	Aquaculture Division
AFFD	Agriculture, Forestry and Fisheries Division
AIMS	Aquaculture of Indigenous Mekong Fish Species
APHEDA	Australian People for Health and Development Abroad
BFSPRS	Bati Fish Seed Production and Research Station
CEDAC	Centre d'Etude et de Developement Agricole Cambodgiene
CIDSE	Cooperation International pour le Development
DAFF	Department of Agriculture, Forestry and Fisheries
DANIDA	Danish International Development Agency
DoF	Department of Fisheries
EU	European Union
FAIEX	Freshwater Aquaculture Improvement and Extension
FFP	Family Food Production
FHI	Family Health International
GTZ	German Technical Cooperation
HEKS	HEKS - Swiss International Aid
IFAD	International Fund for Agriculture Development
IFSP	Integrated Farming System Program
IOs	International Organizations
JICA	Japan International Cooperation Agency
MAFF	Ministry of Agriculture, Forestry and Fisheries
MRC	Mekong River Commission
NGOs	Non-government Organizations
PADEK	Partnership for Development of Kampuchea
PFD	Provincial Fisheries Division
PFD	Provincial Fisheries Division
PRASAC	Pole Regional de Research Appliquee au Developement des Savanes d'Agriculture au Cambodge: Support program for Agriculture Sector in Cambodia
READ	Rural Extension for Aquaculture Development
SEILA	An inter-ministry task force of Royal Government expressed in Khmer language
UNICEF	United Nations Children's Fund
WFP	World Food Programme of the United Nations

1. Profile KAT PHLUK commune

1.1. Location

KAT PHLUK commune is one of the communes located in Basedth district, Kampong Speu province (See location maps attached below). It is adjacent to the northern boundary of Choam Sangkae commune (Phnum Sruoch district), the southern boundary of Phong commune, the eastern boundary of Preah Khae commune and the western boundary of Pheakdei commune. It is composed of eleven villages.

Geographical condition

KAT PHLUK commune is located 7 km from Basedth district Hall, 53 km from Kampong Speu provincial Hall and 97 km from Phnom Penh. It is located 29 km from National Road # 3. KAT PHLUK has an area of 3,460 ha, including 987 ha of agricultural land, 971 ha of house land, 1,470 ha of forest land. It consists of seven dams (32 ha) and four canals. Water is available in dams and canals in wet season only. It is an upland area, where there is no any natural water body and no any flood. There are regular droughts and the most severe one is in year 2004. Sandy-loam land is the most widely found land type in KAT PHLUK commune.

Transportation accessibility

- There are four main roads in KAT PHLUK commune, of which one is from Basedth district Hall.
- In addition, there are twelve small (branch) roads linked from one to another village in KAT PHLUK commune. They are in good shape and accessible in both dry and wet seasons.

1.2 General information

Name of commune chief and his term: Mr. Seang Chharth; his term: four years

Industry other than agriculture:

- There are three furniture workshops;
- There are twelve rice mills; and
- There are two battery recharge workshops in KAT PHLUK commune.

Total number of population

- Total: 7,834
- Male: 3,805
- Female: 4,029

Total number of households

- Total: 1,406
- Male-headed households: 1,135
- Female-headed households: 271

Total number of farming households

- Total: 1,406
- Male-headed households: 1,135
- Female-headed households: 271

Total number of landless household

- No agricultural land: 5
- No house land: 2
- Male-headed households: 3
- Female-headed households: 4

Number of farmer's group

- No. of farmer's group: 0
- Main activities: Not applicable

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: July – September
- Harvesting: December – January
- Wet season (rain-fed) rice area: 987 ha
- Rice yield: < 0.5 ton/ha

Use of chemical/pesticide for rice production

- When: generally 2 – 3 months after transplanting
- What kind: FILIDOL
- Amount: 250 ml/ha

Nutrition status of the population

- Reduction in consumption of fish and other animal meats and vegetable (i.e. 50-60% reduction) due to rapid population growth and natural disaster (i.e. droughts).

Main source of animal protein

- Wet season: Fish protein intake (40%) and other animal protein intake (60%)
- Dry season: Fish protein intake (40%) and other animal protein intake (60%)

Total number of ponds (including trap ponds)

- Private: 245 ponds (\approx 20,570 ha)
- Community (public): 0
- Pagoda: 4 ponds (average size: 60 m x 40 m x 3 m)

Number of trap ponds

- Number: 7 ponds
- Average size: 5 m x 4 m x 1 m

Major fish species caught in trap ponds

- Major fish species caught: Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*), and Chhlounh (eel, *Macrognathus sp.*).
- Productivity of trap ponds: 7 – 20 kg/pond/year

1.3 Freshwater aquaculture

How aquaculture started in the commune?

Aquaculture development in the commune started in 2001 with the support of EU-PRASAC program. Training on small-scale aquaculture technologies was provided to selected farmers by aquaculture extension staff of the Provincial Fisheries Division. Pond inputs and fish seed were offered to all trained farmers by the program. The stocking density of ponds was 3 fish per m².

Total number of aquaculture households

- Total: 38
- Male-headed: 33
- Female-headed: 5

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 2
- Male-headed: 2
- Female-headed: 0

Fish grow-out pond households

- Total: 36
- Male-headed: 31
- Female-headed: 5

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 38
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 5, Tilapia (*Tilapia nilotica* or *Oreochromis aureus*), common carp (*Cyprinus carpio*), silver carp (*Hypophthalmichthys molitrix*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*), and mrigal (*Cirrhinus cirrhosus*).
- Fish seed production: 0
- Fish seed nursery: Tilapia, common carp, silver carp, silver barb and mrigal

Main source of fish seed by major species and their availability

- Farmer's hatchery in Nitean commune, Basedth district
- Public hatchery, Chak Ang Rae Fish Seed Production Station in Phnom Penh

- Not secure supply (i.e. fish seed availability is not constant)

Average price of seeds by major species and their size

- Tilapia: 3-4 cm, Riel 50 per fish
- Common carp: 3-4 cm, Riel 60 per fish
- Silver barb: 3-4 cm, Riel 60 per fish
- Silver carp: 4-5 cm, Riel 70 per head
- Mrigal: 4-5 cm, Riel 70 per fish

Aquaculture season (month)

- Stocking: July – September
- Harvesting: April

Major water source for aquaculture activity

- Major water source: Rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 7%
- Short: 93%
- Extremely short: 0

Present condition of community (public) ponds

- Not applicable or not available

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: No
- Predation: Snakehead murrel, snake, crab, swam eel, mouse and bird

Main destination of cultured fish by major species

- All cultured fish species were sold on farm
- Few cultured fish production was sold at Trapaing Phong market, Preah Khae commune
- Most fish production were for family consumption

Average selling (on-farm) price of major cultured fish specie

- Wet season: Tilapia, Riel 4,000/kg
- Dry season: All fish species, Riel 5,000/kg

Average market price of major cultured fish species

- Wet season: All fish species, Riel 5,000/kg
- Dry season: All fish species, Riel 5,000/kg

Main feed stuff and its supplier

- Rice bran: Riel 300-400/kg, commune's market and village's rice mills
- Duck weed, collected by fish farmers in the commune
- Termite, collected by fish farmers in the commune

Main fertilizers stuff and its supplier

- DAP: Riel 1,700/kg, Trapaing Phong market

- UREA: Riel 1,600/kg, Trapaing Phong market
- Green manure, collected in the commune
- Animal manure, collected on farm, mostly from farmer's owned animals

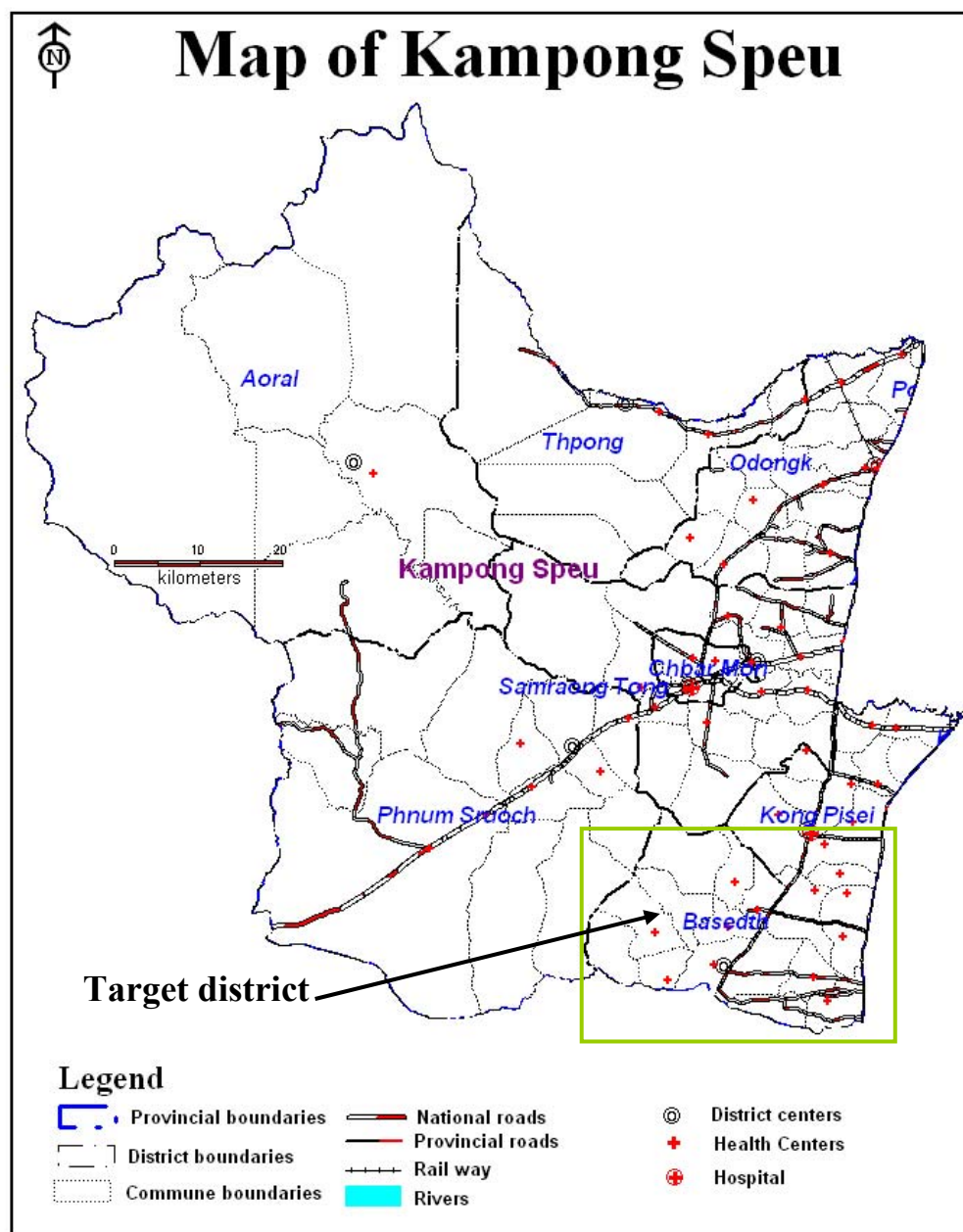
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

Freshwater aquaculture development/extension (Present and past)

- The PRASAC program funded by European Union, in cooperation with provincial aquaculture extension staff, started promoting small-scale aquaculture in KAT PHLUK commune in 2001. This program ended in 2002.
- Currently, the JICA- FAIEX Project, in cooperation with Aquaculture Division (AD) of the Department of Fisheries (DoF), has trained 40 farmers how to culture fish with low inputs for increasing family fish consumption and generating additional family income. JICA has provided some inputs for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.
- The commune chief suggests that at least one village's hatchery should be built in the commune.

Fish refuge pond management (Present and past)

- Not applicable



2. Profile of PHEARI MEAN CHEY commune

2.1 Location

PHEARI MEAN CHEY commune is one of the communes located in Basedth district, Kampong Speu province (See location map below). It is adjacent to the northern boundary of Sdok and Prey Vihear communes (Kong Pisei district), the southern boundary of Nitean and Mreal communes, the eastern boundary of Tuol Ampil commune and the western boundary of Svay Rumpea commune. It is composed of thirteen villages.

Geographical condition

PHEARI MEAN CHEY commune is located 15 km from Basedth district Hall, 42 km from Kampong Speu provincial Hall and 60 km from Phnom Penh. It is located 6 km from Paing Sei market on National Road # 3. PHEARI MEAN CHEY has an area of 1,186.5 ha, including 914 ha of agricultural land, 268 ha of house land and 4.5 ha of dams. Water is available in dams in wet season only. The western part of the commune is an upland area and the eastern part a lowland area. There is no flood detected in the commune. There are droughts detected almost every year and the most severe one is in year 2004. Sandy-loam land is found in PHEARI MEAN CHEY commune.

Transportation accessibility

- There are two main roads connected from National Road # 3 in PHEARI MEAN CHEY commune. One is linked from commune Hall and another from district Hall.
- In addition, there are seven small (branch) roads linked from one to another village in PHEARI MEAN CHEY commune and from commune Hall. They are in good shape and accessible in both dry and wet seasons.

2.2 General information

Name of commune chief and his term: Mr. Vong Nuon; his term: already 18 years

Industry other than agriculture:

- There is one vehicle/car repairing workshop;
- There are two iron/metal workshops;
- There are sixteen rice mills; and
- There are four battery recharge workshops in PHEARI MEAN CHEY commune.

Total number of population

- Total: 7,928
- Male: 3,926
- Female: 4,002

Total number of households

- Total: 1,497
- Male-headed households: 1,150
- Female-headed households: 347

Total number of farming households

- Total: 1,497
- Male-headed households: 1,150
- Female-headed households: 347

Total number of landless household

- No agricultural land: 52
- No house land: 0
- Male-headed households: 38
- Female-headed households: 14

Number of farmer's group

- No. of farmer's group: 0
- Main activities: Not applicable

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: July – September
- Harvesting: December – January
- Wet season (rain-fed) rice area: 878 ha
- Rice yield: 0.9 ton/ha

Use of chemical/pesticide for rice production

- When: Not use any pesticide
- What kind: Not applicable
- Amount: Not applicable

Nutrition status of the population

- Reduction in consumption of fish and other animal meats and vegetable (i.e. 40-50% reduction) due to rapid population growth and natural disaster (i.e. droughts).

Main source of animal protein

- Wet season: Fish protein intake (40%) and other animal protein intake (60%)
- Dry season: Fish protein intake (30%) and other animal protein intake (70%)

Total number of ponds (including trap ponds)

- Private: 113 ponds
- Community (public): 1 pond (70 m x 65 m x 2.5 m)
- Pagoda: 2 ponds (2,100 m²)

Number of trap ponds

- Number: 0
- Average size: Not applicable

Major fish species caught in trap ponds

- Major fish species caught: Not applicable
- Productivity of trap ponds: Not applicable

2.3 Freshwater aquaculture

How aquaculture started in the commune?

Aquaculture development in the commune started in 1995. This development was implemented, under the Ministry of Agriculture, Forestry and Fisheries, by Family Food Production (FFP) funded by World Food Program and UNICEF. This program provided rice to farmers to dig ponds and fingerling to stock in some dug ponds. No fish culture training had been given to farmers before the dug ponds were stocked with fingerling. After stocking, no follow up activity was provided. Consequently, this aquaculture development program was not successful. In 2001, provincial aquaculture extension staff, in cooperation with PRASAC funded by European Union, provided training on small-scale aquaculture technologies to selected farmers before stocking fish seed. This EU-PRASAC program ended in 2002.

Total number of aquaculture households

- Total: 21
- Male-headed: 21
- Female-headed: 0

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 21
- Male-headed: 21
- Female-headed: 0

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 21 (4,000 m²)
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 4, Tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver carp (*Hypophthalmichthys molitrix*), common carp (*Cyprinus carpio*) and silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*)
- Fish seed production: 0
- Fish seed nursery: 0

Main source of fish seed by major species and their availability

- Farmer's hatcheries in Takeo province
- A public hatchery, Chak Ang Rae Fish Seed Production Station, Phnom Penh
- Not secure supply (i.e. fish seed availability is not constant)

Average price of seeds by major species and their size

- Tilapia: 3-4 cm, Riel 50 per fish
- Common carp: 3-4 cm, Riel 60 per fish
- Silver barb: 3-4 cm, Riel 60 per fish
- Silver carp: 4-5 cm, Riel 70 per head

Aquaculture season (month)

- Stocking: July – August
- Harvesting: April

Major water source for aquaculture activity

- Major water source: Rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100%
- Extremely short: 0

Present condition of community (public) ponds

- Not applicable

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: No
- Predation: Snakehead murrel, snake, crab, swam eel, mouse and bird

Main destination of cultured fish by major species

- All cultured fish species were sold on farm
- Most fish production was consumed in family.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable
- Dry season: All fish species, Riel 4,000 - 5,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: Not applicable

Main feed stuff and its supplier

- Rice bran: Riel 400/kg, commune's market and village's rice mills
- Duck weed, collected by fish farmers in the village and its commune
- Termite, collected by fish farmers in the village and its commune

Main fertilizers stuff and its supplier

- DAP: Riel 1,600/kg, Slab Leng commune market
- UREA: Riel 1,500/kg, Slab Leng commune market
- Green manure, collected in the commune
- Animal manure, collected on farm, mostly from farmer's owned animals

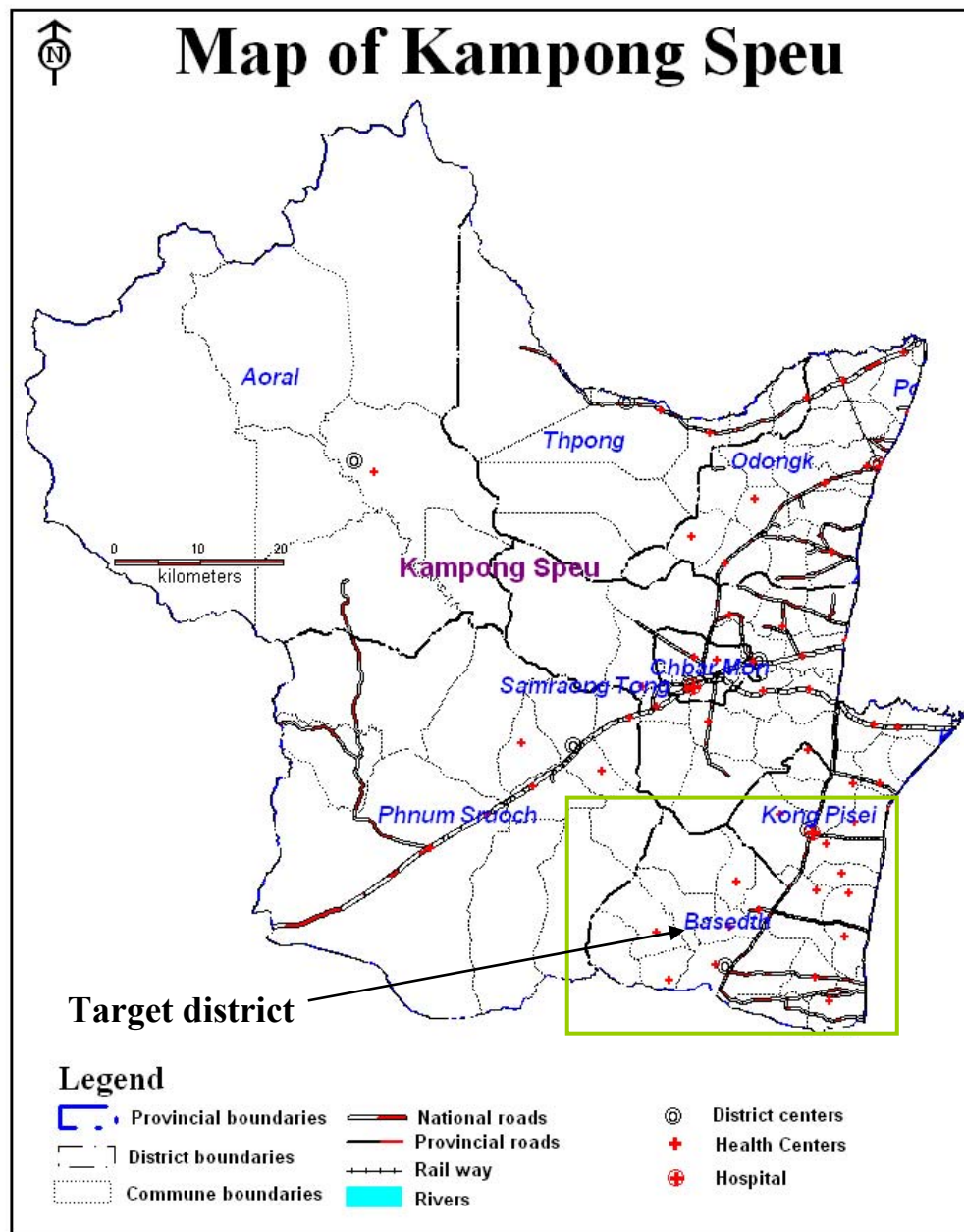
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

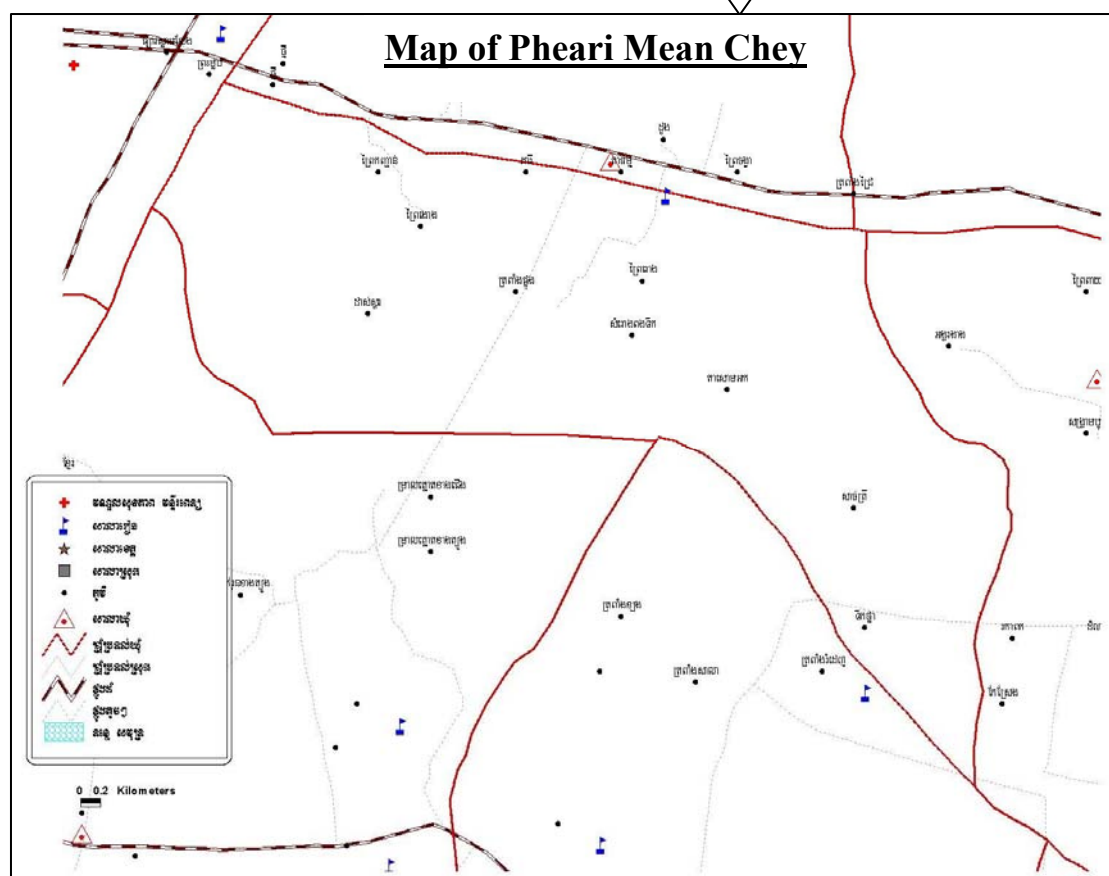
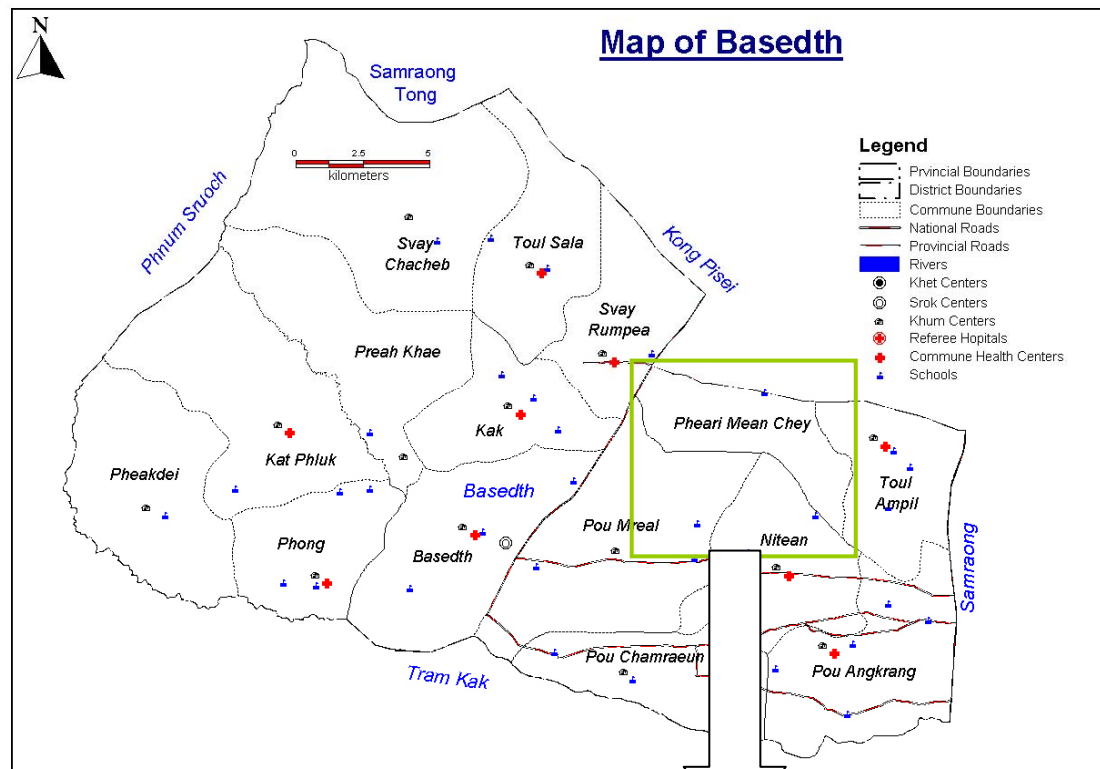
Freshwater aquaculture development/extension (Present and past)

- The Family Food Production funded by World Food Program and UNICEF has initiated fish culture in the commune without providing any training to farmers. Its activity was not successful.
- The PRASAC program funded by European Union, in cooperation with provincial aquaculture extension staff, started promoting small-scale aquaculture in Pheari Mean Chey commune in 2001. This program ended in 2002.
- Currently, the JICA- FAIEX Project, in cooperation with Aquaculture Division (AD) of the Department of Fisheries (DoF), has trained 40 farmers how to culture fish with low inputs for increasing family fish consumption and generating additional family income. JICA has provided some inputs for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- In 2005, the FAIEX has selected one fish refuge pond (size: 70 m x 65 m x 2.5 m) in Pheari village to be managed by villagers (The profile of Pheari village give below).





3 Profile of PHONG commune

3.1 Location

PHONG commune is one of the communes located in Basedth district, Kampong Speu province (See location maps attached below). It is adjacent to the northern boundary of Kat Phluk commune, the southern boundary of Tram Kak district (Takeo province), the eastern boundary of Basedth commune and the western boundary of Pheakdei commune. It is composed of thirteen villages.

Geographical condition

PHONG commune is located 16 km from Basedth district Hall, 78 km from Kampong Speu provincial Hall and 108 km from Phnom Penh. It is located 38 km from National Road # 3. PHONG has an area of 3,740 ha, including 914 ha of agricultural land, 946 ha of house land, 69 ha of lake area and 1,811 ha of dam area. It is an upland area, where there is no any natural water body and no any flood. There are regular droughts and the most severe one is in year 2004. Sandy-loam land is the most widely found land type in PHONG commune.

Transportation accessibility

- There are two main roads in PHONG commune, which are connected to Basedth district Hall.
- In addition, there are nine small (branch) roads linked from one to another village in PHONG commune. They are in good shape and accessible in both dry and wet seasons.

3.2 General information

Name of commune chief and his term: Mr. Chap Sokha; his term: four years

Industry other than agriculture:

- There are three iron/metal workshops;
- There are eight rice mills; and
- There is one battery recharge workshops in PHONG commune.

Total number of population

- Total: 7,948
- Male: 3,786
- Female: 4,162

Total number of households

- Total: 1,569
- Male-headed households: 1,390
- Female-headed households: 179

Total number of farming households

- Total: 1,569
- Male-headed households: 1,390

- Female-headed households: 179

Total number of landless household

- No agricultural land: 7
- No house land: 0
- Male-headed households: 1
- Female-headed households: 6

Number of farmer's group

- No. of farmer's group: 0
- Main activities: Not applicable

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: July – September
- Harvesting: December – January
- Wet season (rain-fed) rice area: 983 ha
- Rice yield: 0.5 ton/ha

Use of chemical/pesticide for rice production

- When: Not use
- What kind: Not use
- Amount: 0

Nutrition status of the population

- Reduction in consumption of fish and other animal meats and vegetable (i.e. 30-40% reduction) due to rapid population growth, lack of natural water bodies and natural disaster (i.e. droughts).

Main source of animal protein

- Wet season: Fish protein intake (40%) and other animal protein intake (60%)
- Dry season: Fish protein intake (30%) and other animal protein intake (70%)

Total number of ponds (including trap ponds)

- Private: 218 ponds (\approx 15,450 ha)
- Community (public): 0
- Pagoda: 7 ponds (average size: 70 m x 50 m x 3 m)

Number of trap ponds

- Number: 70 ponds
- Average size: 5 m x 4 m x 1 m

Major fish species caught in trap ponds

- Major fish species caught: Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*), and Chhlounh (eel, *Macrognathus sp.*).
- Productivity of trap ponds: 5 – 15 kg/pond/year

3.3 Freshwater aquaculture

How aquaculture started in the commune?

Aquaculture development in the commune started in 2001 with the support of EU-PRASAC program. Training on small-scale aquaculture technologies was provided to selected farmers by aquaculture extension staff of the Provincial Fisheries Division. Pond inputs and fish seed were offered to all trained farmers by the program. The stocking density of ponds was 3 fish per m².

Total number of aquaculture households

- Total: 17
- Male-headed: 16
- Female-headed: 1

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 1
- Male-headed: 1
- Female-headed: 0

Fish grow-out pond households

- Total: 16
- Male-headed: 15
- Female-headed: 1

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 17
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Cultured fish species: 4, Tilapia (*Tilapia nilotica* or *Oreochromis aureus*), common carp (*Cyprinus carpio*), silver carp (*Hypophthalmichthys molitrix*), and silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*)
- Fish seed production: 0
- Fish seed nursery: Tilapia, common carp and silver barb
-

Main source of fish seed by major species and their availability

- Farmer's hatchery in Nitean commune, Basedth district
- Farmer's hatchery in Takeo province
- Not secure supply (i.e. fish seed availability is not constant)

Average price of seeds by major species and their size

- Tilapia: 3-4 cm, Riel 50 per fish
- Common carp: 3-4 cm, Riel 60 per fish
- Silver barb: 3-4 cm, Riel 60 per fish
- Silver carp: 4-5 cm, Riel 70 per head
- Mrigal: 4-5 cm, Riel 70 per fish

Aquaculture season (month)

- Stocking: July – September
- Harvesting: March

Major water source for aquaculture activity

- Major water source: Rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 5%
- Short: 95%
- Extremely short: 0

Present condition of community (public) ponds

- Not applicable or not available

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: No
- Predation: Snakehead murrel, snake, crab, swam eel, mouse and bird

Main destination of cultured fish by major species

- All cultured fish species were sold on farm
- Most fish production were for family consumption

Average selling (on-farm) price of major cultured fish specie

- Wet season: Tilapia, Riel 4,000/kg
- Dry season: All fish species, Riel 5,000 – 6,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: Not applicable

Main feed stuff and its supplier

- Rice bran: Riel 300-400/kg, commune's market and village's rice mills
- Duck weed, collected by fish farmers in the commune
- Termite, collected by fish farmers in the commune

Main fertilizers stuff and its supplier

- DAP: Riel 1,600/kg, village market and Preah Kae market of Kat Phluk commune
- UREA: Riel 1,500/kg, village market and Preah Kae market of Kat Phluk commune
- Green manure, collected in the commune

- Animal manure, collected on farm, mostly from farmer's owned animals

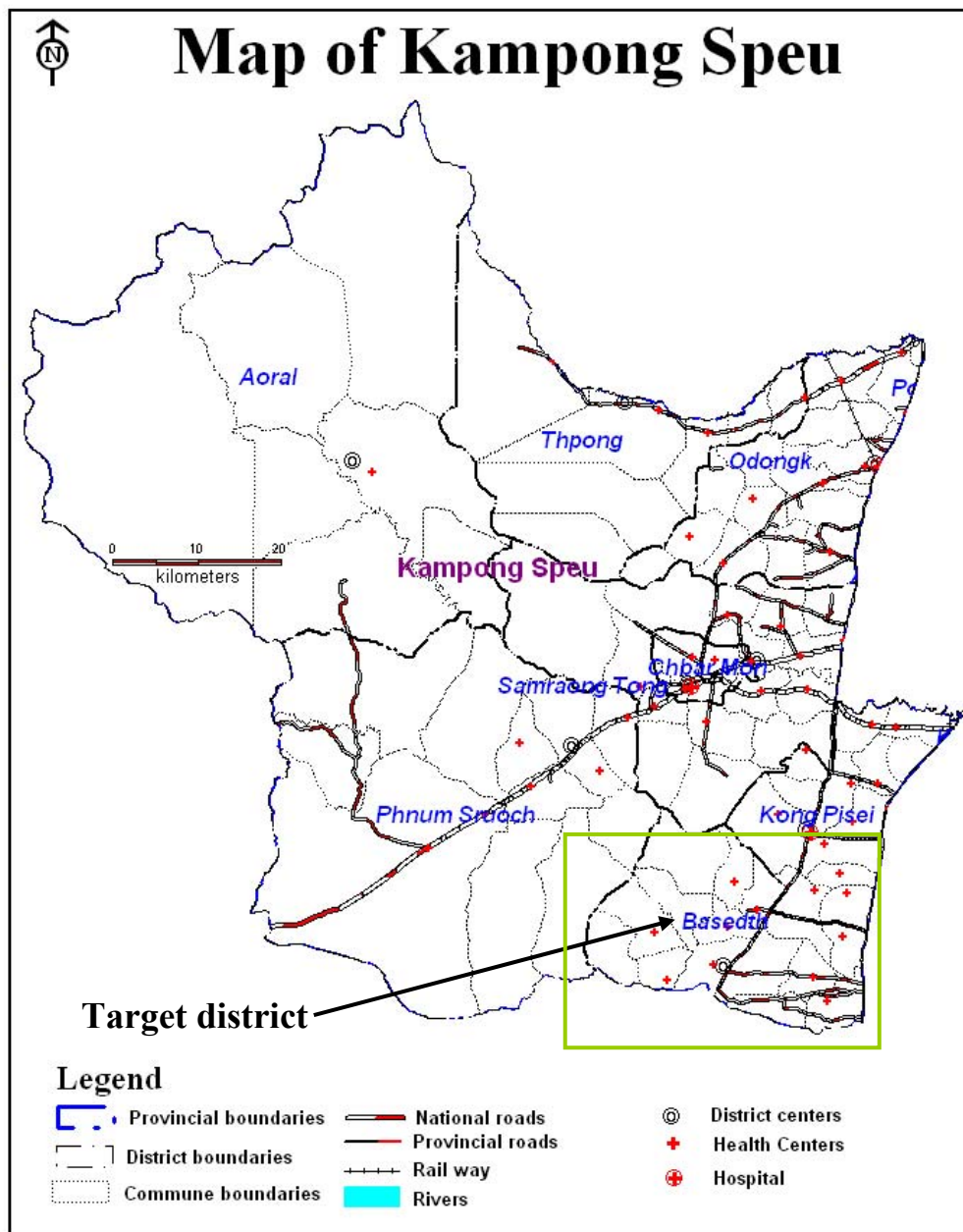
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

Freshwater aquaculture development/extension (Present and past)

- The PRASAC program funded by European Union, in cooperation with provincial aquaculture extension staff, started promoting small-scale aquaculture in PHONG commune in 2001. This program ended in 2003.
- Currently, the JICA- FAIEX Project, in cooperation with Aquaculture Division (AD) of the Department of Fisheries (DoF), has trained 40 farmers how to culture fish with low inputs for increasing family fish consumption and generating additional family income. JICA has provided some inputs for pond preparation and fingerling for stocking the prepared ponds. Regular follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Not applicable



4 Profile of VEAL commune

4.1 Location

VEAL commune is one of the communes located in Kong Pisei district, Kampong Speu province (See location maps attached below). It is adjacent to the northern boundary of RoKa Kaoh and Preah Nipean communes, the southern boundary of Chongruk commune, the eastern boundary of National Road # 3 and Angk Popel commune and the western boundary of Prey Nheat and Roka Koh communes. It is composed of twenty-two villages.

Geographical condition

VEAL commune is located 9 km from Kong Pisei district Hall, 28 km from Kampong Speu provincial Hall and 41 km from Phnom Penh. It is located 3 km from National Road # 3. VEAL has an area of 2,632 ha, including 1,106 ha of agricultural land, 420 ha of house land, 1,106 ha of lake and canal area. It is a lowland area, where there are only two natural lakes. No any flood is detected in the commune. There are regular droughts and the most severe ones are in year 2002 and 2003. Sandy and loamy soils are the most widely found soil types in VEAL commune.

Transportation accessibility

- There are two main roads in VEAL commune, which are connected from National Road # 3 to Kong Pisei district town Hall and provincial town Hall.
- In addition, there are seven small (branch) roads linked from one to another village in VEAL commune. They are in good shape and accessible in both dry and wet seasons.

4.2 General information

Name of commune chief and his term: Mr. Nob Onn; his term: four years

Industry other than agriculture:

- There are two iron/metal workshops;
- There are two firework workshops;
- There is one handicraft workshop; and
- There are many basket making/weaving workshops in VEAL commune.

Total number of population

- Total: 8,889
- Male: 4,325
- Female: 4,564

Total number of households

- Total: 1,609
- Male-headed households: 1,384
- Female-headed households: 225

Total number of farming households

- Total: 1,609
- Male-headed households: 1,384
- Female-headed households: 225

Total number of landless household

- No agricultural land: 53
- No house land: 53
- Male-headed households: 20
- Female-headed households: 33

Number of farmer's group

- No. of farmer's group: 63
- Main activities: Agricultural development and microfinance services in villages

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: July – September
- Harvesting: December – January
- Wet season (rain-fed) rice area: 709 ha
- Rice yield: < 0.5 ton/ha

Use of chemical/pesticide for rice production

- When: 2 -3 month after transplanting
- What kind: FILIDOL
- Amount: 250 ml/ha

Nutrition status of the population

- Reduction in consumption of fish and other animal meats and vegetable (i.e. 20-30% reduction) due to rapid population growth and natural disaster (i.e. droughts).

Main source of animal protein

- Wet season: Fish protein intake (85%) and other animal protein intake (15%)
- Dry season: Fish protein intake (40%) and other animal protein intake (60%)

Total number of ponds (including trap ponds)

- Private: 71 ponds (\approx 12,075 ha)
- Community (public): 0
- Pagoda: 7 ponds (average size: 2.5 ha)

Number of trap ponds

- Number: 0
- Average size: Not applicable

Major fish species caught in trap ponds

- Not applicable

4.3 Freshwater aquaculture

How aquaculture started in the commune?

Aquaculture activity in the commune started in 2001 without any extension and training program provided. Most farmers stocked their ponds with sutchi catfish (*Pangasianodon hypophthalmus*), hybrid clariid catfish (*Clarias batrachus* x *C. gariepinus*) and tilapia (*Tilapia nilotica*). Most of them did not succeed in this activity as they had encountered technical problems.

Total number of aquaculture households

- Total: 29
- Male-headed: 29
- Female-headed: 0

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 29
- Male-headed: 29
- Female-headed: 0

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 29 (or 4,775 m²)
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Cultured fish species: 3, Tilapia (*Tilapia nilotica* or *Oreochromis aureus*), sutchi catfish (*Pangasianodon hypophthalmus*), hybrid clariid catfish (*Clarias batrachus* x *C. gariepinus*)
- Fish seed production: 0
- Fish seed nursery: 0

Main source of fish seed by major species and their availability

- Middlemen from Takeo province

- Not secure supply (i.e. fish seed availability is not constant)

Average price of seeds by major species and their size

- Tilapia: 4-5 cm, Riel 70 per fish
- Sutchi catfish: 5-6 cm, Riel 150-200 per fish
- Hybrid clariid catfish: 4-5 cm, Riel 110 per fish

Aquaculture season (month)

- Stocking: June – August
- Harvesting: April

Major water source for aquaculture activity

- Major water source: Rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 10%
- Short: 90%
- Extremely short: 0

Present condition of community (public) ponds

- Not applicable or not available

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: No
- Predation: Snakehead murrel, snake, crab, frog, swam eel, mouse and bird

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and Dem Roka commune market on National Road # 3.
- Most fish production was for family consumption; all tilapia were for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Sutchi catfish and clariid catfish, Riel 5,000/kg
- Dry season: Sutchi catfish and clariid catfish, Riel 5,000/kg

Average market price of major cultured fish species

- Wet season: Sutchi catfish, Riel 4,000/kg; Clariid catfish, Riel 4,500/kg
- Dry season: Sutchi catfish, Riel 4,000/kg; Clariid catfish, Riel 4,500/kg

Main feed stuff and its supplier

- Rice bran: Riel 300-400/kg, commune's market and village's rice mills
- Duck weed, collected by fish farmers in the commune
- Pig dung, collected on farm

Main fertilizers stuff and its supplier

- No organic and inorganic fertilizer was applied.

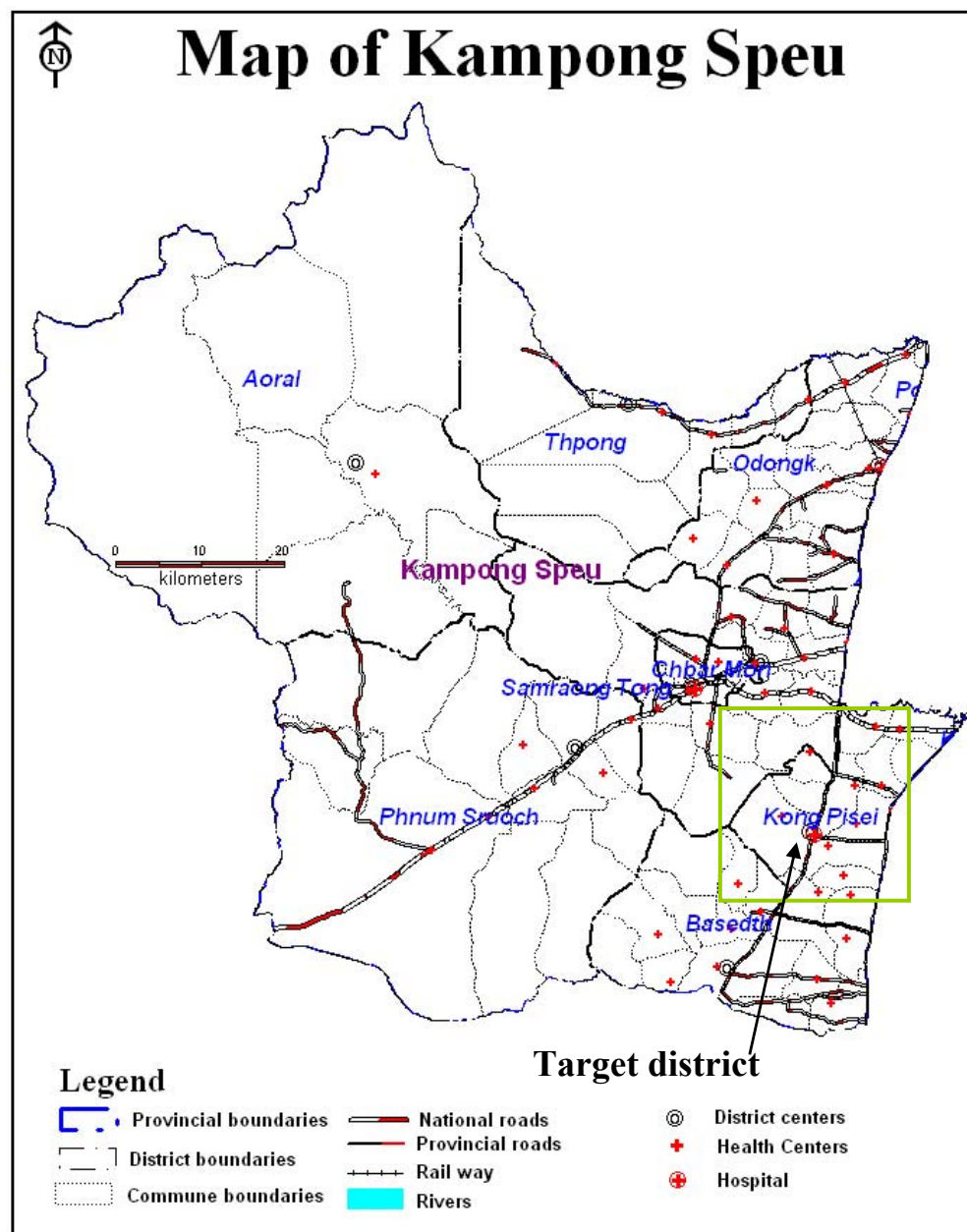
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

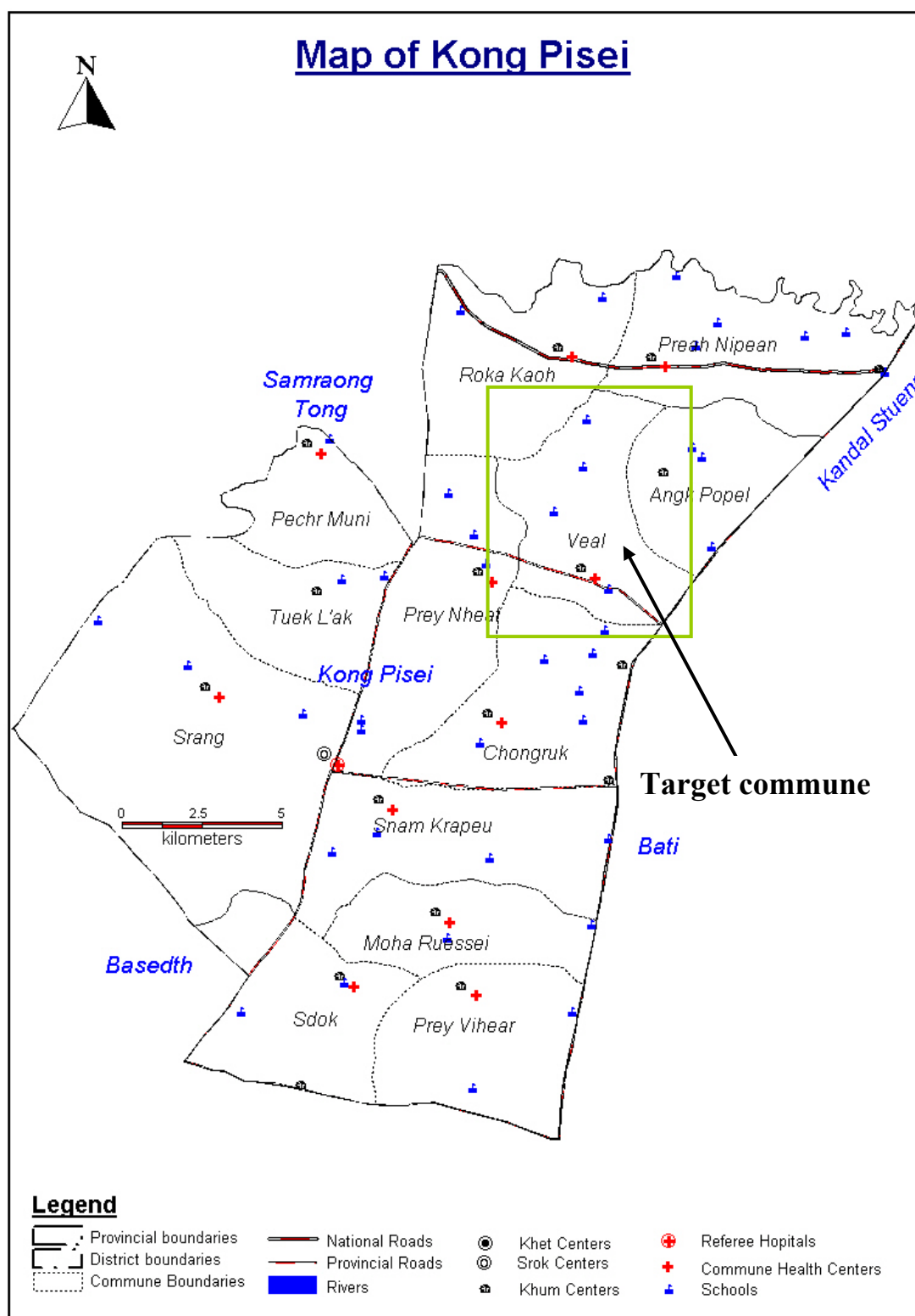
Freshwater aquaculture development/extension (Present and past)

- The first aquaculture activity of VEAL commune was started in 2001. Farmers who were interested in fish culture and wanted both to consume more fish and to generate additional family income bought fish seed of tilapia, sutchi catfish and hybrid clariid catfish to stock in their backyard ponds. They started doing fish culture without any aquaculture knowledge such as pond preparation, stocking fish, feed and feeding fish and pond management.
- In September 2005, the JICA FAIEX Project, in cooperation with Aquaculture Division (AD) of the Department of Fisheries (DoF), has trained 40 farmers how to culture fish with low inputs for increasing family fish consumption and generating additional family income. JICA has provided some inputs for pond preparation and fingerling for stocking the prepared ponds. Regular follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Not applicable





Map of Veal

5 Profile PHEARI village

5.1 Location

PHEARI is one of the thirteen villages located in Pheari Mean Chey commune, Basedth district, Kampong Speu province (See location maps attached below). It is adjacent to the northern boundary of National Road # 3, the southern boundary of Trapaing Phlong village, the eastern boundary of Tar Thor village and the western boundary of Prey Ngoung village. It is the target village where a fish refuge pond has been selected by the FAIEX through several consultations with relevant stakeholders (including DoF/AD, JICA, local authorities and villagers).

Geographical condition

PHEARI village is located 1 km from Pheari Mean Chey commune town hall, 7 km from Basedth district town hall, 47 km from Kampong Speu provincial town hall and 67 km from Phnom Penh. It is located 7 km from National Road # 3. PHEARI has an area of 70 ha, including 57 ha of agricultural land and 13 ha of house and crop (*Chamkar*) land. It is a lowland area where, however, no any flood is detected in the village. There are regular droughts and the most severe one is in year 2004. There are three irrigation canals where water retention is found in wet season only. Sandy-loamy (70%) and sandy (30%) soils are the two found soil types in PHEARI village.

Season of inundation and area

- Beginning (month): July
- Peak (month): September
- End (month): October
- Maximum area (ha): 70
- Minimum area (ha): 57

Available means of transportation, especially in wet season

- There is one main road (with a length of 7 km) in PHEARI village connected from National Road # 3, which is accessible in all seasons.

Accessibility to/from the project target communes nearby

- There is one small road in the village (with a length of 0.5 km) connected from the main road, which is in a good shape and accessible in wet season.

5.2 General information

Name of village chief and his term: Mr. Pel Neth; his term: already 18 years

Industry other than agriculture:

- One furniture workshop in PHEARI village

Total number of population

- Total: 687
- Male: 355

- Female: 332

Total number of households

- Total: 118
- Male-headed households: 107
- Female-headed households: 11
-

Total number of farming households

- Total: 118
- Male-headed households: 107
- Female-headed households: 11

Total number of landless household

- No agricultural land: 0
- No house land: 0
- Male-headed households: 0
- Female-headed households: 0

Number of farmer's group

- No. of farmer's group: 0
- Main activities: 0

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: July – September
- Harvesting: December – January
- Wet season (rain-fed) rice area: 57 ha
- Rice yield: 0.9 ton/ha

Use of chemical/pesticide for rice production

- When: Not use any pesticide
- What kind: Not applicable
- Amount: Not applicable

Nutrition status of the population

- Reduction in consumption of fish and other animal meats and vegetable (i.e. 20-30% reduction) due to rapid population growth and natural disaster (i.e. droughts).

Main source of animal protein

- Wet season: Fish protein intake (85%) and other animal protein intake (15%)
- Dry season: Fish protein intake (40%) and other animal protein intake (60%)

Total number of ponds (including trap ponds)

- Private: 50 ponds (\approx 5,000 ha)
- Community (public): 1 (70 m x 65 m x 2.5 m)
- Pagoda: 0

Number of trap ponds

- Number: 0

- Average size: Not applicable

Major fish species caught in trap ponds

- Not applicable

5.3 Freshwater aquaculture

How aquaculture started in the commune?

Aquaculture development in the village started in 2002. Eleven selected farmers were trained by provincial aquaculture extension staff. EU-PRASAC provided them inputs for pond preparation and fingerling for stocking the prepared ponds. Most of them have dropped this activity because there was no any follow up activity from the project.

Total number of aquaculture households

- Total: 2
- Male-headed: 2
- Female-headed: 0

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 2
- Male-headed: 2
- Female-headed: 0

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 2 (200 m²)
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 3, Tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver carp (*Hypophthalmichthys molitrix*), and silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*)

- Fish seed production: 0
- Fish seed nursery: 0

Main source of fish seed by major species and their availability

- A Farmer's hatchery in Nitean commune, Basedth district, Kampong Speu province
- Not secure supply (i.e. fish seed availability is not constant)

Average price of seeds by major species and their size

- Tilapia: 3-4 cm, Riel 30 per fish
- Silver barb: 3-4 cm, Riel 30 per fish
- Silver carp: 3-4 cm, Riel 30 per head

Aquaculture season (month)

- Stocking: July – September
- Harvesting: April

Major water source for aquaculture activity

- Major water source: Rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough:
- Short: 100%
- Extremely short: 0

Present condition of community (public) ponds

- Renovated by villagers (i.e. making deeper by removing bottom sediments). About 30% of this work has been accomplished. Presently, the pond contains water of a depth of less than 1 m.
- This public pond is used as fish refuge pond, which will be stocked with indigenous fish species and managed based on participatory or community approach under the FAIEX as a model community pond.

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: No
- Predation: Snakehead murrel, crab, swam eel and frog

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and Slab Leng commune market
- Most fish production was consumed in family.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Tilapia, Riel 3,000/kg
- Dry season: All fish species, Riel 4,000 - 5,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: All fish species, Riel 4,000 – 5,000/kg

Main feed stuff and its supplier

- Rice bran: Riel 400/kg, commune's market and village's rice mills
- Duck weed, collected by fish farmers in the village and its commune
- Termite, collected by fish farmers in the village and its commune

Main fertilizers stuff and its supplier

- DAP: Riel 1,700/kg, Slab Leng market
- UREA: Riel 1,500/kg, Slab Leng market
- Green manure, collected in the village
- Animal manure, collected on farm, mostly from farmer's owned animals

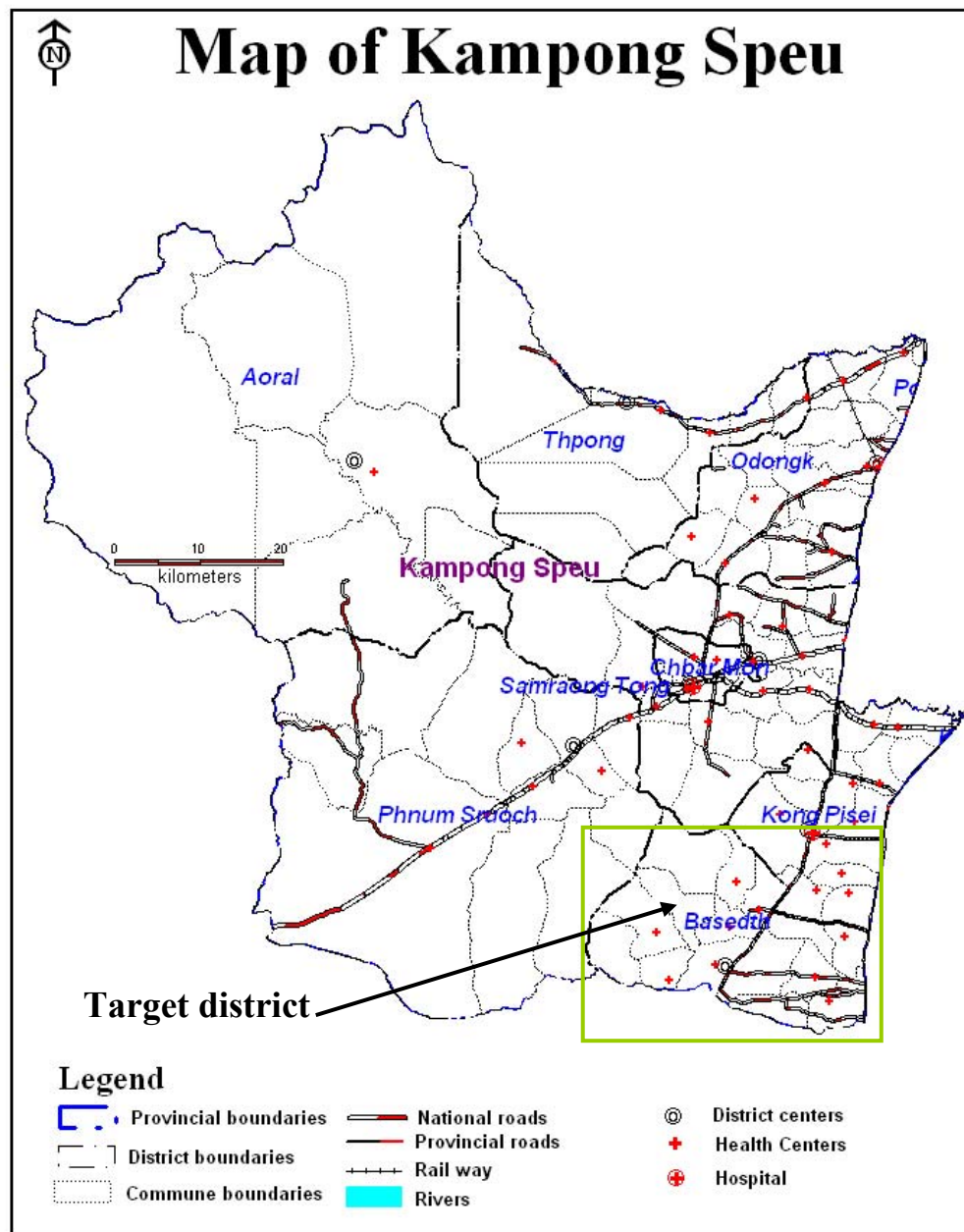
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

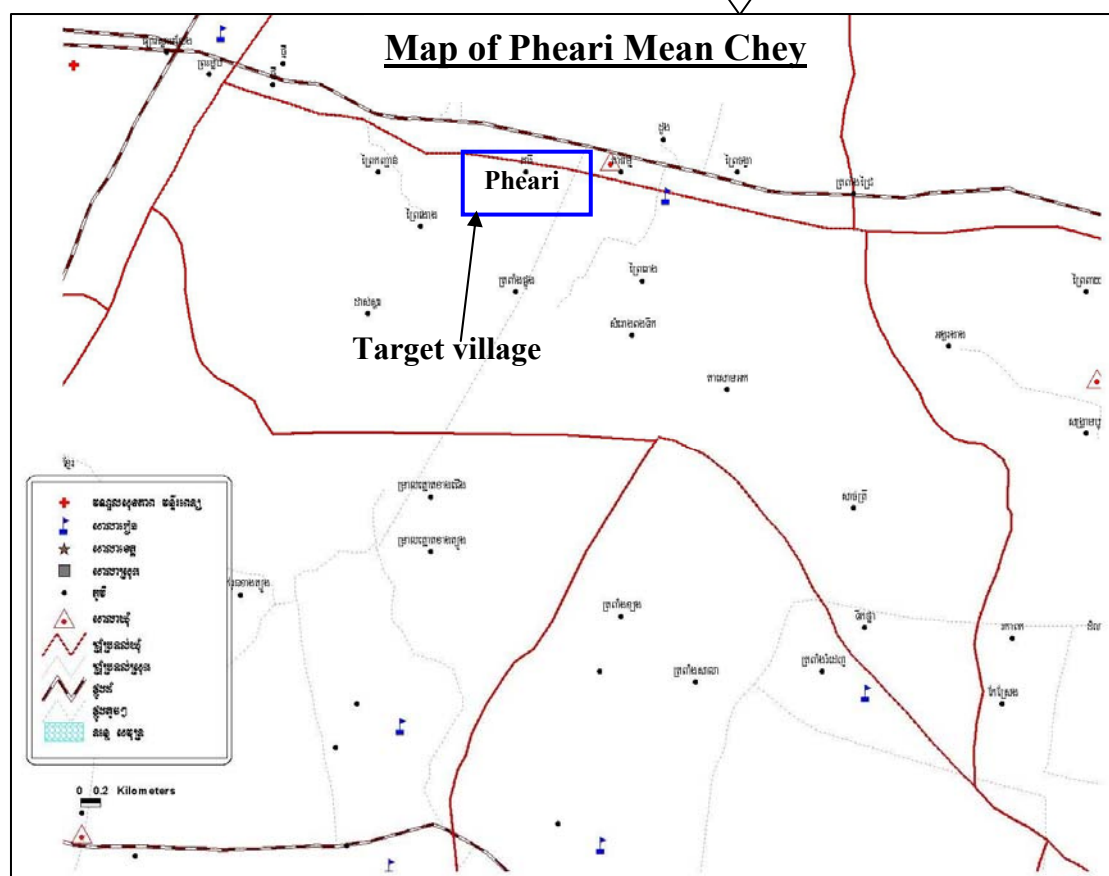
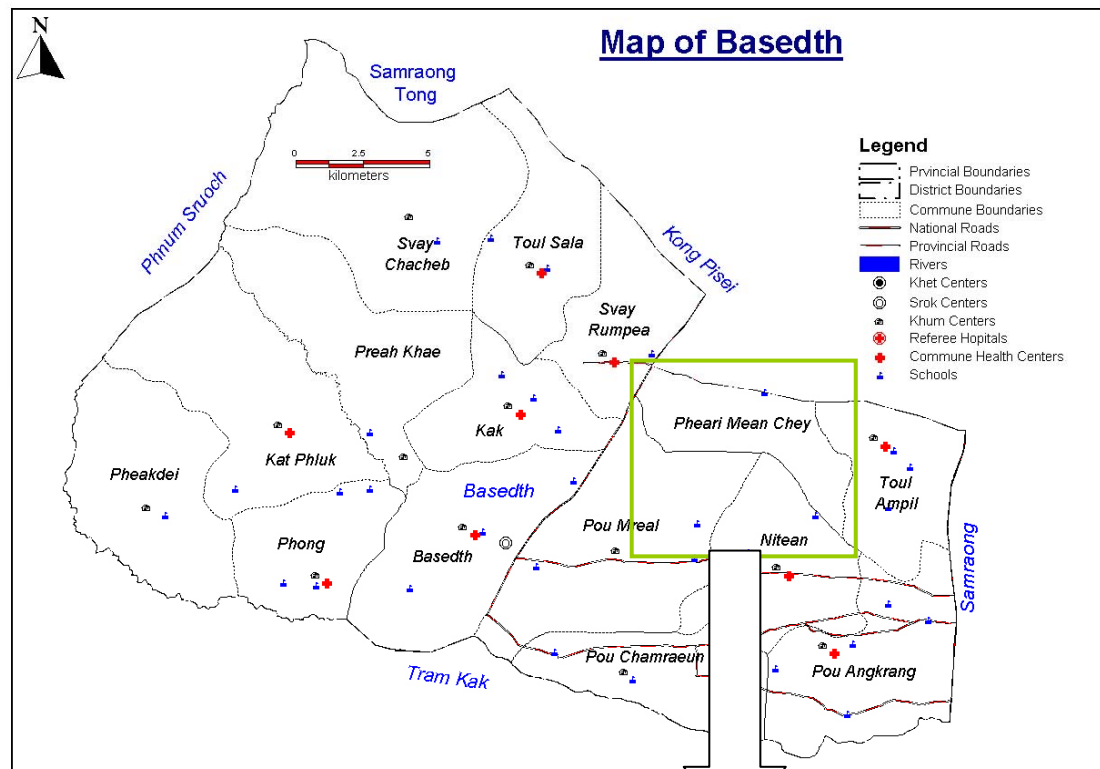
Freshwater aquaculture development/extension (Present and past)

- The PRASAC program funded by European Union, in cooperation with provincial aquaculture extension staff, started promoting small-scale aquaculture in PHEARI village in 2001. This program ended in 2003.
- Afterward, provincial aquaculture extension staff, with support of SEILA program has provided training on fish culture to three farmers in the village. The program has not provided free fingerling to stock their ponds. The monitoring activity after the training provided was absent.

Fish refuge pond management (Present and past)

- No activity of fish refuge pond management was implemented in this village in the past. In September 2005, the DoF-JICA FAIEX project has selected one fish refuge pond (size: 70 m x 65 m x 2.5 m) in PHEARI village to be managed by villagers. This activity is under the progress and last for about five years.





6 Profile ANGKOR MEAS commune

6.1 Location

ANGKOR MEAS commune is one of the communes located in Dang Tong district, Kampot province (See location maps attached below). It is adjacent to the northern boundary of Trapeang Bei commune (Chhuk district), the southern boundary of Mean Ritth commune, the eastern boundary of Damak Srokram and Mean Ritth communes and the western boundary of L' ang commune. It is composed of five villages.

Geographical condition

ANGKOR MEAS commune is located 20 km from Dang Tong district town hall, 30 km from Kampot provincial town hall and 130 km from Phnom Penh. It is located next to National Road # 3. ANGKOR MEAS has an area of 1,605 ha, including 1,292 ha of rice production land, 85 ha of crop land and 128 ha of house land. Public land (including school, pagoda, administrative office and health center) is about 10 ha. It consists of one stream (named Stung Treung) and four irrigation dams. There are regular droughts and no severe flood. There is occasional flood leading to flooding of about 30% of the total commune area. Sandy-loamy land is the most widely found land type in ANGKOR MEAS commune. The rest is laterite land type.

Transportation accessibility

- There are four main roads in ANGKOR MEAS commune. They are in good shape and connected to Mean Ritth and Boeng Nimol communes (Chhuk district).
- In addition, there are several small (branch) roads linked from one to another village in ANGKOR MEAS commune. They are in good shape and accessible in both dry and wet seasons.

6.2 General information

Name of commune chief and his term: Mr. Tith Ren; his term: five years

Industry other than agriculture:

- There is one furniture workshop;
- There is one iron/metal making workshop; and
- There are several family scale business activities such rice wine making, rice milling and battery recharging.

Total number of population

- Total: 6,116
- Male: 2,950
- Female: 3,166

Total number of households

- Total: 1,291
- Male-headed households: 1,252

- Female-headed households: 39

Total number of farming households

- Total: 1,267 (12 households, business affair and 12 households, government officers)
- Male-headed households: 1,229
- Female-headed households: 38

Total number of landless household

- No agricultural land: 30
- No house land: 60
- Male-headed households: 65
- Female-headed households: 25

Number of farmer's group

- No. of farmer's group: 0
- Main activities: Not applicable

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: July – September
- Harvesting: December – January
- Wet season (rain-fed) rice area: 1,292 ha
- Rice yield: 1 – 2 ton/ha

Use of chemical/pesticide for rice production

- When: Not use pesticide
- What kind: Not applicable
- Amount: Not applicable

Nutrition status of the population

- Reduction in consumption of fish and other animal meats and vegetable (i.e. 30-50% reduction) due to rapid population growth and natural disaster (i.e. droughts), natural fish habitat destruction and stream becoming shallower.

Main source of animal protein

- Wet season: Fish protein intake (70%) and other animal protein intake (30%)
- Dry season: Fish protein intake (40%) and other animal protein intake (60%)

Total number of ponds (including trap ponds)

- Private: 225 ponds (range, 100-400 m²/pond)
- Community (public): 10 ponds (average size, 50 m x 35 m x 2.5 m)
- Pagoda: 3 ponds (average size: 50 m x 30 m x 3 m)

Number of trap ponds

- Number: 30 ponds
- Average size: 10 m x 8 m x 1.5 m

Major fish species caught in trap ponds

- Major fish species caught: Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*), Kanchos (*Mystus sp.*) and Changva (*Labocheilos sp.*)

- Productivity of trap ponds: 5 – 20 kg/pond/year

6.3 Freshwater aquaculture

How aquaculture started in the commune?

- Aquaculture development in the commune started in 2002 with the support of APHEDA program implemented under the Kampot Department of Agriculture, Forestry and Fisheries (DAFF). Training on small-scale aquaculture technologies was provided to 60 selected farmers from four villages by aquaculture extension staff of the Provincial Fisheries Division. Pond inputs (including rice for digging pond) and fish seed were offered to all trained farmers by the program. APHEDA did not provide any financial support to this development activity since 2003.

Total number of aquaculture households

- Total: 65
- Male-headed: 60
- Female-headed: 5

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 65
- Male-headed: 60
- Female-headed: 5

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 75 (range, 130 – 400 m²)
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 4, Tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver carp (*Hypophthalmichthys molitrix*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*), and mrigal (*Cirrhinus cirrhosus*).
- Fish seed production: 0

- Fish seed nursery: 0

Main source of fish seed by major species and their availability

- Farmer's hatcheries in Chhuk district
- Public hatchery, Chhuk Fish Seed Production Station supported by APHEDA/DAFF
- Not secure supply (i.e. fish seed availability is not constant)

Average price of seeds by major species and their size

- Tilapia: 2-3 cm, Riel 50 per fish
- Silver barb: 2-3 cm, Riel 50 per fish
- Silver carp: 3-5 cm, Riel 70 fish
- Mrigal: 2-3 cm, Riel 50 per fish

Aquaculture season (month)

- Stocking: July – September
- Harvesting: March

Major water source for aquaculture activity

- Major water source: Rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100%
- Extremely short: 0

Present condition of community (public) ponds

- Not applicable or not available

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: inflammation leading to ulcer
- Predation: Snake and crab

Main destination of cultured fish by major species

- All cultured fish species were sold on farm, and Chhuk and Thnol Bot district markets
- Few cultured fish production was sold at Trapeang Phong market, Preah Khae commune
- Most fish production were for family consumption

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable
- Dry season: Tilapia, mrigal and silver carp, Riel 4,000/kg; silver barb, Riel 5,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable

- Dry season: All fish species, Riel 6,000/kg

Main feed stuff and its supplier

- Rice bran: Riel 300-400/kg, village's rice mills
- Vegetable, collected by fish farmers on farm
- Termite, collected by fish farmers in the commune
- Red ant: collected in the commune

Main fertilizers stuff and its supplier

- DAP: Riel 1,800/kg, Thnol Bot district and Treung commune markets
- UREA: Riel 1,600/kg, Thnol Bot district and Treung commune markets
- Green manure, collected in the commune
- Animal manure, collected on farm, mostly from farmer's owned animals

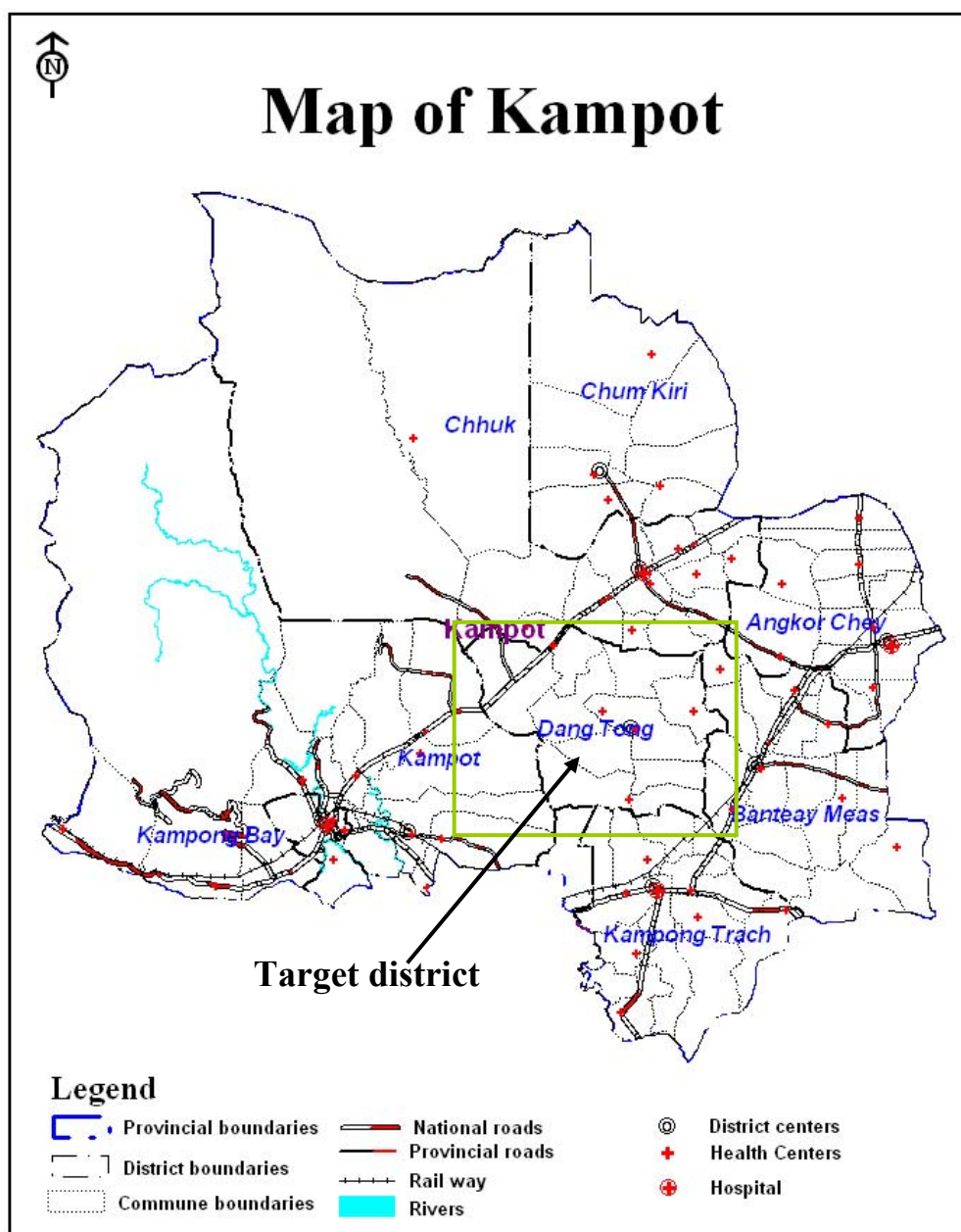
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

Freshwater aquaculture development/extension (Present and past)

- The APHEDA program, in cooperation with DAFF and Kampot Fisheries Division, started promoting small-scale aquaculture in Angkor Meas commune in 2002. Such development activity was not financially supported by APHEDA since 2003.
- Currently, the JICA- FAIEX Project, in cooperation with Aquaculture Division (AD) of the Department of Fisheries (DoF), has trained 40 farmers how to culture fish with low inputs for increasing family fish consumption and generating additional family income. JICA has provided some inputs for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.
- The commune chief suggests that the FAIEX should offer materials to other farmers who have ponds in order to enable them to deepen and improve their ponds to stock fingerling. This can increase fish consumption of rural families.

Fish refuge pond management (Present and past)

- Not applicable



7. Profile DAMNAK SOKRAM commune

7.1. Location

DAMNAK SROKRAM commune is one of the communes located in Dang Tong district, Kampot province (See location maps attached below). It is adjacent to the northern boundary of Baniev commune (Chhuk district), the southern boundary of Dang Tong commune, the eastern boundary of Voat Angk Khang Cheung (Banteay Meas district) commune and the western boundary of Mean Ritth commune. It is composed of five villages.

Geographical condition

DAMNAK SROKRAM commune is located 5.5 km from Dang Tong district town hall, 60 km from Kampot provincial town hall and about 135 km from Phnom Penh. DAMNAK SROKRAM has an area of 1,048 ha, including 703 ha of rice production land, 25 ha of crop land, 267 ha of house land and 12 ha of public land (including school, pagoda, administrative office and health center). It consists of three streams (named Damnak Srokram, Kbal Krabei and Koh Kar Tes) and several irrigation canals, which have an area of 13 ha. There is occasional drought and flood in the commune. When there is flood, 50% of the total land of the commune is flooded. Sandy-loamy land is the most widely found land type in DAMNAK SROKRAM commune.

Transportation accessibility

- There are five main roads in DAMNAK SROKRAM commune. They are in good shape and connected to other neighboring communes. They are accessible in wet season.
- In addition, there are several small (branch) roads linked from one to another village in DAMNAK SROKRAM commune. They are in good shape and accessible in both dry and wet seasons.

7.2 General information

Name of commune chief and his term: Mr. Suong Horn; his term: five years

Industry other than agriculture:

- There are two iron/metal making workshops;
- There are five rice mills;
- There are four rice wine making shops; and
- There is one battery recharging workshop

Total number of population

- Total: 3,621
- Male: 1,725
- Female: 1,896

Total number of households

- Total: 730

- Male-headed households: 708
- Female-headed households: 22

Total number of farming households

- Total: 728 (2 households, school teachers)
- Male-headed households: 706
- Female-headed households: 22

Total number of landless household

- No agricultural land: 3
- No house land: 0
- Male-headed households: 0
- Female-headed households: 3

Number of farmer's group

- No. of farmer's group: Village bank (i.e. Cash Saving group) in two villages
- Main activities: Increase cash in the bank and member of the group can borrow cash from this village bank with a very low interest.

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: July – September
- Harvesting: November – January
- Wet season (rain-fed) rice area: 703 ha
- Rice yield: 1 – 2 ton/ha

Use of chemical/pesticide for rice production

- When: Not use pesticide
- What kind: Not applicable
- Amount: Not applicable

Nutrition status of the population

- Reduction in consumption of fish and other animal meats and vegetable (i.e. 30-40% reduction) due to rapid population growth and natural disaster (i.e. droughts), natural fish habitat destruction and stream becoming shallower.

Main source of animal protein

- Wet season: Fish protein intake (70%) and other animal protein intake (30%)
- Dry season: Fish protein intake (60%) and other animal protein intake (40%)

Total number of ponds (including trap ponds)

- Private: 260 ponds (range, 100-600 m²/pond)
- Community (public): 9 ponds (average size, 50 m x 35 m x 3 m)
- Pagoda: 1 pond (size, 30 m x 20 m x 2.5 m)

Number of trap ponds

- Number: 10 ponds
- Average size: 8 m x 3 m x 1.25 m

Major fish species caught in trap ponds

- Major fish species caught: Chhlaing (*Hemibagrus sp.*), Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*), Kanchos (*Mystus sp.*) and Changva (*Labocheilos sp.*)
- Productivity of trap ponds: 10 – 30 kg/pond/year

7.3 Freshwater aquaculture

How aquaculture started in the commune?

- Aquaculture development in the commune started in 2002 with the support of APHEDA and GTZ/IFSP programs implemented under the Kampot Department of Agriculture, Forestry and Fisheries (DAFF). Trainings on small-scale aquaculture technologies were provided to farmers from four of the five villages with the support of APHEDA and from the fifth village with the support of GTZ. Aquaculture extension staff of the Provincial Fisheries Division provided such trainings. Pond inputs (including rice for digging ponds) and fish seed were offered to all trained farmers by the program. The GTZ-IFSP program continues, its activity till date, while the APHEDA ends this activity in 2003.

Total number of aquaculture households

- Total: 53
- Male-headed: 50
- Female-headed: 3

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 53
- Male-headed: 53
- Female-headed: 3

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 65 (range, 120 – 400 m²)

- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 3, Tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver carp (*Hypophthalmichthys molitrix*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*).
- Fish seed production: 0
- Fish seed nursery: 0

Main source of fish seed by major species and their availability

- Farmer's hatcheries in Chhuk district
- Public hatchery, Chhuk Fish Seed Production Station supported by APHEDA/DAFF
- Not secure supply (i.e. fish seed availability is not constant)

Average price of seeds by major species and their size

- Tilapia: 2-3 cm, Riel 50 per fish
- Silver barb: 2-3 cm, Riel 50 per fish
- Silver carp: 3-5 cm, Riel 75 fish

Aquaculture season (month)

- Stocking: July – September
- Harvesting: March

Major water source for aquaculture activity

- Major water source: Rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100%
- Extremely short: 0

Present condition of community (public) ponds

- Not applicable or not available

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: inflammation leading to ulcer and resulting in fish died
- Predation: Snakehead, snake and bird

Main destination of cultured fish by major species

- All cultured fish species were sold on farm, and Chhuk district and Baniev commune markets
- Few cultured fish production was sold at Trapeang Phong market, Preah Khae commune
- Most fish production were for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable

- Dry season: Tilapia, Riel 4,000/kg; silver barb and silver carp, Riel 5,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: Tilapia, Riel 5,000/kg and silver barb and silver carp, Riel 6,000/kg

Main feed stuff and its supplier

- Rice bran: Riel 300-400/kg, village's rice mills
- Vegetable waste, collected by fish farmers on farm
- Termite, red ant and duck weed collected by fish farmers in village or commune

Main fertilizers stuff and its supplier

- DAP: Riel 1,800/kg, Chhuk and Baniev markets or from vendors
- UREA: Riel 1,500/kg, Chhuk and Baniev markets or from vendors
- Green manure, collected in the commune
- Animal manure, collected on farm, mostly from farmer's owned animals

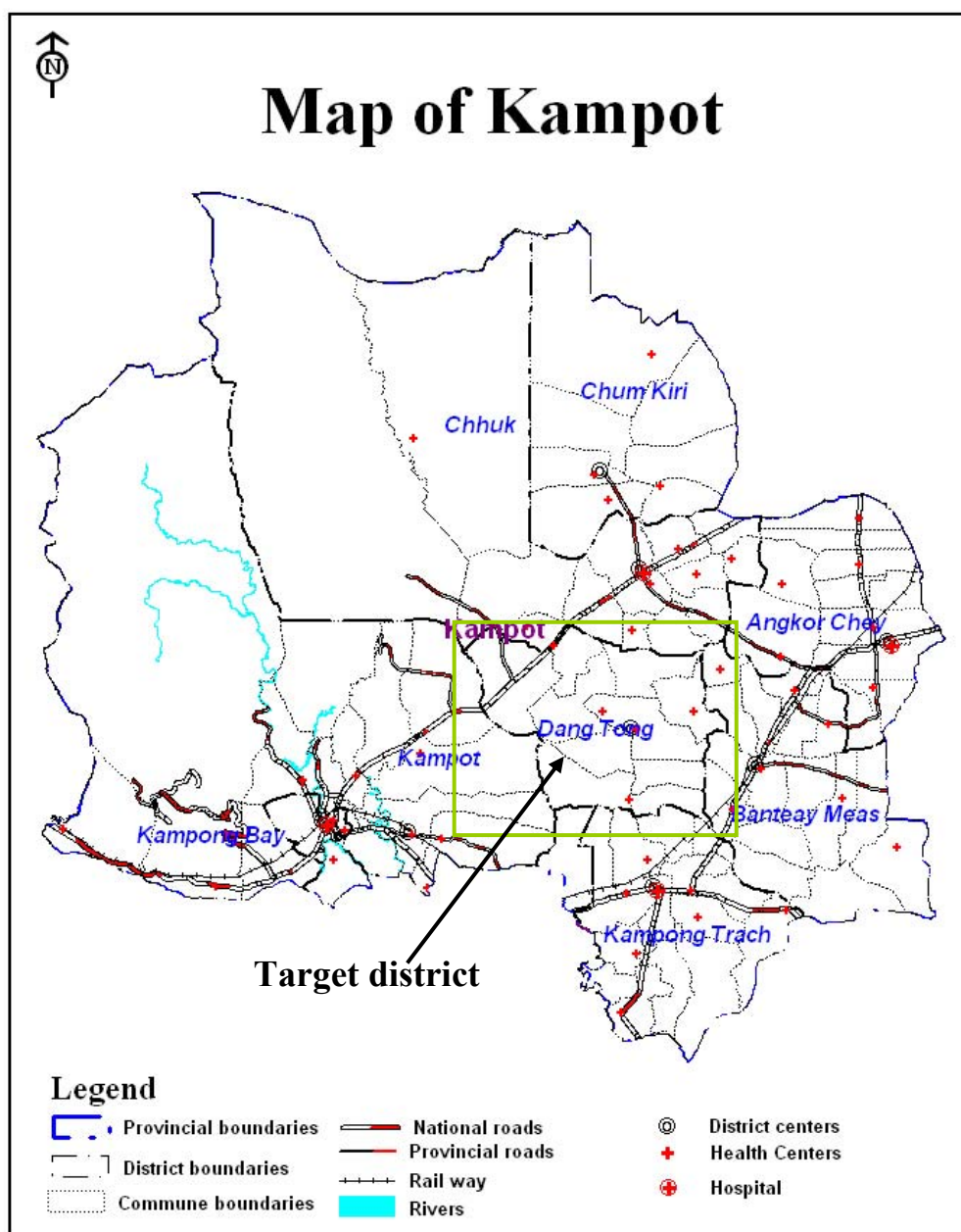
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

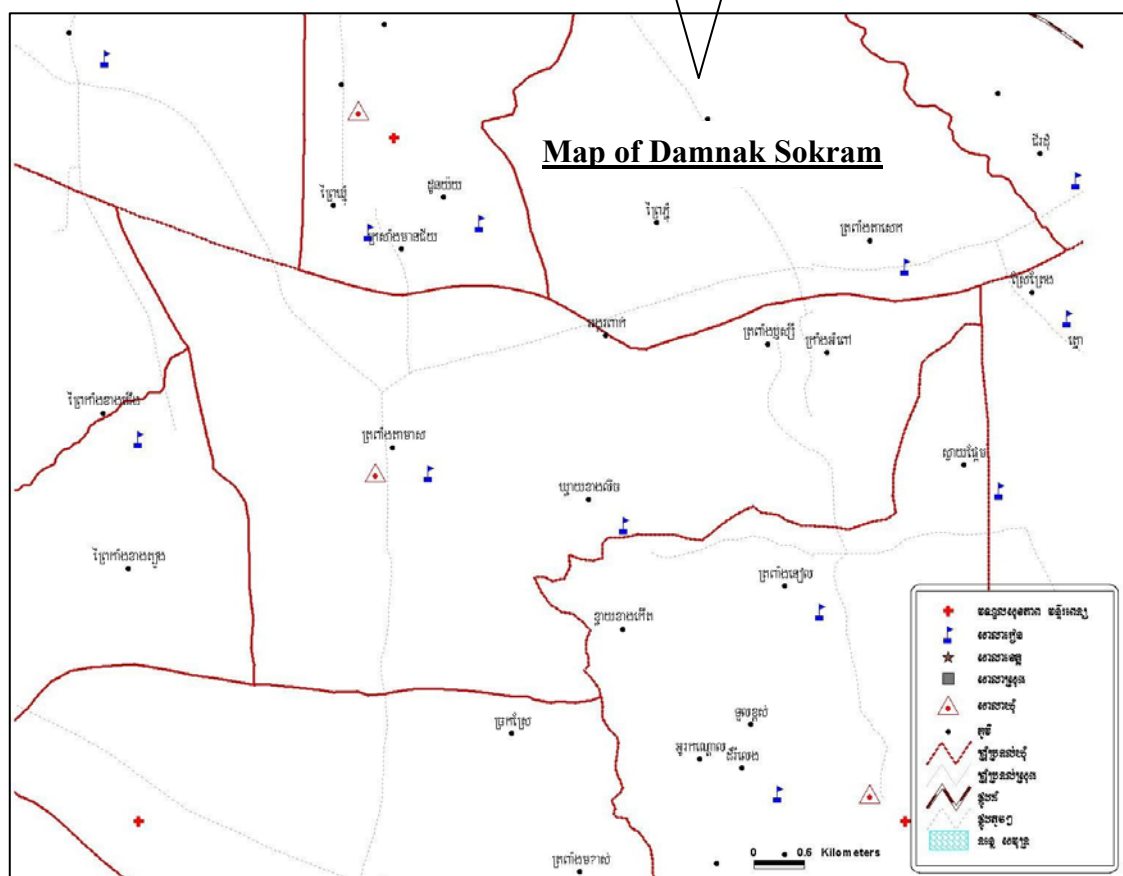
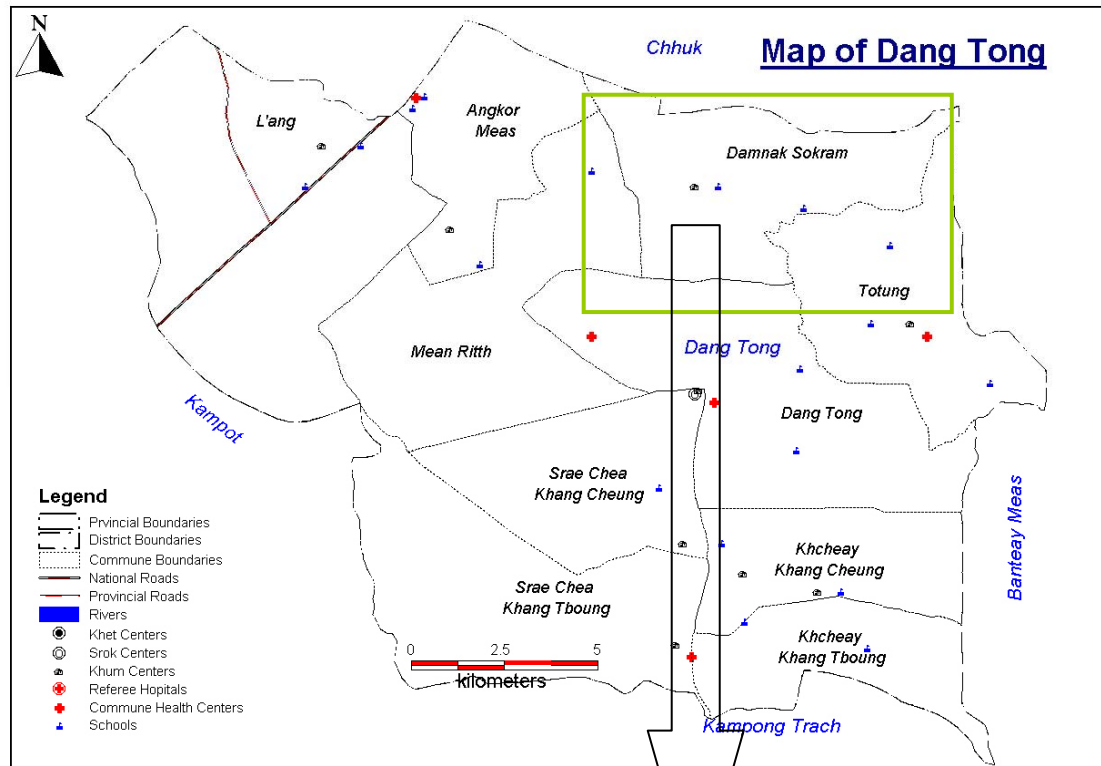
Freshwater aquaculture development/extension (Present and past)

- The APHEDA program, in cooperation with DAFF and Kampot Fisheries Division, started promoting small-scale aquaculture in four villages and GTZ in the fifth village of Damnak Sokram commune in 2002. There is no regular follow up activity from provincial aquaculture extension staff as this development is implemented under the DAFF. This development was not very successful. APHEDA stop supporting this development activity in 2003, while GTZ continue supporting such activity till date.
- Currently, the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF under the Freshwater Aquaculture Improvement and Extension (FAIEX) Project funded by JICA, has trained 40 selected farmers on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. The FAIEX has provided some inputs for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Not applicable





8. Profile KRANG SBOV commune

8.1 Location

KRANG SBOV commune is one of the communes located in Chhuk district, Kampot province (See location maps attached below). It is adjacent to the northern boundary of Tramaeng commune (Chhuk district), the southern boundary of Voat Angk Khang Cheung commune (Dang Tong district), the eastern boundary of Dambouk Khpos communes (Angkor Chey district) and the western boundary of Baniev commune. It is composed of five villages.

Geographical condition

KRANG SBOV commune is located 15 km from Chhuk district town hall, 65 km from Kampot provincial town hall and about 130 km from Phnom Penh. KRANG SBOV has an area of 1,520 ha, including 950 ha of agriculture land and about 570 ha of house and public land. There is no any natural water body and only a single irrigation dam (named Krang Sbov dam) is found in the commune. There is regular drought and no flood detected in the commune. Sandy-loamy land is the most widely found land type in KRANG SBOV commune.

Transportation accessibility

- There are two main roads in KRANG SBOV commune. They are in good shape and connected to other neighboring communes. They are accessible in wet season.
- In addition, there are three small roads linked from one to another village in KRANG SBOV commune. They are in good shape and accessible in both dry and wet seasons.

8.2 General information

Name of commune chief and his term: Mr. Prak Sy; his term: five years

Industry other than agriculture:

- There is one iron/metal making workshop;
- There are two earthen pot making shops ;
- There are five rice wine making shops; and
- There are two battery recharging workshops.

Total number of population

- Total: 5,843
- Male: 2,894
- Female: 2,949

Total number of households

- Total: 1,199
- Male-headed households: 1,079
- Female-headed households: 120

Total number of farming households

- Total: 1,199
- Male-headed households: 1,079
- Female-headed households: 120

Total number of landless household

- No agricultural land: 0
- No house land: 0
- Male-headed households: 0
- Female-headed households: 0

Number of farmer's group

- No. of farmer's group: Rice banks and animal banks (i.e. Cash Saving group) in two villages
- Main activities: Increase cash in the banks and member of the group can borrow cash from these banks with a very low interest (3% per year).

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: July – October
- Harvesting: December – January
- Wet season (rain-fed) rice area: 950 ha
- Rice yield: 0.5 – 0.8 ton/ha

Use of chemical/pesticide for rice production

- When: July and September
- What kind: FILIDOL (for killing insect and grass)
- Amount: 250 ml/ha

Nutrition status of the population

- Reduction in consumption of fish and other animal meats (i.e. 30-40% reduction) due to rapid population growth and natural disaster (i.e. droughts). In 1998-1999, electricity fishing was used resulting in reduction in about 80% of total wild fish catch. Farmers have enough vegetable for daily food.

-

Main source of animal protein

- Wet season: Fish protein intake (70%) and other animal protein intake (30%)
- Dry season: Fish protein intake (30%) and other animal protein intake (70%)

Total number of ponds (including trap ponds)

- Private: 280 ponds (range, 100-600 m²/pond)
- Community (public): 2 ponds (for water utilization)
- Pagoda: 2 ponds

Number of trap ponds

- Number: 0
- Average size: Not applicable

Major fish species caught in trap ponds

- Major fish species caught: Not applicable

- Productivity of trap ponds: Not applicable

8.3 Freshwater aquaculture

How aquaculture started in the commune?

- Aquaculture development in the commune started in 2003 with the support of FHI program implemented under the Kampot Department of Agriculture, Forestry and Fisheries (DAFF). Trainings on small-scale aquaculture technologies were provided to 10 farmers from two of the five villages. Fish seed were offered to all trained farmers by the program. No monitoring activity was conducted. This program was not successful, although it continues the activity till date.
- In 2004, Chhouk Agriculture, Forestry and Fisheries Division (AFFD) offers rice to farmers to dig pond to culture fish. Then fish seed were stocked in dug ponds without any training provided. Finally, this development activity was failed and ended in 2005.

Total number of aquaculture households

- Total: 70
- Male-headed: 49
- Female-headed: 21

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 70
- Male-headed: 49
- Female-headed: 21

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 70 (300-600 m²)
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 5, Tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver carp (*Hypophthalmichthys molitrix*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*), common carp (*Cyprinus carpio*) and mrigal (*Cirrhinus cirrhosus*).
- Fish seed production: 0
- Fish seed nursery: 0

Main source of fish seed by major species and their availability

- Public hatchery, Chhuk Fish Seed Production Station supported by APHEDA/DAFF
- Not secure supply (i.e. fish seed availability is not constant)

Average price of seeds by major species and their size

- Tilapia: 3-4 cm, Riel 50 per fish
- Silver barb: 3-4 cm, Riel 50 per fish
- Silver carp: 5-7 cm, Riel 80 fish
- Common carp: 3-5 cm, Riel 50 per fish
- Mrigal: 3-5 cm, Riel 50 per fish

Aquaculture season (month)

- Stocking: July – September
- Harvesting: April

Major water source for aquaculture activity

- Major water source: most of them waiting for rain and some using pumping machine to draw water from irrigation canals.

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100%
- Extremely short: 0

Present condition of community (public) ponds

- Not applicable or not available

Experience/present situation on fish disease outbreak and predations

- Disease No outbreak
- Predation: Snakehead, snake and bird; some report that fish loss from their ponds without any reason.

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and Chhuk market
- Most fish production were for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Tilapia, Riel 6,000 – 8,000/kg
- Dry season: All species, Riel 7,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: All species, Riel 8,000/kg

Main feed stuff and its supplier

- Rice bran: Riel 300-600/kg, village's rice mills and Chhuk district market
- Duck weed, collected by fish farmers in village or commune

Main fertilizers stuff and its supplier

- DAP: Riel 1,800/kg, Chhuk market
- UREA: Riel 1,500/kg, Chhuk market
- Animal manure (cow, buffalo, chicken and duck), collected on farm, mostly from farmer's owned animals

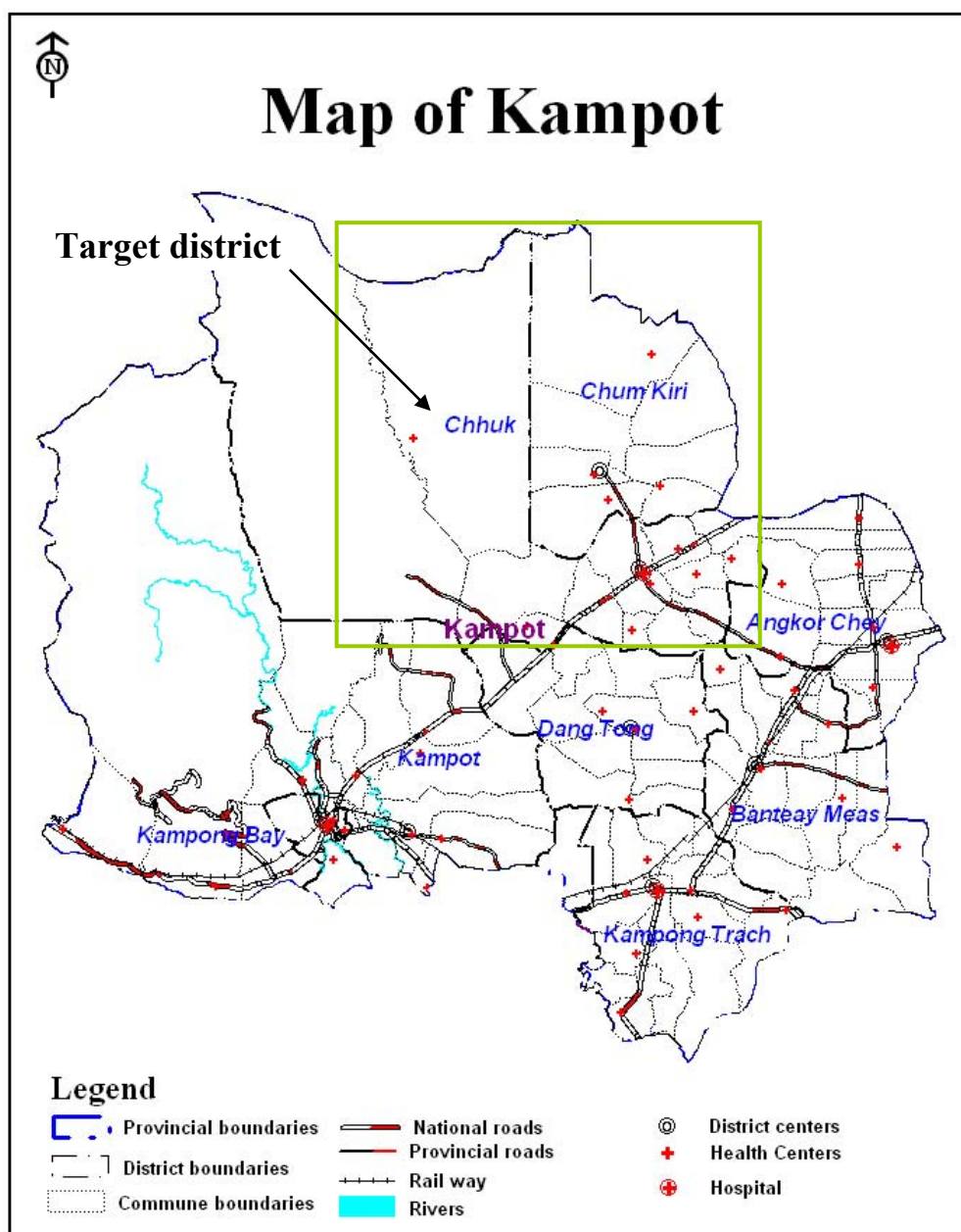
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

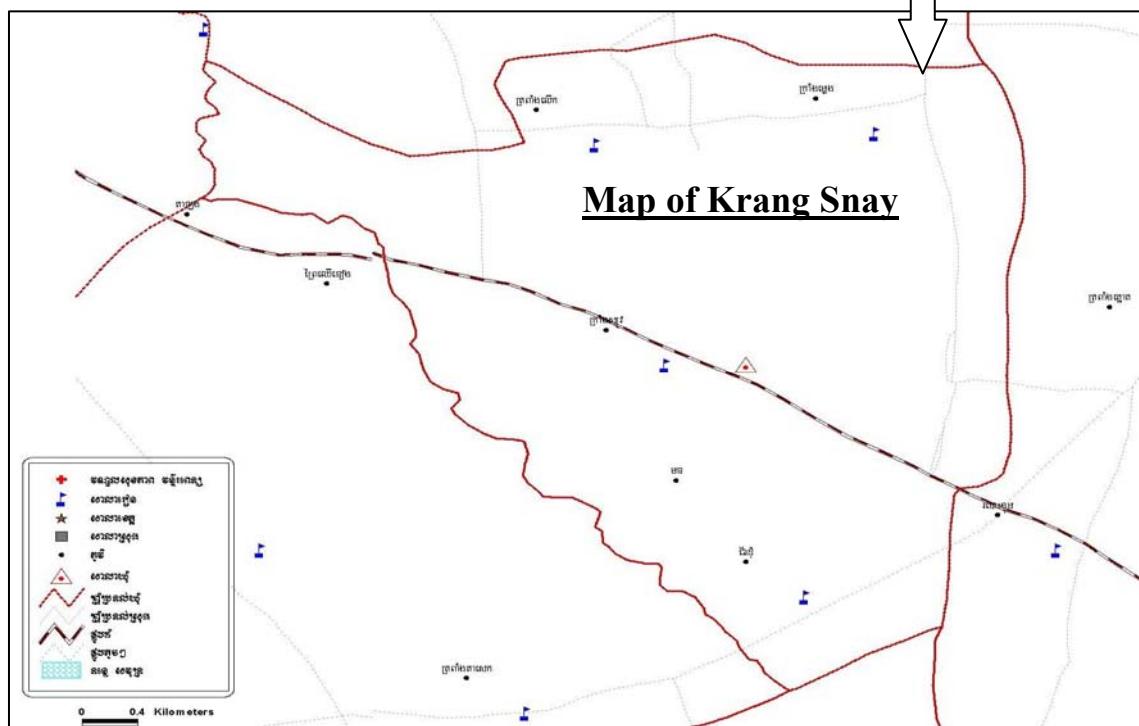
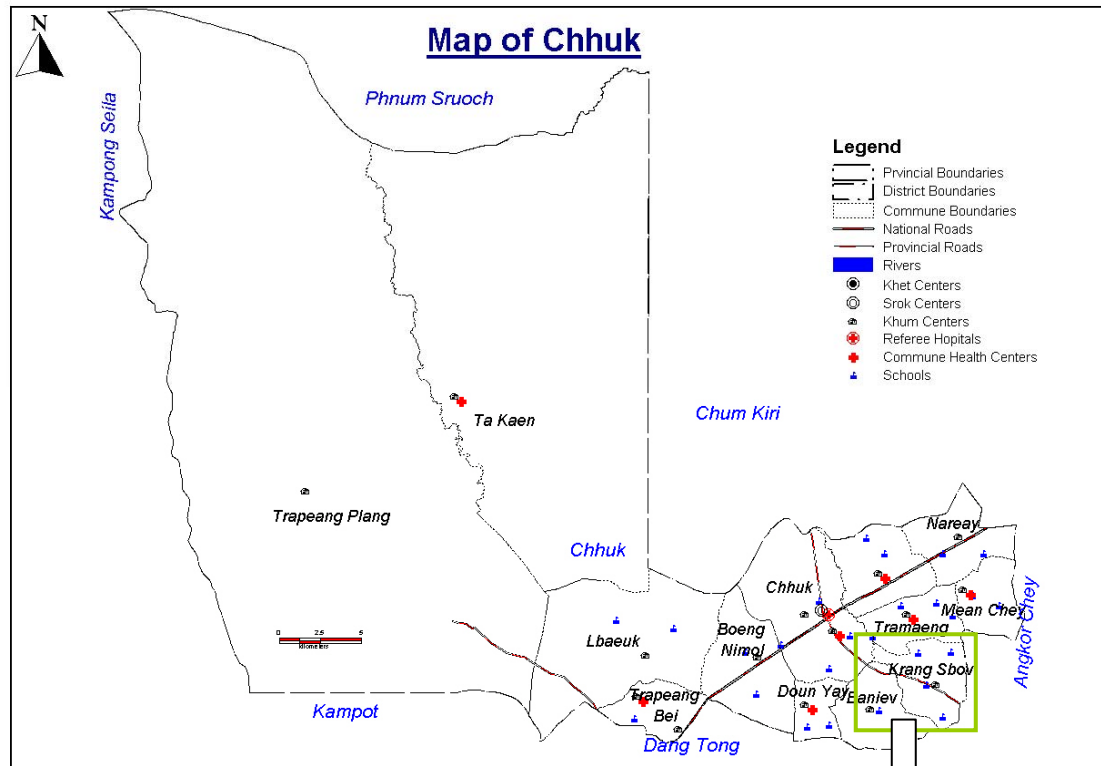
Freshwater aquaculture development/extension (Present and past)

- The FHI program, in cooperation with DAFF and Kampot Fisheries Division, started promoting small-scale aquaculture in two villages of Krang Sbov commune in 2003. There is no regular follow up activity from provincial aquaculture extension staff as this development is implemented under the DAFF. This development was failed, although it continues the activity till date.
- Similarly, small-scale aquaculture development was encouraged and supported by Chhuk AFFD in 2004. This development was also failed and ended in 2005.
- Currently, the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF under the FAIEX Project funded by JICA, has trained 40 selected farmers on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. The FAIEX has provided some inputs for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.
- The commune chief suggests that the FAIEX should train more farmers how to growth fish to enhance rural family fish food and nutrition because they could not depend on wild fish to feed their family and wild fish stocks have been overfished due to rapid population growth. He also asks for help from the project to dig a community fish pond to enhance fish stock for future generation because the commune has land for this development.

Fish refuge pond management (Present and past)

- Not applicable





9. Profile KRANG SNAY commune

9.1 Location

KRANG SNAY commune is one of the communes located in Chhuk district, Kampot province (See location maps attached below). It is adjacent to the northern boundary of Chres commune (Chum Kiri district), the southern boundary of Tramaeng commune, the eastern boundary of Nareay communes and the western boundary of Chhuk commune. It is composed of six villages.

Geographical condition

KRANG SBOV commune is located 5 km from Chhuk district town hall, 50 km from Kampot provincial town hall and 130 km from Phnom Penh. The commune is located next to National Road # 3. KRANG SNAY has an agriculture land area of 1,350 ha and a public land area of 10 ha. There is no any natural water body found in the commune, but only a few irrigation canals are built. There is regular drought and occasional flood detected in the commune. The flood is not severe and last for a few days. Sandy-loamy land is the most widely found land type in KRANG SNAY commune.

Transportation accessibility

- There is one main road in KRANG SNAY commune. They are in good shape and connected to other neighboring communes. They are accessible in wet season.
- In addition, there are two dikes of irrigation canals and several rice field dikes, which are used as transportation means. The latter ones are not in good shapes due to inundated by rainfalls; hence accessibility is difficult in wet season.

9.2 General information

Name of commune chief and his term: Mr. Ouch Noun; his term: five years

Industry other than agriculture:

- There are two iron/metal making workshops;
- There are two earthen pot making shops;
- There are fifty rice mills;
- There are four rice wine making shops; and
- There are three battery recharging workshops.

Total number of population

- Total: 10,340
- Male: 5,117
- Female: 5,223

Total number of households

- Total: 2,074
- Male-headed households: 1,742

- Female-headed households: 332

Total number of farming households

- Total: 2,012 farmer and 62 businessmen and government officers
- Male-headed households: 1,680
- Female-headed households: 332

Total number of landless household

- No agricultural land: 82
- No house land: 41
- Male-headed households: 25
- Female-headed households: 98

Number of farmer's group

- No. of farmer's group: Rice banks and animal banks (i.e. Cash Saving group) in four villages out of six villages in the commune.
- Main activities: Increase cash in the banks and member of the group can borrow cash from these banks with a very low interest. This activity is supported by HEKS.

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: July – October
- Harvesting: December – January
- Wet season (rain-fed) rice area: 1,350 ha
- Rice yield: average, 1.5 ton/ha

Use of chemical/pesticide for rice production

- When: Pesticide not used
- What kind: Not applicable
- Amount: Not applicable

Nutrition status of the population

- Reduction (i.e. insufficiency) in consumption of fish, other animal meats and vegetable (i.e. 30-40% reduction) due to rapid population growth and natural disaster (i.e. regular and long drought).

Main source of animal protein

- Wet season: Fish protein intake (70%) and other animal protein intake (30%)
- Dry season: Fish protein intake (40%) and other animal protein intake (60%)

Total number of ponds (including trap ponds)

- Private: > 300 ponds (range, 100-900 m²/pond)
- Community (public): 3 ponds namely Sraes Chas, Sraes Tbaeng and Trapaing Samseb (for water utilization)
- Pagoda: 2 ponds (Krang Roluos and Krang Snay)

Number of trap ponds

- Number: 65
- Average size: 7 m x 4 m x 1.5 m

Major fish species caught in trap ponds

- Major fish species caught: Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*), Chhlounh (eel, *Macrogathus sp.*), Kanchos (*Mystus sp.*), Changva (*Labocheilos sp.*) and Komphleanh (*Trichogaster sp.*).
- Productivity of trap ponds: 2-15 kg/pond/year

9.3 Freshwater aquaculture

How aquaculture started in the commune?

- Aquaculture development in the commune started in 1997 with the support of APHEDA program implemented under the Kampot Department of Agriculture, Forestry and Fisheries (DAFF). Trainings on small-scale aquaculture technologies were provided to selected farmers. Fish seed were offered to all trained farmers by the program. Chhouk Fish Seed Production Station was built in the same year with the financial support of APHEDA. In 2000-2001, DAFF-APHEDA continued providing training and 50% of the total fish seed cost. Such initiatives were not so successful as fish seed stocked in farmers' pond is very small.
- In 2002, SEILA program offered rice to farmers to dig pond to culture fish. Then training and fish seed were provided. Not many farmers participated in training course because of lack of communication and coordination among SEILA, DAFF, PFD and farmers.

Total number of aquaculture households

- Total: 115
- Male-headed: 103
- Female-headed: 12

Fish seed production households

- Total: 1
- Male-headed: 1
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 114
- Male-headed: 102
- Female-headed: 12

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 115 (120-300 m²)
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 3, Tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver carp (*Hypophthalmichthys molitrix*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*).
- Fish seed production: Tilapia, silver carp and silver barb
- Fish seed nursery: Not applicable

Main source of fish seed by major species and their availability

- Public hatchery, Chhuk Fish Seed Production Station supported by APHEDA/DAFF
- Farmer's hatchery, Damnak Trob Khhang Tboung village, Krang Snay commune
- Secure supply (i.e. fish seed availability is constant during stocking season)

Average price of seeds by major species and their size

- Tilapia: 2-3 cm, Riel 50 per fish
- Silver barb: 3-4 cm, Riel 70 per fish
- Silver carp: 4-5 cm, Riel 70 fish

Aquaculture season (month)

- Stocking: July – September
- Harvesting: March/April

Major water source for aquaculture activity

- Major water source: Rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100%
- Extremely short: 0

Present condition of community (public) ponds

- There are three community/public ponds (named Sraes Chas, Sraes Tbaeng and Trapeang Samseb), where water was utilized for human, animal and rice/vegetable in the commune. So far, there has been no any management system applied for such community ponds.

Experience/present situation on fish disease outbreak and predations

- Disease Inflammation leading to ulcer and fish died.
- Predation: Snakehead, snake and bird; some report that fish was lost from their ponds by poaching and some lost their fish, especially tilapia, from ponds without any clear reason.

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and Chhuk district and Trapeang Phlov commune markets
- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable
- Dry season: Silver barb, Riel 6,000/kg and silver carp and tilapia, Riel 4,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: Silver barb, Riel 6,000/kg and silver carp and tilapia, Riel 5,000/kg

Main feed stuff and its supplier

- Rice bran: Riel 300-600/kg, village's or farmer's owned rice mills and Chhuk district market
- Vegetable and other wastes collected on farm
- Duck weed, red ant and termite collected by fish farmers in village or commune.

Main fertilizers stuff and its supplier

- DAP: Riel 1,600/kg, Chhuk district or Trapeang Phlov commune markets
- UREA: Riel 1,500/kg, Chhuk district market or Trapeang Phlov commune markets
- Animal manure (cow, buffalo, chicken and duck), collected on farm, mostly from farmer's owned animals.
- Green manure collected in village or commune.

Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

Freshwater aquaculture development/extension (Present and past)

- The APHEDA, in cooperation with DAFF and Kampot Fisheries Division, started promoting small-scale aquaculture in KRANG SNAY commune in 1997. A public hatchery was built in the same year. This Chhuk Fish Seed Production Station is under the administrative system of DAFF. APHEDA continue providing financial support to the station till date, while the small-scale aquaculture development in KRANG SNAY commune, as well as in Kampot province was ended in 2003.
- The SEILA also involve in small-scale aquaculture development in this commune in 2002. This development activity was also ended in 2003.
- Currently, the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF under the FAIEX Project funded by JICA, has trained 40 selected farmers on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. The FAIEX has provided some inputs for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will

be provided by provincial aquaculture extension staff in cooperation with AD staff.

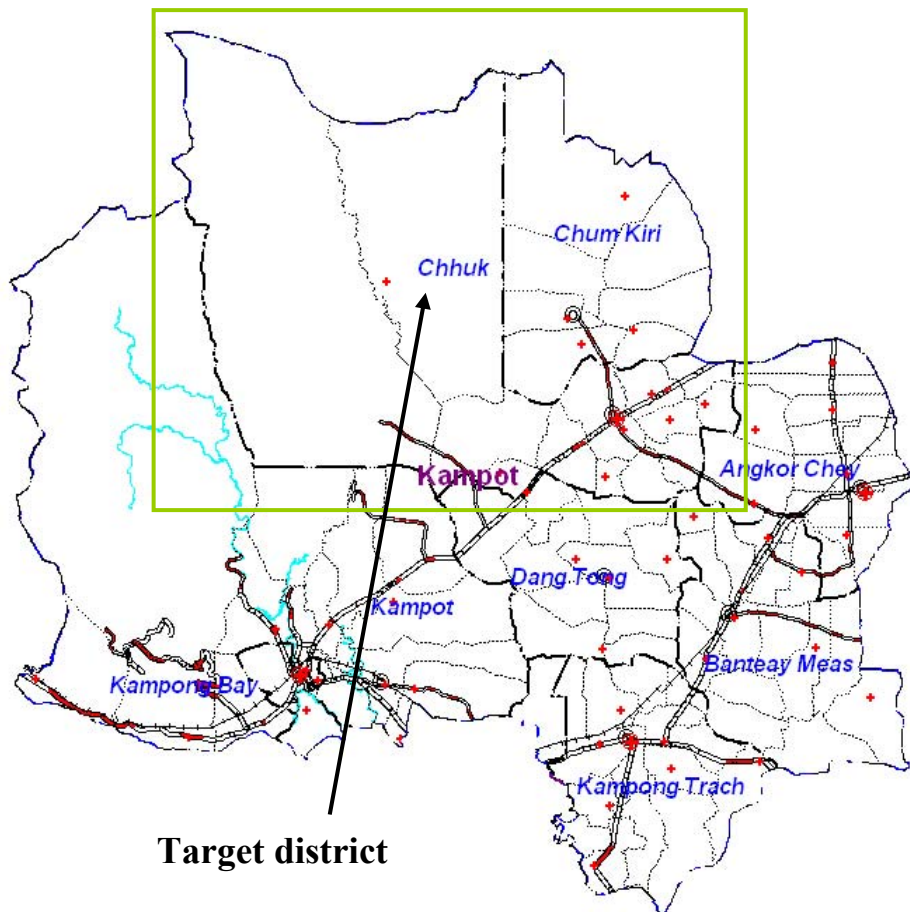
- The commune chief suggests that the FAIEX should have regular follow up activities to ensure that this aquaculture development is successful.

Fish refuge pond management (Present and past)

- Not applicable



Map of Kampot



Legend

- | | | |
|-----------------------|------------------|------------------|
| Provincial boundaries | National roads | District centers |
| District boundaries | Provincial roads | Health Centers |
| Commune boundaries | Rail way | Hospital |
| | Rivers | |

10. Profile DAMNAK TROP KHANG CHEUNG village

10.1 Location

DAMNAK TROP KHANG CHEUNG village is one of the six villages located in Krang Snay commune, Chhuk district, Kampot province (See location maps attached below). It is adjacent to the northern boundary of Krang Roluos and Lve villages, the southern boundary of Damnak Trop Khang Tboung village, the eastern boundary of Lve village and the western boundary of Krang Roluos village.

Geographical condition

DAMNAK TROP KHANG CHEUNG is located 15 km from Chhuk district town hall, 55 km from Kampot provincial town hall. The commune is located about 6 km from National Road # 3. DAMNAK TROP KHANG CHEUNG village has a total land area of 215 ha including an agriculture land area of 159 ha, a crop land area of 7 ha and a house land area of 29 ha. There is one ancient common pond (called Trapeang Sarmseb in Cambodian language) found in the village. There is occasional flood detected during wet season in the village. The flood is not severe and last for a few days resulting flooding 50% of the total village land area. Sandy-loamy land is the most widely found land type in DAMNAK TROP KHANG CHEUNG village.

Transportation accessibility

- There are several dikes of irrigation canals and rice field dikes, which are used as transportation means in the village. They are not in good shapes due to inundated by rainfalls; hence accessibility is difficult in wet season.

10.2 General information

Name of commune chief and his term: Mr. Long Oeun; his term: five years

Industry other than agriculture:

- There are two rice mills; and
- There are eight rice wine making shops.

Total number of population

- Total: 1,253
- Male: 551
- Female: 702

Total number of households

- Total: 247
- Male-headed households: 207
- Female-headed households: 40

Total number of farming households

- Total: 247
- Male-headed households: 207

- Female-headed households: 40

Total number of landless household

- No agricultural land: 4
- No house land: 4
- Male-headed households: 4
- Female-headed households: 4

Number of farmer's group

- No. of farmer's group: Rice banks and animal banks (i.e. Cash Saving group) in the village
- Main activities: Increase cash in the banks and member of the group can borrow cash from these banks with a very low interest. This activity is supported by HEKS.

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: July – September
- Harvesting: November – January
- Wet season (rain-fed) rice area: 159 ha
- Rice yield: average, 1.7 ton/ha

Use of chemical/pesticide for rice production

- When: 2-3 months after transplanting
- What kind: FILIDOL
- Amount: 250 ml/ha

Nutrition status of the population

- Deficiency in consumption of fish, other animal meats and vegetable due to rapid population growth and natural disaster (i.e. regular and long drought). In addition, illegal fishing gears (including electricity fishing gear) were used.

Main source of animal protein

- Wet season: Fish protein intake (85%) and other animal protein intake (15%)
- Dry season: Fish protein intake (60%) and other animal protein intake (40%)

Total number of ponds (including trap ponds)

- Private: 160 ponds (range, 120-900 m²/pond)
- Community (public): 1 (an total area of 10 ha) used for drinking water, animals and vegetable
- Pagoda: 0

Number of trap ponds

- Number: 60
- Average size: 6 m x 5 m x 1.2 m

Major fish species caught in trap ponds

- Major fish species caught: Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*),

- Chhlounh (eel, *Macrogathus sp.*), Kanchos (*Mystus sp.*), Changva (*Labocheilos sp.*) and Komphleanh (*Trichogaster sp.*).
- Productivity of trap ponds: 5-15 kg/pond/year

10.3 Freshwater aquaculture

How aquaculture started in the village?

- Aquaculture development in the village started in 2000 with the support of APHEDA program implemented under the Kampot Department of Agriculture, Forestry and Fisheries (DAFF). Trainings on "Small-scale aquaculture technologies" and extension materials were provided to selected farmers. Fish seed were offered to all trained farmers by the program. There was an increase in fish consumption in fish farmer households after small-scale aquaculture was promoted in this village. Unfortunately, APHEDA stopped funding this aquaculture development in 2003.

Total number of aquaculture households

- Total: 11
- Male-headed: 8
- Female-headed: 3

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 11
- Male-headed: 8
- Female-headed: 3

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 11 (120 – 300 m²)
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 3, Tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver carp (*Hypophthalmichthys molitrix*) and silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*).
- Fish seed production: 0
- Fish seed nursery: 0

Main source of fish seed by major species and their availability

- Public hatchery, Chhuk Fish Seed Production Station supported by APHEDA under the DAFF.
- Secure supply (i.e. fish seed availability is constant during stocking season).

Average price of seeds by major species and their size

- Tilapia: 2-3 cm, Riel 50 per fish
- Silver barb: 3-4 cm, Riel 70 per fish
- Silver carp: 4-5 cm, Riel 70 fish

Aquaculture season (month)

- Stocking: July – September
- Harvesting: March/April

Major water source for aquaculture activity

- Major water source: Rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100%
- Extremely short: 0

Present condition of community (public) ponds

- There is one community/public pond (named Trapaing Samseb, 10 ha), where water is utilized for human, animal and rice/vegetable in the village. So far, there has been no any management system applied for such community pond.

Experience/present situation on fish disease outbreak and predations

- Disease Inflammation leading to ulcer and fish died.
- Predation: Snakehead, snake and bird; some report that fish, especially tilapia, was lost from their ponds without any clear reason.

Main destination of cultured fish by major species

- All cultured fish species were sold on farm.
- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable
- Dry season: Silver barb, Riel 6,000/kg and silver carp and tilapia, Riel 5,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable

- Dry season: Not applicable

Main feed stuff and its supplier

- Rice bran: Riel 300-600/kg, village's or farmer's owned rice mills
- Vegetable and other wastes collected on farm
- Duck weed, red ant and termite collected by fish farmers in village or commune.

Main fertilizers stuff and its supplier

- DAP: Riel 1,600/kg, Chhuk or Trapaing Phlov (commune) markets
- UREA: Riel 1,500/kg, Chhuk market or Trapaing Phlov (commune) markets
- Animal manure (cow, buffalo, chicken and duck), collected on farm, mostly from farmer's owned animals.
- Green manure collected in village or commune.

Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

Freshwater aquaculture development/extension (Present and past)

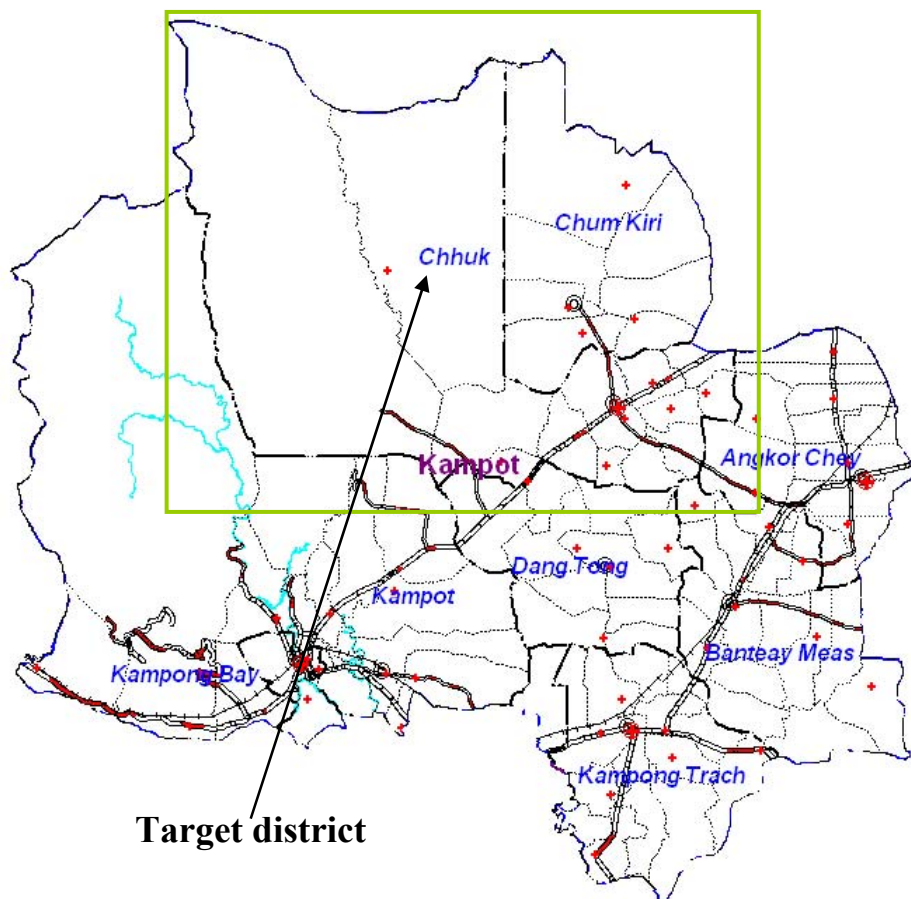
- The APHEDA, in cooperation with DAFF and Kampot Fisheries Division, started promoting small-scale aquaculture in DAMNAK TROP KHANG CHEUNG village in 2000. The APHEDA small-scale development program was ended in 2003.
- Currently, the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF under the FAIEX Project funded by JICA, has trained selected farmers from the village on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. Extension materials such as poster and brochure related to small-scale aquaculture technologies were also provided during the training. The FAIEX has provided all trained farmers digging instruments (hoc/grub-hoe, shovel and two-handle basket open at one end and made of silvers of bamboo), some inputs (lime and inorganic fertilizers) for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Village chief suggests that community fish pond management system should be developed in the village in order to enhance fish stock and improve fish food security of villagers.



Map of Kampot



Legend

Provincial boundaries	National roads	District centers
District boundaries	Provincial roads	Health Centers
Commune boundaries	Rail way	Hospital
	Rivers	

11 Profile BOENG PREAH commune

11.1 Location

BOENG PREAH commune is one of the communes located in Ba Phnum district, Prey Veng province (See location maps attached below). It is adjacent to the northern boundary of Rak Chey commune, the southern boundary of Spueu Ka commune, the eastern boundary of Prey Veng district and the western boundary of ROUNG DAMREI and REAKS CHEY communes. BOENG PREAH commune is composed of 14 villages.

Geographical condition

BOENG PREAH is located 12 km from Ba Phnum district town hall, 30 km from Neak Loeang, 60 km from Prey Veng provincial town hall through National Road # 1 and 90 km from Phnom Penh. BOENG PREAH commune has a total land area of 3,550 ha including an agriculture land area of 2,291 ha, house and crop land areas of 469 ha and a public land area of 120 ha. There is one lake of 7 ha and several irrigation canals found in the commune. There was occasional flood detected during wet season in BOENG PREAH commune and no severe disaster was resulted from the flood. There was severe drought for the last three years. Sandy-loamy land is the most widely found land type in BOENG PREAH commune.

Transportation accessibility

- There is one major road in BOENG PREAH commune connected from Rak Chey commune to Me Sang district and National Road # 1. It is in a good shape and accessible in wet season.
- There are four small roads in the commune connected from the major road. They are in good shapes; hence accessibility is not the problem in wet season.

11.2 General information

Name of commune chief and his term: Mr. Nob Chik; his term: five years

Industry other than agriculture:

- There are five iron/metal making workshops;
- There are twenty-five rice mills;
- There are ten rice wine making shops; and
- There are six battery recharging workshops.

Total number of population

- Total: 13,645
- Male: 6,522
- Female: 7,123

Total number of households

- Total: 2,787
- Male-headed households: 2,377
- Female-headed households: 410

Total number of farming households

- Total: 2,787
- Male-headed households: 2,377
- Female-headed households: 410

Total number of landless household

- No agricultural land: 79
- No house land: 79
- Male-headed households: 24
- Female-headed households: 55

Number of farmer's group

- No. of farmer's group: Rice banks (i.e. Cash Saving group)
- Main activities: Increase cash in the banks and member of the group can borrow cash from these banks with a very low interest. This activity has been supported by UNICEF/IFAD since 1997.

Rice production season

- Number of crops: 1 (i.e. wet season)
- Planting: June – September
- Harvesting: December – January
- Wet season (rain-fed) rice area: 2,291 ha
- Rice yield: average, 1.2 ton/ha

Use of chemical/pesticide for rice production

- When: 2-3 months after transplanting (only 10% of the commune rice production farmers, especially farmers producing light rice, used pesticides)
- What kind: FILIDOL
- Amount: 200 ml/ha

Nutrition status of the population

- Deficiency in consumption of fish, other animal meats and vegetable (reduction rate, 20%) due to rapid population growth and natural disaster (i.e. regular and long drought).

Main source of animal protein

- Wet season: Fish protein intake (85%) and other animal protein intake (15%)
- Dry season: Fish protein intake (60%) and other animal protein intake (40%)

Total number of ponds (including trap ponds)

- Private: 1,436 ponds
- Community (public): 0
- Pagoda: 6 ponds (average size: 30 m x 20 m x 3 m)

Number of trap ponds

- Number: 150
- Average size: 7 m x 5 m x 1.5 m

Major fish species caught in trap ponds

- Major fish species caught: Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*),

- Chhlounh (eel, *Macrogathus sp.*), Kanchos (*Mystus sp.*), Changva (*Labocheilos sp.*) and Komphleanh (*Trichogaster sp.*), Kounthou (snakeskin gourami, *Trichogaster pectoralis*), Slath (bronze freatherback, *Notopterus notopterus*), Ta ADn (Butter catfish, *Ompok sp.*) and Kompeus (small shrimp).
- Productivity of trap ponds: 5-6 kg/pond/year

11.3 Freshwater aquaculture

How aquaculture started in the commune?

- Aquaculture development in the commune started in 1997 with the support of FFP program implemented under the Prey Veng Department of Agriculture, Forestry and Fisheries (DAFF). Trainings on "Small-scale aquaculture technologies" were provided to 58 selected farmers. Fish seed were offered to all trained farmers by the program. This development failed as no proper follow up activity was given.
- DAFF/UNICEF stocked fish seed into 68 farmers' ponds without providing any training in 1998. This activity was not successful due to overstocking the ponds and absence of monitoring system.
- In 1999 MRC/DoF-READ project funded by DANIDA, in cooperation with Prey Veng Fisheries Division, provided training and extension materials to farmers in the commune. After training, three pilot ponds were selected to stock fish seed. No good results were obtained as pond selection was not properly done. The selected ponds were dried up very fast and no water source was available at the vicinity to the ponds. The project ended in 2000.

Total number of aquaculture households

- Total: 200
- Male-headed: 185
- Female-headed: 15

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 198
- Male-headed: 183
- Female-headed: 15
-

Rice-cum-fish culture households

- Total: 2
- Male-headed: 2
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 200 (120 – 300 m²)
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 6, Sutchi catfish (*Pangasianodon hypophthalmus*), tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*), hybrid clariid catfish (*C. batrachus* and *C. gariepinus*), common carp (*Cyprinus carpio*) and mrigal (*Cirrhinus cirrhosus*).
- Fish seed production: 0
- Fish seed nursery: 0

Main source of fish seed by major species and their availability

- Sutchi catfish and silver barb obtained from a public hatchery, Bati Fish Seed Production and research Station.
- Tilapia, common carp and mrigal obtained from a farmer's hatchery (Mr. Noeun) in Chheu Kach commune located 10 km this target commune.
- Hybrid clariid catfish and sutchi catfish obtained from vendor who brought them from Viet Nam.
- Not secure supply (i.e. fish seed availability is not constant during stocking season).

Average price of seeds by major species and their size

- Tilapia: 2-3 cm, Riel 30 per fish
- Silver barb: 3-4 cm, Riel 70 per fish
- Common carp: 2-3 cm, Riel 50 per fish
- Mrigal: 2-3 cm, Riel 50 per fish
- Sutchi catfish: 3-5 cm, Riel 70 per fish
- Hybrid catfish, 2-3 cm, Riel 40 per fish

Aquaculture season (month)

- Stocking: July – August
- Harvesting: February/March

Major water source for aquaculture activity

- Major water source: Rainfalls (> 95%) and about 5% using pump to pump water from dug well.

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100% (short of water for 2-3 months per year)
- Extremely short: 0

Present condition of community (public) ponds

- Not applicable

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: Inflammation leading to ulcer and fish died as no any treatment was applied.
- Predation: Snakehead, mouse and bird

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and Po Kanleng market (Mesang district), about 10 km from the target commune.
- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable
- Dry season: All species, Riel 5,000 – 6,000 per kilo

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: All species, Riel 6,000 – 7,000 per kilo at Po Kanleng market

Main feed stuff and its supplier

- Rice bran: Riel 300-600/kg, village's or farmer's owned rice mills
- Rice: Riel 1,000/kg, farmer's owned rice
- Vegetable and other wastes collected on farm
- Duck weed, red ant and termite collected by fish farmers in village or commune
- Pellet, Riel 1,200/kg from Viet Nam for fry/fingerling of sutchi catfish and hybrid catfish.

Main fertilizers stuff and its supplier

- DAP: Riel 1,300/kg, Reaks Chey commune market (about 7 km from the target commune)
- UREA: Riel 1,000/kg, Reaks Chey commune market
- Animal manure (cow, buffalo, chicken and duck), collected on farm, mostly from farmer's owned animals.
- Green manure collected in village or commune.

Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

Freshwater aquaculture development/extension (Present and past)

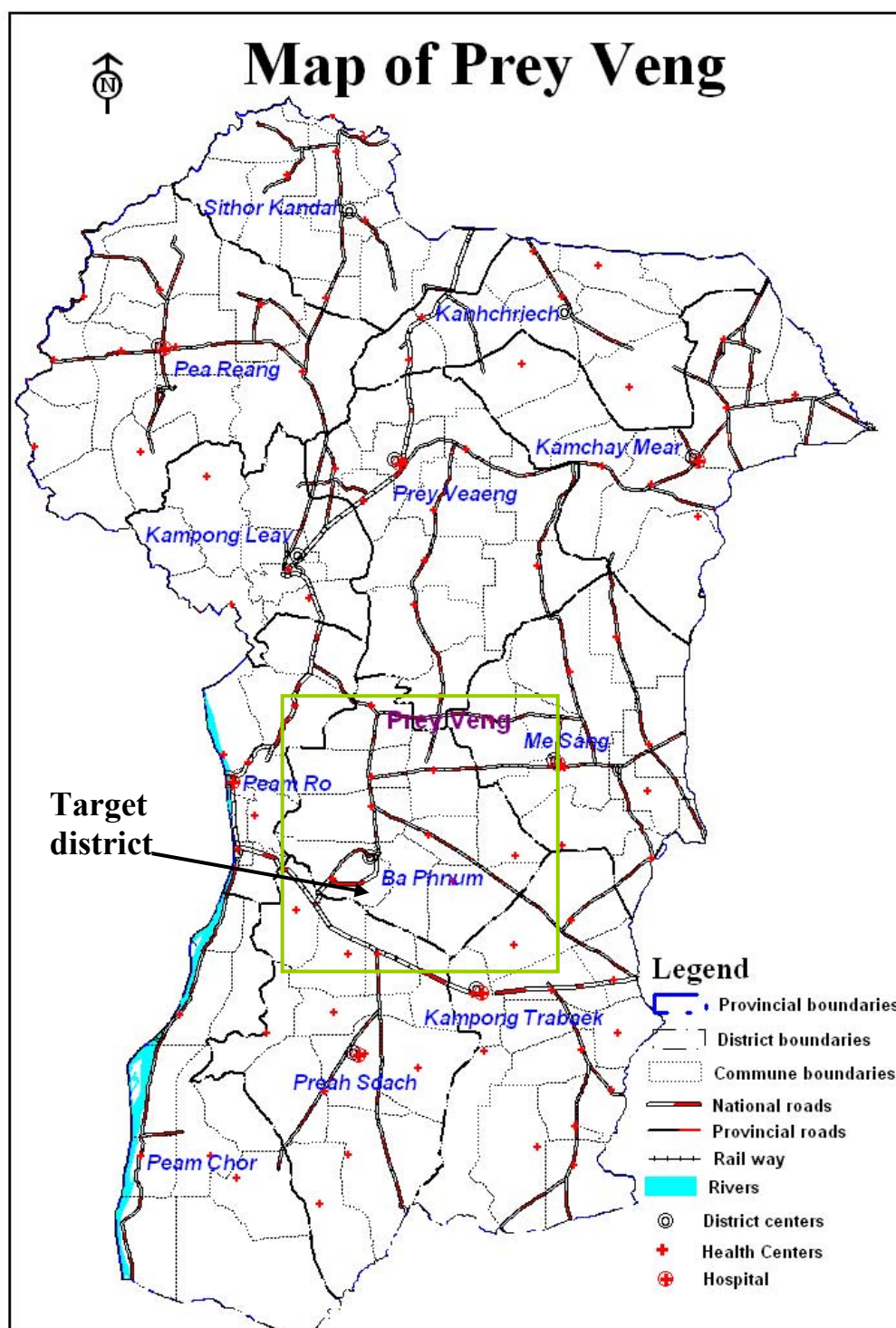
- In 1997 aquaculture development in the commune started with the support of FFP program implemented under the Prey Veng Department of Agriculture, Forestry and Fisheries (DAFF). Trainings on "Small-scale aquaculture technologies" were provided to 58 selected farmers. Fish seed were offered to all trained farmers by the program. This development failed as no proper follow up activity was given.
- In 1998 DAFF/UNICEF stocked fish seed into 68 farmers' ponds without providing any training. This activity was not successful due to overstocking the ponds and absence of monitoring system.
- In 1999 MRC/DoF-READ project funded by DANIDA, in cooperation with Prey Veng Fisheries Division, provided training and extension materials to

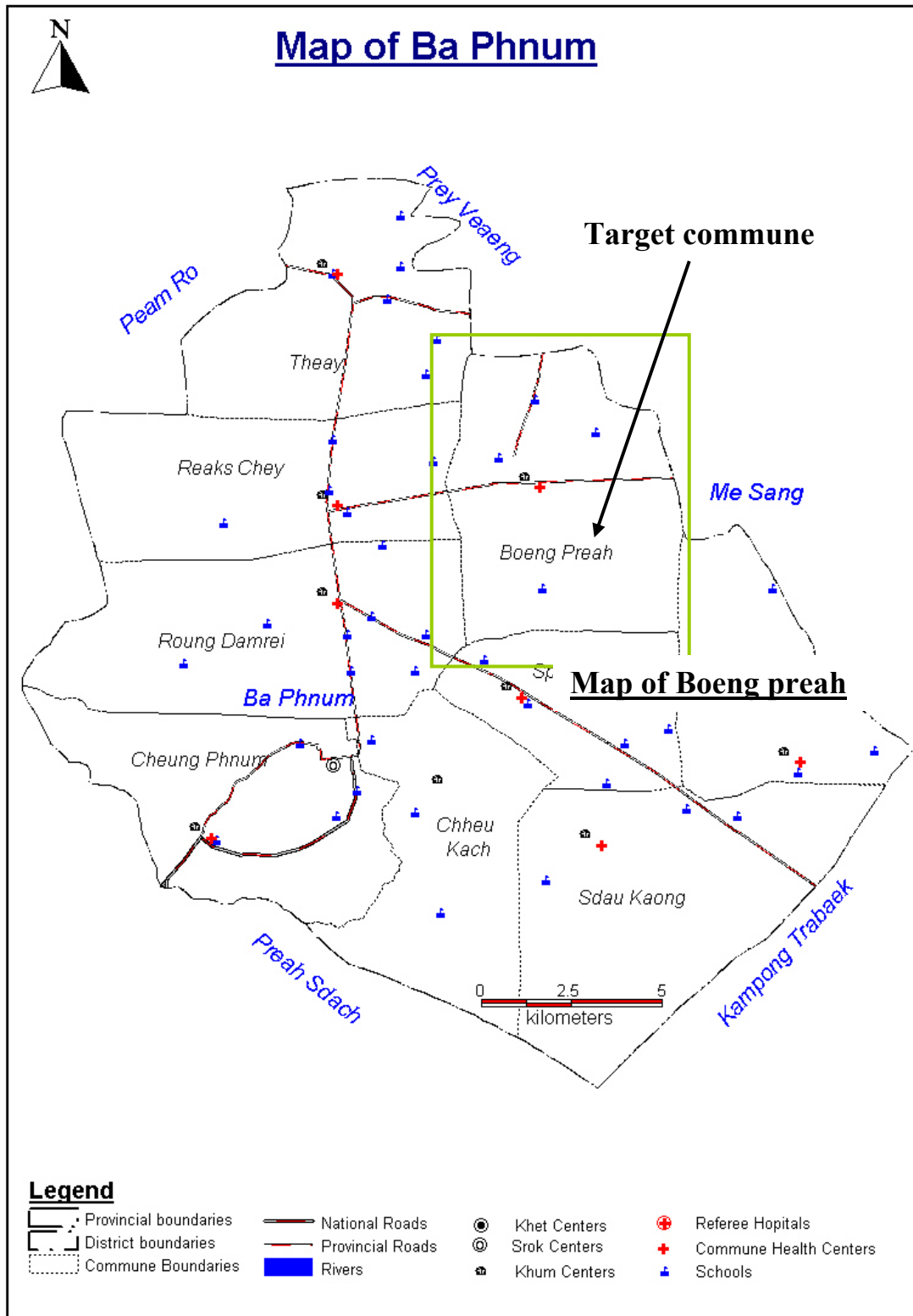
farmers in the commune. After training, three pilot ponds were selected to stock fish seed. No good results were obtained as pond selection was not properly done. The selected ponds were dried up very fast and no water source was available at the vicinity to the ponds. The project ended in 2000.

- After ending the DAFF/FFP, DAFF/UNICEF and MCR/DoF-READ projects, farmers without fish culture knowledge and willing to do fish culture have learned this knowledge from experienced fish farmers. As a result, the number of farmers involving in fish culture activity increased year after year.
- Currently, the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF under the Freshwater Aquaculture Improvement and Extension Project funded by JICA, has trained selected farmers from the village on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. Extension materials such as poster and brochure related to small-scale aquaculture technologies were also provided during the training. The FAIEX has provided all trained farmers digging instruments (hoc/grub-hoe, shovel and two-handle basket open at one end and made of silvers of bamboo), some inputs (lime and inorganic fertilizers) for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Not applicable







12 Profile CHEA KHLANG commune

12.1 Location

CHEA KHLANG commune is one of the communes located in Prey Veng district, Prey Veng province (See location maps attached below). It is adjacent to the northern boundary of Prey Khla commune and Kamchay Mear district, the southern boundary of Ankor Tret and Chrey communes, the eastern boundary of Chrey commune and Kamchay Mear district and the western boundary of Svay Antor commune. CHEA KHLANG commune is composed of 8 villages.

Geographical condition

CHEA KHLANG commune is located 6 km from Prey Veng district town hall, 20 km from Prey Veng provincial town hall, 50 km from Neak Loeang, 110 km from Phnom Penh. CHEA KHLANG commune has a total land area of 3,110 ha including an agriculture land area of 2,224 ha, a crop land area of 14 ha and house and public land areas of 862 ha. There is no river and seven lakes (named Chang Sandan, Kamping Puay, Cham Nes, Ro Leay, Kbal Kou, Koh and Krapeu) and several irrigation canals are found in the commune. There was occasional flood detected during wet season in CHEA KHLANG commune and no severe disaster was resulted from the flood. There was severe drought in the commune. Sandy-loamy lowland is the most widely found land type in CHEA KHLANG commune.

Transportation accessibility

- There is one major road in CHEA KHLANG commune connected from Provincial town to Kamchay Mear district. It is in a good shape and accessible in wet season.
- There are 21 small roads connected from the major road into villages of the commune. They are in good shapes; hence accessibility is not the problem in wet season.

12.2 General information

Name of commune chief and his term: Mr. Ob Seab; his term: five years

Industry other than agriculture:

- Beside agriculture activity, many types of small business are found in the commune, including rice mill, iron/metal workshop, battery recharging workshop, handicraft workshop, ice making shop and furniture workshop.

Total number of population

- Total: 7,537
- Male: 3,616
- Female: 3,921

Total number of households

- Total: 1,745

- Male-headed households: 1,479
- Female-headed households: 266

Total number of farming households

- Total: 1,745
- Male-headed households: 1,479
- Female-headed households: 266

Total number of landless household

- No agricultural land: 19
- No house land: 6
- Male-headed households: 10 and 2
- Female-headed households: 9 and 4

Number of farmer's group

- No. of farmer's group: Village banks (i.e. Cash Saving group) in all villages
- Main activities: Increase cash in the banks and only member of the group can borrow cash from these banks with a very low interest (1% per month) for expanding rice cultivation activity and making new small business.

Rice production season

- Number of crops: 2 (i.e. recession rice and wet season rice)
- Planting: May – June recession rice and July – September wet season rice
- Harvesting: August – September recession rice and December – February wet season rice
- Rice area: recession rice: 24 ha and wet season rice: 2,200 ha
- Rice yield: average, recession rice: 3 ton/ha and wet season rice 1.5 ton/ha

Use of chemical/pesticide for rice production

- When: 1-2 months after transplanting (only for recession rice)
- What kind: FILIDOL
- Amount: 250 ml/ha

Nutrition status of the population

- Deficiency in consumption of fish and other animal meats (reduction rate, 40-50%) due to rapid population growth and natural disaster (i.e. regular and long drought). Farmers eat more vegetable in stead of meats and most of farmers could grow sufficient vegetable for their own family consumption.

Main source of animal protein

- Wet season: Fish protein intake (70%) and other animal protein intake (30%)
- Dry season: Fish protein intake (30%) and other animal protein intake (70%)

Total number of ponds (including trap ponds)

- Private: 455 ponds
- Community (public): 1 (100 m x 100 m x 1.5)
- Pagoda: 3 ponds (average size: 30 m x 30 m x 2 m)

Number of trap ponds

- Number: 98
- Average size: 10 m x 5 m x 1.5 m

Major fish species caught in trap ponds

- Major fish species caught: Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*), Chhlounh (eel, *Macrogathus sp.*), Kanchos (*Mystus sp.*), Changva (*Labocheilos sp.*), Chhlang (Asian red tail catfish, *Hemibagrus spilopterus*), Ta ADn (Butter catfish, *Ompok sp.*) and Kompeus (small shrimp).
- Productivity of trap ponds: 5-20 kg/pond/year

12.3 Freshwater aquaculture

How aquaculture started in the commune?

- Aquaculture development in the commune started in 1991 with the support of PADEK implemented under Bati Fish Seed Production and Research Station (BFSPRS) of the Prey Veng DAFF. Trainings on "Small-scale aquaculture technologies" were provided to eight selected farmers in 1991. Fish seed were offered to all trained farmers by PADEK. Follow up activity was also provided by FRFSPS staff. This piloting project was very successful and led to an increase in number of fish culture farmers drastically, especially in 1996 and 1997. Although PADEK had not supported this development since 2003, many fish farmers continued stocking their ponds.

Total number of aquaculture households

- Total: 275
- Male-headed: 251
- Female-headed: 24

Fish seed production households

- Total: 1
- Male-headed: 1
- Female-headed: 0

Fish seed nursery households

- Total: 1
- Male-headed: 1
- Female-headed: 0

Fish grow-out pond households

- Total: 267
- Male-headed: 243
- Female-headed: 24

Rice-cum-fish culture households

- Total: 8
- Male-headed: 8
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 285
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 6, Sutchi catfish (*Pangasianodon hypophthalmus*), tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*), common carp (*Cyprinus carpio*), mrigal (*Cirrhinus cirrhosus*), and silver carp (*Hypophthalmichthys molitrix*).
- Fish seed production: Tilapia, silver carp, common carp and mrigal
- Fish seed nursery: Tilapia, silver carp, common carp and mrigal

Main source of fish seed by major species and their availability

- Sutchi catfish and silver carp obtained from a public hatchery, Bati Fisheries Research and Fish Seed Production Station.
- Tilapia, common carp, silver barb and mrigal obtained from a farmer's hatchery (Mr. Phuang Phong) and a farmer's nursery site (Mr. Pheng Vy) in this target commune.
- Not secure supply (i.e. fish seed availability is not constant).

Average price of seeds by major species and their size

- Tilapia: 2-3 cm, Riel 50 per fish
- Silver barb: 2-3 cm, Riel 50 per fish
- Silver carp: 3-4 cm, Riel 50 per fish
- Common carp: 2-3 cm, Riel 50 per fish
- Mrigal: 3-4 cm, Riel 50 per fish
- Sutchi catfish: 5-7 cm, Riel 100 per fish

Aquaculture season (month)

- Stocking: June - September
- Harvesting: April

Major water source for aquaculture activity

- Major water source: Rainfalls (> 90%) and about 10% using pump to pump water from dug well.

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100% (short of water for 2-3 months per year)
- Extremely short: 0

Present condition of community (public) ponds

- Not applicable

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: Inflammation leading to ulcer (particularly sutchi catfish) and fish died as no any treatment was applied.

- Predation: Snakehead, mouse, bird, frog and swam eel.

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and Svay Antor, Chrey and Pean Phleung commune markets.
- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable
- Dry season: Sutchi catfish, Riel 3,500 per kilo; others Riel 4,500 per kilo

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: All species, Riel 7,000 per kilo Svay Antou, Chrey and Pean Phleung markets.

Main feed stuff and its supplier

- Rice bran: Riel 300/kg, village's or farmer's owned rice mills
- Rice: Riel 1,000/kg, farmer's owned rice
- Vegetable and other wastes collected on farm
- Duck weed collected by fish farmers in Kompeus and Mebon villages (Ankor Tret commune); Riel 1,000/15kg
- Pellet, Riel 2,000/kg from Viet Nam for fry/fingerling of sutchi catfish.

Main fertilizers stuff and its supplier

- DAP: Riel 1,500/kg, commune market (Chin Yorng market)
- UREA: Riel 1,200/kg, commune market (Chin Yorng market)
- Animal manure (cow, buffalo, chicken and duck), collected on farm, mostly from farmer's owned animals.
- Green manure collected in village or commune.

Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

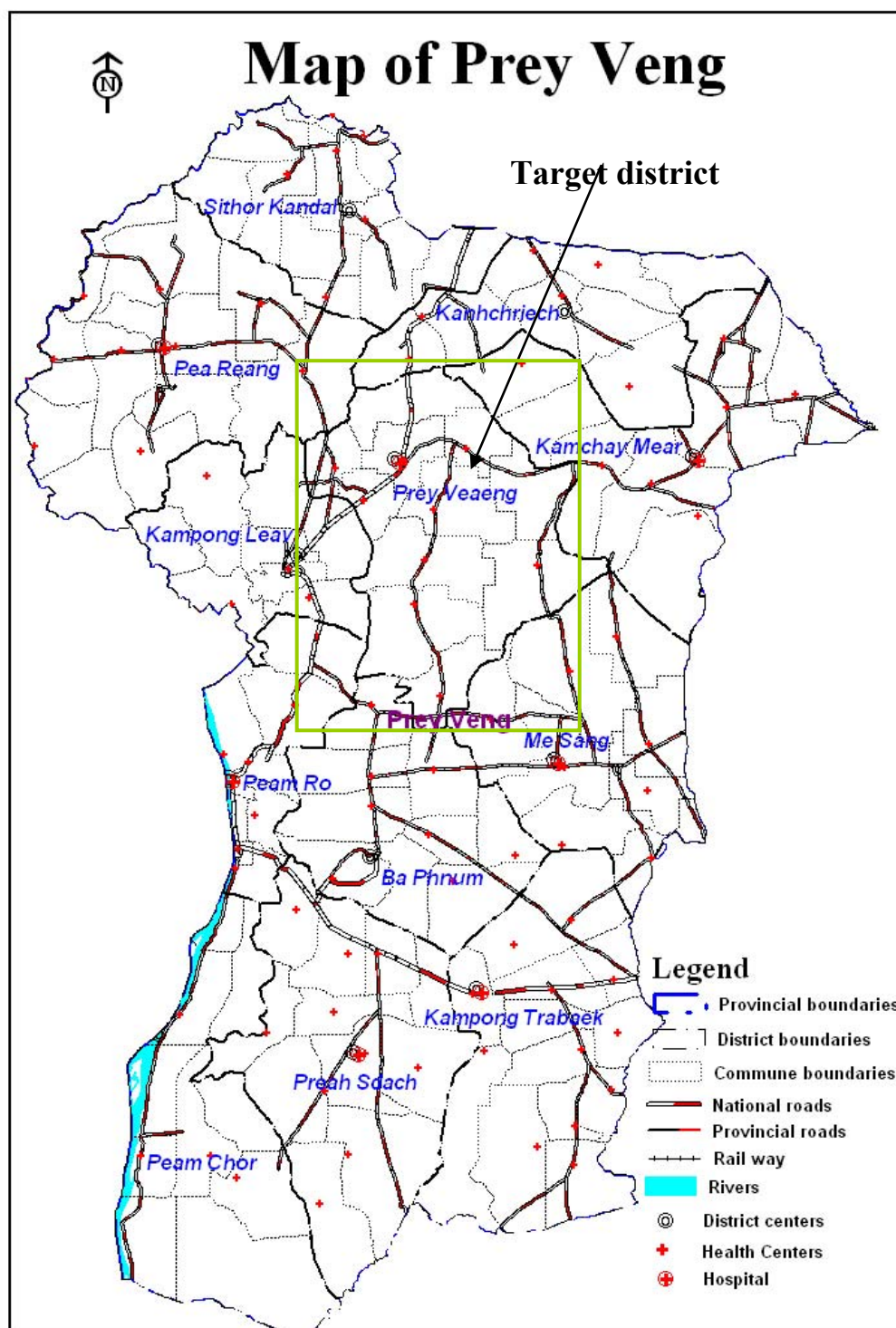
Freshwater aquaculture development/extension (Present and past)

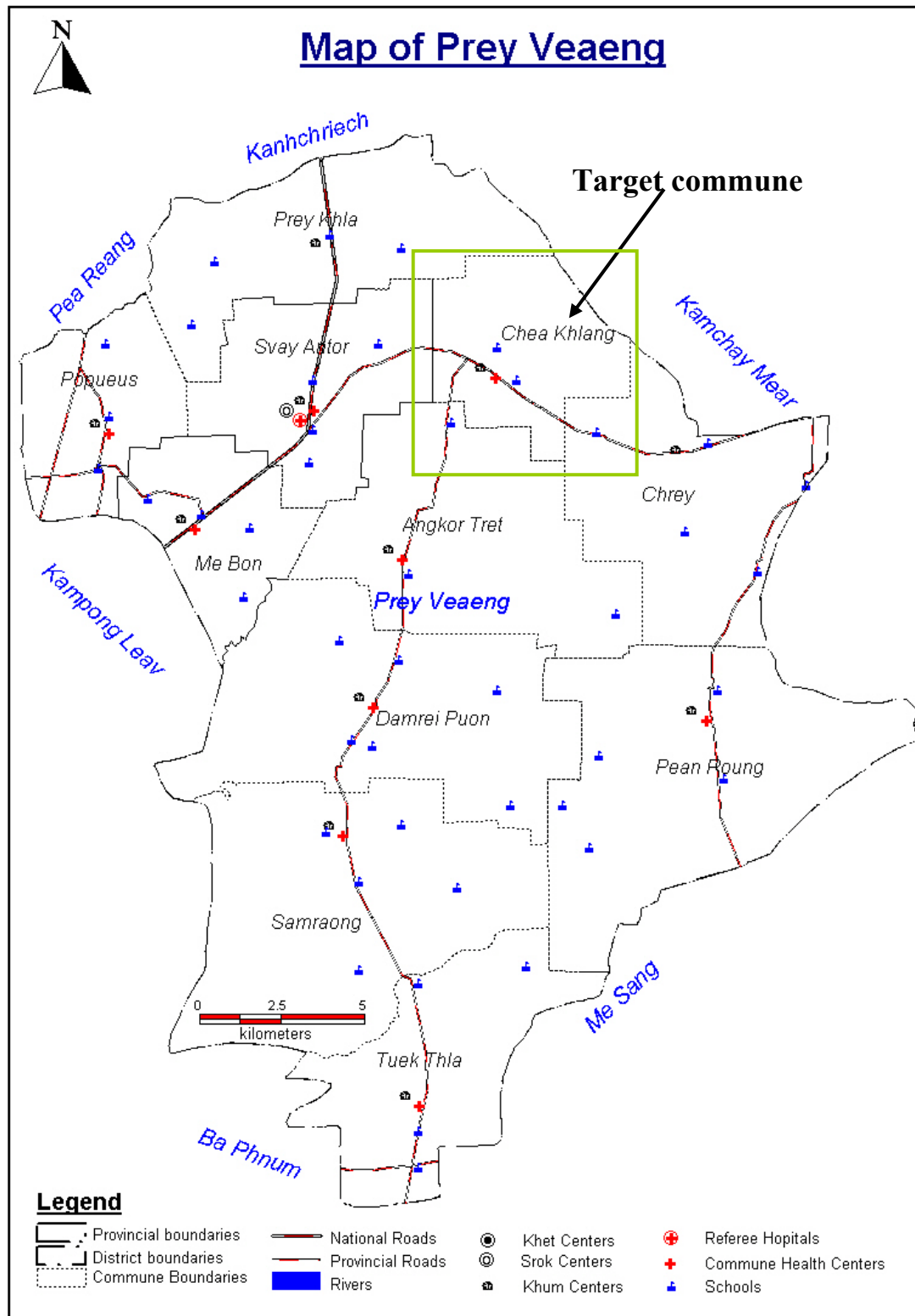
- In 1991 aquaculture development in the commune started with the support of PADEK under BFSPRS of DAFF. Trainings on "Small-scale aquaculture technologies" were provided to eight selected farmers from eight villages in the commune in 1991. Fish seed were offered to all trained farmers by the program. This development has been very successful and expanded, so far, although PADEK stopped supporting this aquaculture development since 2003.
- Currently (2005), the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF under the FAIEX Project funded by JICA, has trained selected farmers from the village on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. Extension materials such as poster and brochure related to small-scale aquaculture technologies were also provided during the training. The FAIEX has provided all trained farmers digging instruments (hoc/grub-hoe, shovel and two-handle basket open at one end and made of

silvers of bamboo), some inputs (lime and inorganic fertilizers) for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Commune chief and commune council suggest that a community fish pond management system should be developed in the commune in order to enhance natural fish stock and improve fish food security of villagers, although water from a single common pond of the commune is used for dry season rice production every year.





13 Profile CHREY commune

13.1 Location

CHREY commune is one of the communes located in Kampong Trabaek district, Prey Veng province (See location maps attached below). It is adjacent to the northern boundary of Pratheath and Thkov communes, the southern boundary of Cham commune, the eastern boundary of Svay Chrum district (Svay Rieng province) and the western boundary of Prey Poun commune. CHREY commune is composed of nine villages.

Geographical condition

CHREY commune is located 19 km from Kampong Trabaek district town hall, 26 km from Neak Loeang, 75 km from Prey Veng provincial town hall, 105 km from Phnom Penh. CHREY commune has a total land area of 1,851 ha, including an agriculture land area of 1,498 ha, a house land area of 311 ha and a public land area of 42 ha. There is no any river and lake. Several streams are found in the commune and dried in dry season. There was occasional flood detected during wet season in CHREY commune and no severe disaster was, generally, resulted from the flood. Four villages (Svay Park, Samrong, Chrey and PlAD) are located in the lowest parts of the commune and flood is detected first in those villages. In 2000, flood devastated rice field and houses in the villages, especially Chrey and Samrong (where community pond was selected, see the village profile). There was severe drought in the commune, the driest commune for the past five years in Kampong Trabaek district. Sandy-loamy lowland is the most widely found land type in CHREY commune.

Transportation accessibility

- There are three major roads in CHREY commune connected from National Road # 1. It is in a good shape and accessible in wet season.
- There are six small roads connected from the major road into villages of the commune. They are in good shapes; hence accessibility is not the problem in wet season.

13.2 General information

Name of commune chief and his term: Mr. Chab Youk; his term: five years

Industry other than agriculture:

- Beside agriculture activity, many types of small business are found in the commune, including rice mill, iron/metal workshop, and battery recharging workshop.

Total number of population

- Total: 6,807
- Male: 3,580
- Female: 3,227

Total number of households

- Total: 1,430
- Male-headed households: 1,215
- Female-headed households: 215

Total number of farming households

- Total: 1,430
- Male-headed households: 1,215
- Female-headed households: 215

Total number of landless household

- No agricultural land: 0
- No house land: 0
- Male-headed households: 0
- Female-headed households: 0

Number of farmer's group

- No. of farmer's group: Rice bank and village banks (i.e. Cash Saving group) in all villages
- Main activities: Increase cash or rice in the banks and only member of the group can borrow cash or rice from these banks with a very low interest (1% per month) for expanding rice and vegetable cultivation activities, animal raising activity (including fish), digging drinking water well and making new small business.

Rice production season

- Number of crops: 1 (i.e. wet season rice)
- Planting: July - September
- Harvesting: December – January
- Rice area: 1,498 ha
- Rice yield: 1-1.5 t/ha

Use of chemical/pesticide for rice production

- When: 2-3 months after transplanting
- What kind: FILIDOL
- Amount: 200-300 ml/ha

Nutrition status of the population

- Deficiency in consumption of fish and other animal meats (reduction rate, 30-40%) due to rapid population growth and natural disaster (i.e. regular and long drought). Farmers eat more vegetable in stead of meats and most of farmers could grow sufficient vegetable for their own family consumption.

Main source of animal protein

- Wet season: Fish protein intake (70%) and other animal protein intake (30%)
- Dry season: Fish protein intake (50%) and other animal protein intake (50%)

Total number of ponds (including trap ponds)

- Private: 787 ponds
- Community (public): 2 (water retention for the whole year)

- Pagoda: 4 ponds (average size: 50 m x 40 m x 3 m)

Number of trap ponds

- Number: 167
- Average size: 10 m x 5 m x 1.5 m

Major fish species caught in trap ponds

- Major fish species caught: Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*), Chhlounh (eel, *Macrogathus sp.*), Kanchos (*Mystus sp.*), Changva (*Labocheilos sp.*), Kompleanh (*Trichogaster sp.*) and Kompeus (small shrimp).
- Productivity of trap ponds: 7-10 kg/pond/year

13.3 Freshwater aquaculture

How aquaculture started in the commune?

- Aquaculture development in the commune started in 1996 with the support of EU-PRASAC, in cooperation with PADEK-Fisheries program, implemented by Prey Veng DAFF. Trainings on "Small-scale aquaculture technologies" were provided to three selected farmers at Bati Fish Seed Production and Research Station (BFSPRS). After training, the three farmers received fish seed from BFSPRS to stock their ponds. Follow up activity was also provided by BFSPRS staff. This piloting project was quite successful and led to an increase in number of fish culture farmers. Although PADEK had not supported this development since 2002, many fish farmers continued stocking their ponds.
- In 1998, a local NGO named Chitthor provided training on "fish culture" and fish seed to twenty selected farmers. The number of fish farmers under Chitthor project increased from 20 in 1998 to 300 farmers in 2002. Then this number was decreased because of drought.

Total number of aquaculture households

- Total: 231
- Male-headed: 227
- Female-headed: 4

Fish seed production households

- Total: 1
- Male-headed: 1
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 225

- Male-headed: 221
- Female-headed: 4

Rice-cum-fish culture households

- Total: 5
- Male-headed: 5
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 235
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 7, Sutchi catfish (*Pangasianodon hypophthalmus*), hybrid catfish (*Clarias batrachus* x *C. gariepinus*), tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*), common carp (*Cyprinus carpio*), mrigal (*Cirrhinus cirrhosus*), and silver carp (*Hypophthalmichthys molitrix*).
- Fish seed production: Tilapia, mrigal, common carp, silver carp and silver barb
- Fish seed nursery: Not applicable

Main source of fish seed by major species and their availability

- Sutchi catfish and hybrid catfish obtained from Viet Nam
- Tilapia, mrigal, common carp, silver carp and silver barb obtained from a farmer's hatchery (Mr. Uy Choo, Chrey commune)
- Not secure supply (i.e. fish seed availability is not constant).

Average price of seeds by major species and their size

- Tilapia: 2-3 cm, Riel 60 per fish
- Silver barb: 2-3 cm, Riel 60 per fish
- Silver carp: 3-4 cm, Riel 80 per fish
- Common carp: 2-3 cm, Riel 60 per fish
- Mrigal: 3-4 cm, Riel 80 per fish
- Sutchi catfish: 5-7 cm, Riel 120 per fish
- Hybrid catfish: 3-5 cm, Riel 90 per fish

Aquaculture season (month)

- Stocking: June - September
- Harvesting: April - May

Major water source for aquaculture activity

- Major water source: Waiting for rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100% (especially in April and May)
- Extremely short: 0

Present condition of community (public) ponds

- There are two community ponds.
- One pond with a size of 50 m x 20m x 3 m located in Samrong village (See village profile). This pond was dug in 2002 with the support of a local NGO named Chitthor to store water for plant and animals use. This pond is managed by farmers of the Samrong village.
- Another pond of a size of 40m x 30 m x 1.5 m located in Trapaing Re village. This pond was dug to store water for animal and human use. This is a common pond, which has no any management system set up.

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: Inflammation leading to ulcer (particularly sutchi catfish) and fish died as no any treatment was applied.
- Predation: Snakehead, bird and duck.

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and commune market
- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable
- Dry season: All species, Riel 5,000 – 6,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: All species, Riel 4,000 – 5,000 per kilo

Main feed stuff and its supplier

- Rice bran: Riel 300/kg, village's or farmer's owned rice mills and Kor Andaek market
- Rice: Riel 1,000/kg, farmer's owned rice
- Vegetable and other wastes collected on farm
- Duck weed and termite collected by fish farmers in village or commune
- Pellet, Riel 2,000/kg from Kor Andaek market (imported from Viet Nam) for fry/fingerling of sutchi catfish and hybrid catfish

Main fertilizers stuff and its supplier

- DAP: Riel 1,500/kg, commune market (Kor Andaek market)
- UREA: Riel 1,200/kg, commune market (Kor Andaek market)
- Animal manure (cow, buffalo, chicken and duck), collected on farm, mostly from farmer's owned animals.
- Green manure collected in village or commune.

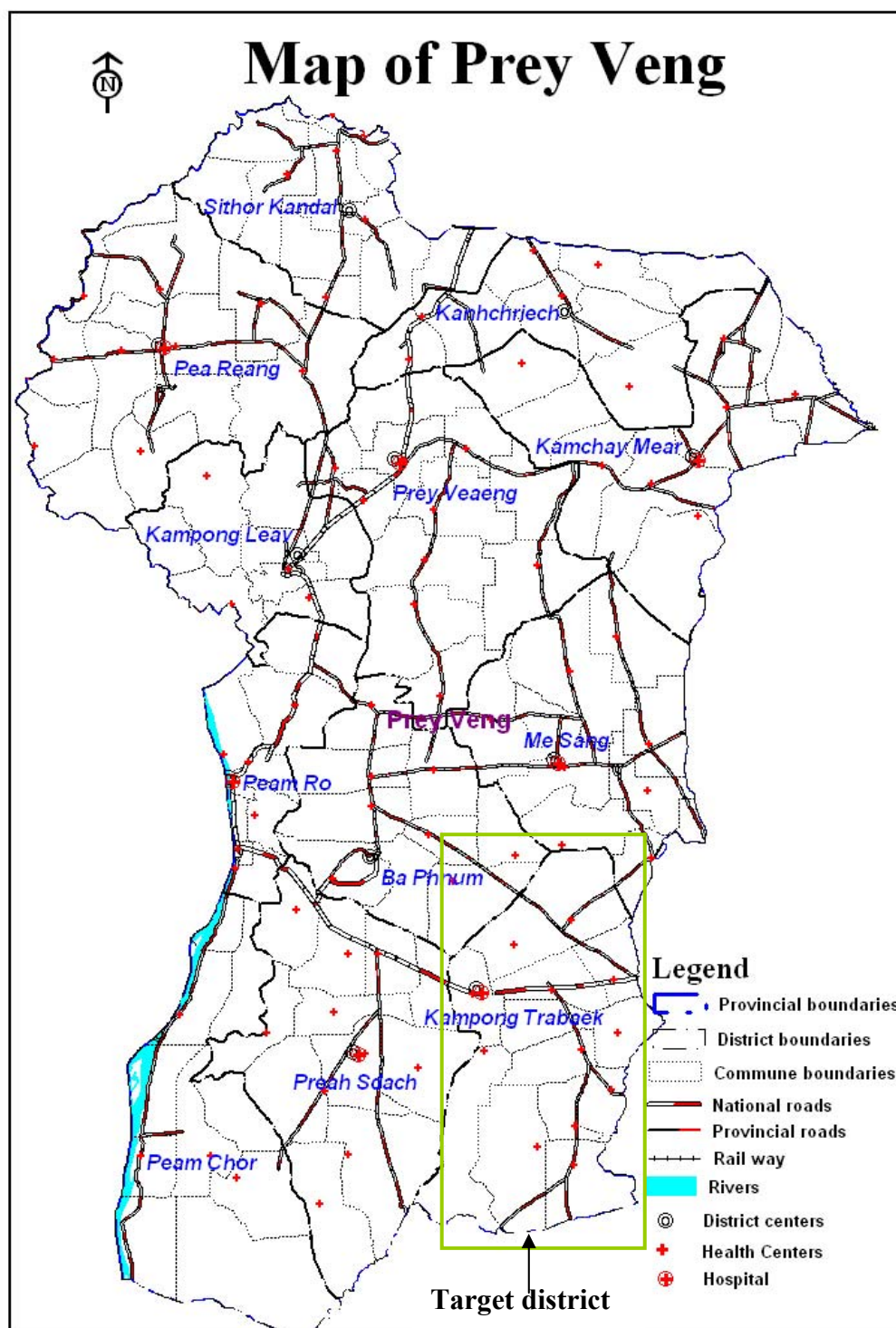
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

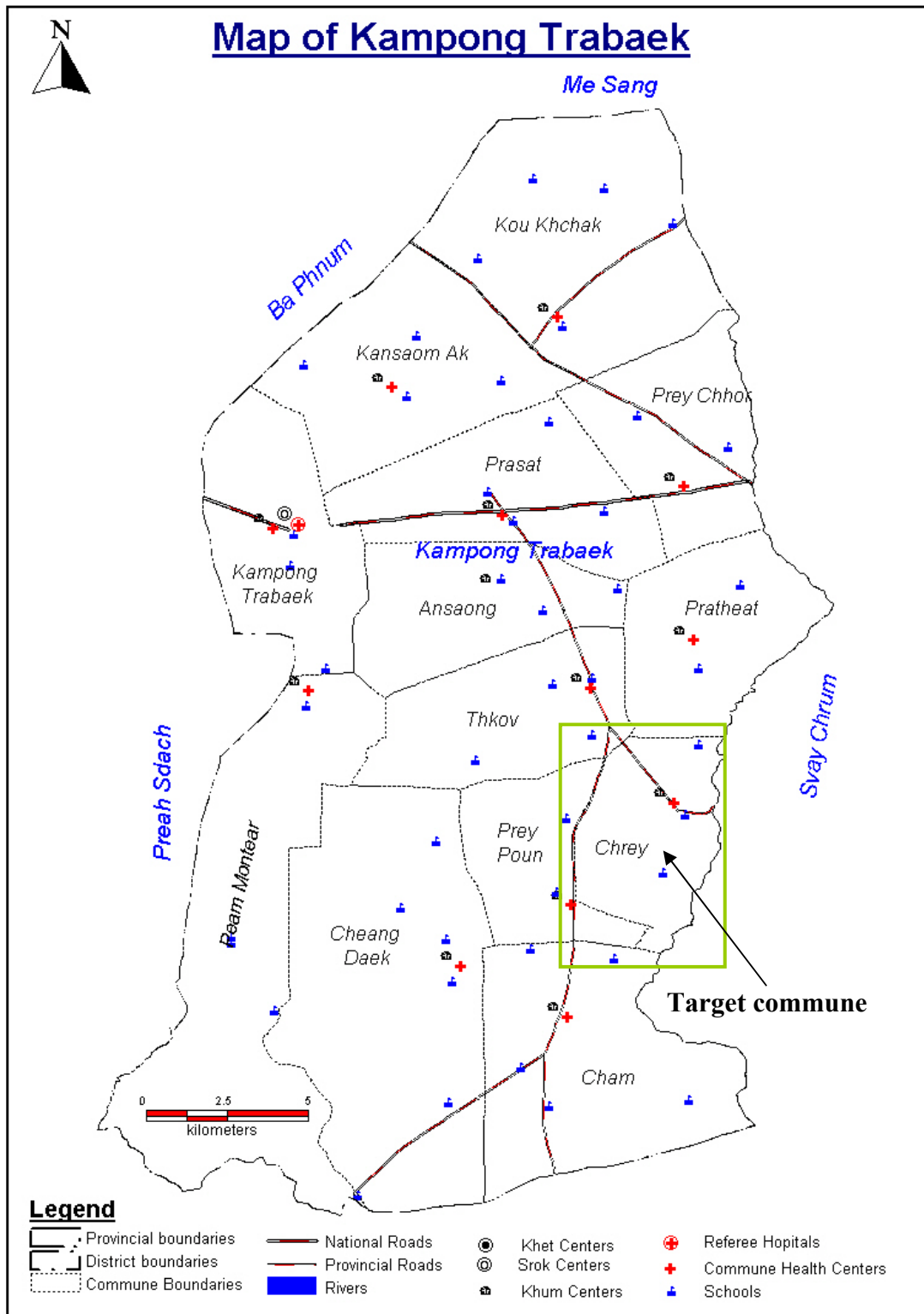
Freshwater aquaculture development/extension (Present and past)

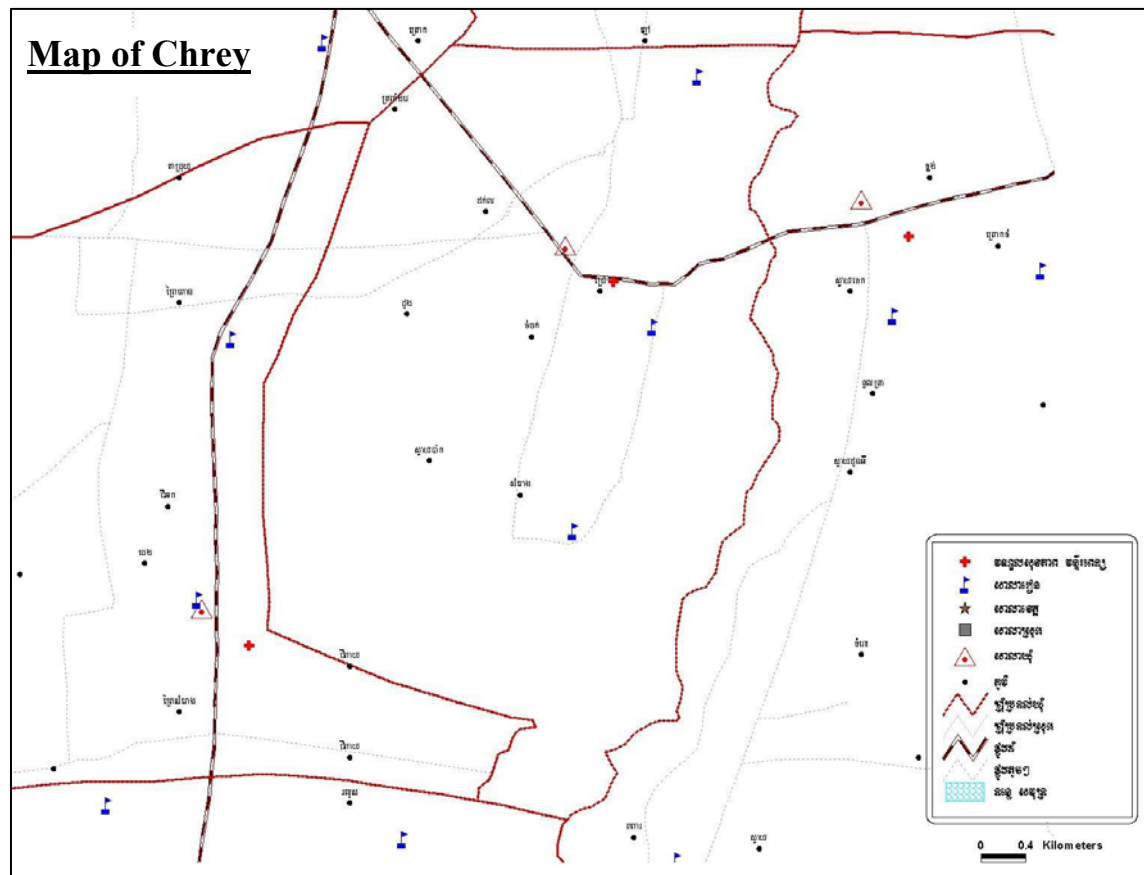
- In 1996 aquaculture development in the commune started with the support of EU-PRASAC under Prey Veng DAFF and in cooperation with PADEK/BFSPRS. Trainings on "Small-scale aquaculture technologies" were provided to three selected farmers at BFSPRS. After training, the three farmers received fish seed from BFSPRS to stock their ponds. Follow up activity was also provided by FRFSPS staff. This piloting project was quite successful and led to an increase in number of fish culture farmers. Although PADEK had not supported this development since 2002, many fish farmers continued stocking their ponds.
- In 1998, a local NGO named Chitthor provided training on "fish culture" and fish seed to twenty selected farmers. The number of fish farmers under Chitthor project increased from 20 in 1998 to 300 farmers in 2002. Then, this number was decreased because of drought. The project continues its activity till date.
- In 2004, CEDAC encouraged rice farmers to grow fish in an integrated system, especially with rice, although this organization has no aquaculture expertise.
- Currently (2005), the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF under the Freshwater Aquaculture Improvement and Extension Project funded by JICA, has trained selected farmers from the village on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. Extension materials such as poster and brochure related to small-scale aquaculture technologies were also provided during the training. The FAIEX has provided all trained farmers digging instruments (hoc/grub-hoe, shovel and two-handle basket open at one end and made of silvers of bamboo), some inputs (lime and inorganic fertilizers) for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- In 2001-2002, sutchi catfish and silver barb (about 1,400 fish) were stocked in the community pond with a size of 40 m x 30 m x 1.5 m in Trapeang Re village (Chrey commune). This pond was managed by a group of twelve farmers. There was conflict between fish farmers (this group) and other farmers who wanted to use water for their animals. This led to a failure and this initiative was ended in 2002.







14 Profile LVEA commune

14.1 Location

LVEA commune is one of the communes located in Preah Sdach district, Prey Veng province (See location maps attached below). It is adjacent to the northern boundary of Ba Phnum district, the southern boundary of Chey Kampok commune, the eastern boundary of Krang Svay commune and the western boundary of Rumchek commune. LVEA commune is composed of eleven villages.

Geographical condition

LVEA commune is located 11 km from Preah Sdach district town hall, 17 km from Neak Loeang, 47 km from Prey Veng provincial town hall, 77 km from Phnom Penh. LVEA commune has a total land area of 4,449 ha, including an agriculture land area of 2,449 ha, and house, public and other land areas of 2,000 ha. There is one major tributary named Dai Tonle Kampong Trabaek connected from the Mekong River. There is no lake, but two major irrigation canals (4,000 m long, named Bopea canal and 2,800 m, named Polos canal) connected from the major tributary and nine small irrigation canals connected from the major canals are found in the commune. Rice fields of six of the eleven villages (Kompong Thnol, Prey Kduach, Thnot Chros, Thom, Lvea and Samrong) are under water every year for two months. These rice field areas are used for wet season rice production when water recedes. There was occasional flood detected during wet season in LVEA commune and flood devastated villagers' rice in their field. There was severe drought in the commune in the past years. Sandy-loamy lowland is the most widely found land type in LVEA commune.

Transportation accessibility

- LVEA commune is located along National Road # 1. There is one major road (Road # 102) connected from National Road # 1 into villages. It is in a good shape and accessible in both dry and wet seasons.
- There are eight small roads across villages of the commune. They are in good shapes; hence accessibility is not the problem in wet season.

14.2 General information

Name of commune chief and his term: Mr. Sin Ting; his term: five years

Industry other than agriculture:

- Beside agriculture activity, many types of small business are found in the commune, including rice mill, iron/metal workshop, and battery recharging workshop.

Total number of population

- Total: 7,048
- Male: 3,438

- Female: 3,610

Total number of households

- Total: 1,472
- Male-headed households: 898
- Female-headed households: 574

Total number of farming households

- Total: 1,251
- Male-headed households: 776
- Female-headed households: 475

Total number of landless household

- No agricultural land: 147
- No house land: 72
- Male-headed households: 44 and 21
- Female-headed households: 103 and 51

Number of farmer's group

- No. of farmer's group: village banks (i.e. Cash Saving group)
- Main activities: Increase cash in the banks and only member of the group can borrow cash or rice from these banks with a very low interest for expanding rice and vegetable cultivation activities, animal raising activity (including fish), digging drinking water well and making new small business. This activity was previously supported by PADEK.

Rice production season

- Number of crops: 2 (i.e. wet season rice and dry season rice)
- Planting: July – September (wet season rice) and February – March (dry season rice)
- Harvesting: December – January (wet season rice) and April – June (dry season rice)
- Rice area: 1,768 ha (wet season rice) and 381 ha (dry season rice)
- Rice yield: 1-1.5 t/ha (wet season rice) and 1.5-3.0 t/ha (dry season rice).

Use of chemical/pesticide for rice production

- When: 1-3 months after transplanting
- What kind: FILIDOL for killing insects and other pesticides for killing crab and grass, especially for dry season rice
- Amount: 200-300 ml/ha

Nutrition status of the population

- Deficiency in consumption of fish and other animal meats (reduction rate, 30-40%) due to rapid population growth and natural disaster (i.e. regular and long drought). Farmers eat more vegetable in stead of meats and most of farmers could grow sufficient vegetable for their own family consumption.

Main source of animal protein

- Wet season: Fish protein intake (70%) and other animal protein intake (30%)
- Dry season: Fish protein intake (40%) and other animal protein intake (60%)

Total number of ponds (including trap ponds)

- Private: 316 ponds
- Community (public): 0
- Pagoda: 4 ponds

Number of trap ponds

- Number: 251
- Average size: 15 m x 10 m x 2.0 m

Major fish species caught in trap ponds

- Major fish species caught: Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*), Chhlounh (eel, *Macrogynathus sp.*), Kanchos (*Mystus sp.*), Changva (*Labocheilos sp.*), Kompleanh (*Trichogaster sp.*), Antong (swam eel) and Kompeus (small shrimp).
- Productivity of trap ponds: 4-30 kg/pond/year. If there is poaching annual fish yield is about 2-3 kg/pond/year.

14.3 Freshwater aquaculture

How aquaculture started in the commune?

- Aquaculture development, funded by PADEK- Fisheries program, started in the commune in 1994. This program was implemented under Bati Fish Seed Production and Research Station (BFSPRS) of Prey Veng DAFF. Trainings on "Small-scale aquaculture technologies" were provided to six selected farmers at BFSPRS. After training, the six farmers received lime (for pond preparation) and fish seed (for stoking prepared ponds) from BFSPRS. Follow up activity was also provided by BFSPRS and DoF staff. This piloting project was quite successful and led to an increase in number of fish culture farmers. Although PADEK had not supported this development since 2003, many fish farmers still continued stocking their ponds.

Total number of aquaculture households

- Total: 59
- Male-headed: 56
- Female-headed: 3

Fish seed production households

- Total: 2
- Male-headed: 2
- Female-headed: 0

Fish seed nursery households

- Total: 2
- Male-headed: 2

- Female-headed: 0

Fish grow-out pond households

- Total: 55
- Male-headed: 52
- Female-headed: 3

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 75
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 7, Sutchi catfish (*Pangasianodon hypophthalmus*), hybrid catfish (*Carias batrachus* and *C. gariepinus*), tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*), common carp (*Cyprinus carpio*), mrigal (*Cirrhinus cirrhosus*), and silver carp (*Hypophthalmichthys molitrix*).
- Fish seed production: Tilapia, mrigal, common carp, silver carp and silver barb
- Fish seed nursery: Tilapia, mrigal, common carp, silver carp and silver barb

Main source of fish seed by major species and their availability

- Sutchi catfish and hybrid catfish from vendors who import fish seed from Viet Nam
- Tilapia, mrigal, common carp, silver carp and silver barb obtained from farmer's hatcheries in Lvea commune (Mr. Kith Lonh and Mr. Ean Sak) and from Bati FRFSPS
- Not secure supply (i.e. fish seed availability is not constant).

Average price of seeds by major species and their size

- Tilapia: 2-3 cm, Riel 50 per fish
- Silver barb: 2-3 cm, Riel 50 per fish
- Silver carp: 3-4 cm, Riel 70 per fish
- Common carp: 2-3 cm, Riel 50 per fish
- Mrigal: 3-4 cm, Riel 60 per fish
- Sutchi catfish: 5-6 cm, Riel 100 per fish
- Hybrid catfish: 5-7 cm, Riel 150 per fish

Aquaculture season (month)

- Stocking: August - October
- Harvesting: April - May

Major water source for aquaculture activity

- Major water source: Waiting for rainfalls (> 90%) and pumping from dug well, irrigation canals or tributary (< 10%).

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100% (Especially in April-May)
- Extremely short: 0

Present condition of community (public) ponds

- No community (public pond) is available in the commune.

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: Inflammation leading to ulcer (particularly fish stocked in ponds without application of lime). Not many fish farmers are aware of using salt to treat such disease.
- Predation: Snakehead, catfish, frog, bird and mouse.
- Poaching: Yes.

Main destination of cultured fish by major species

- All cultured fish species (few amounts of fish production) were sold on farm and commune market
- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable
- Dry season: All species, Riel 5,000 – 7,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: All species, Riel 3,000 – 5,000 per kilo

Main feed stuff and its supplier

- Rice bran: Riel 250-450/kg, village's or farmer's owned rice mills or Kampong Trabaek district, Lvea commune or Neak Loeang market
- Rice: Riel 500-600/kg, farmer's owned rice mill
- Pellet, Riel 2,000/kg from Kampong Trabaek, Lvea or Neak Loeang market (imported from Viet Nam) for fry/fingerling of sutchi catfish and hybrid catfish.
- Vegetable and other agricultural wastes collected on farm
- Duck weed (Riel 1000 per 20 kg) collected from ponds in which fish seed is not stocked.

Main fertilizers stuff and its supplier

- DAP: Riel 1,200/kg, commune market (Kampong Trabaek, Lvea or Neak Loeang market)
- UREA: Riel 1,000/kg, commune market (Trabaek, Lvea or Neak Loeang market)
- Animal manure (cow, buffalo, chicken, pig and duck), collected on farm, mostly from farmer's owned animals.
- Green manure collected in village or commune.

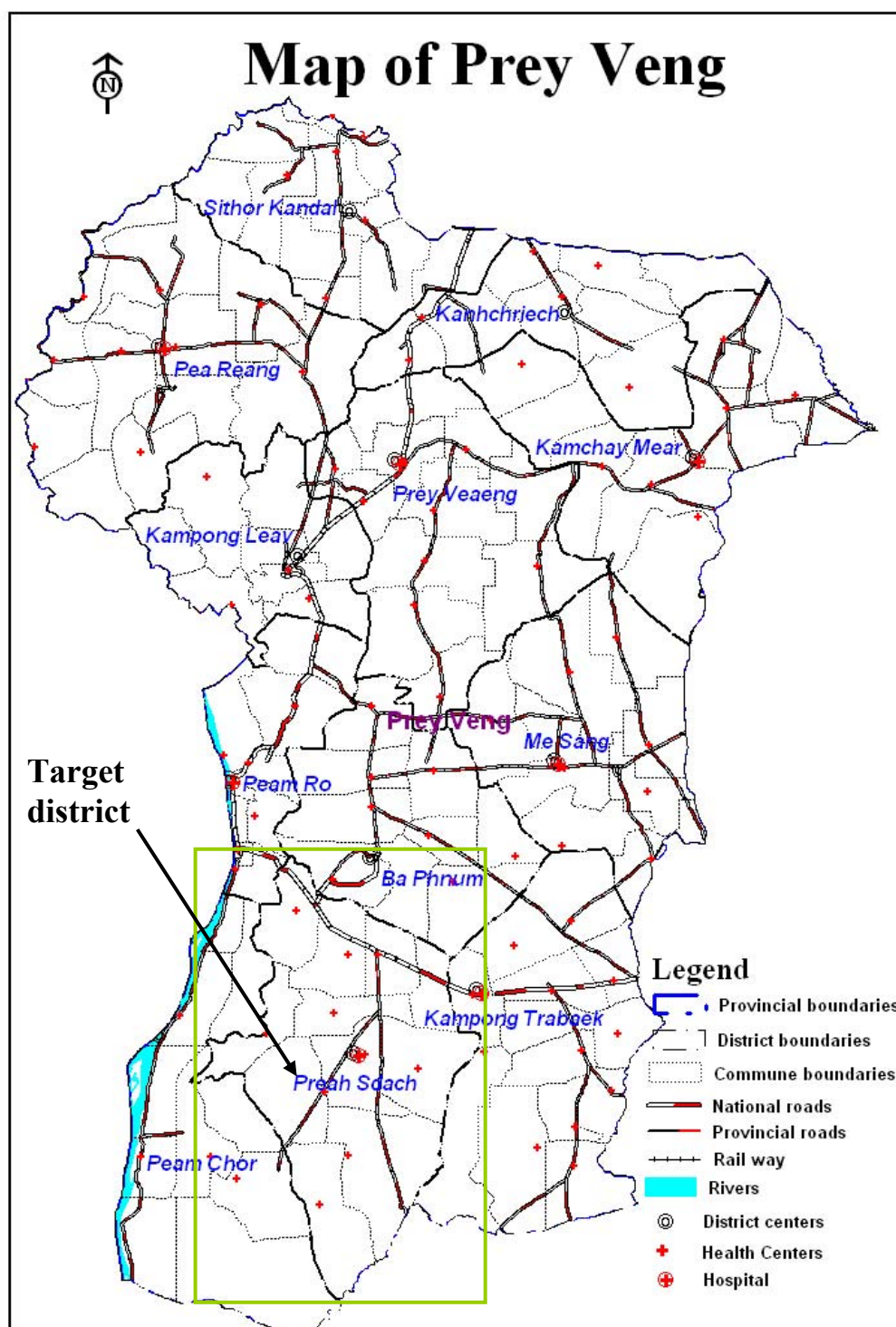
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

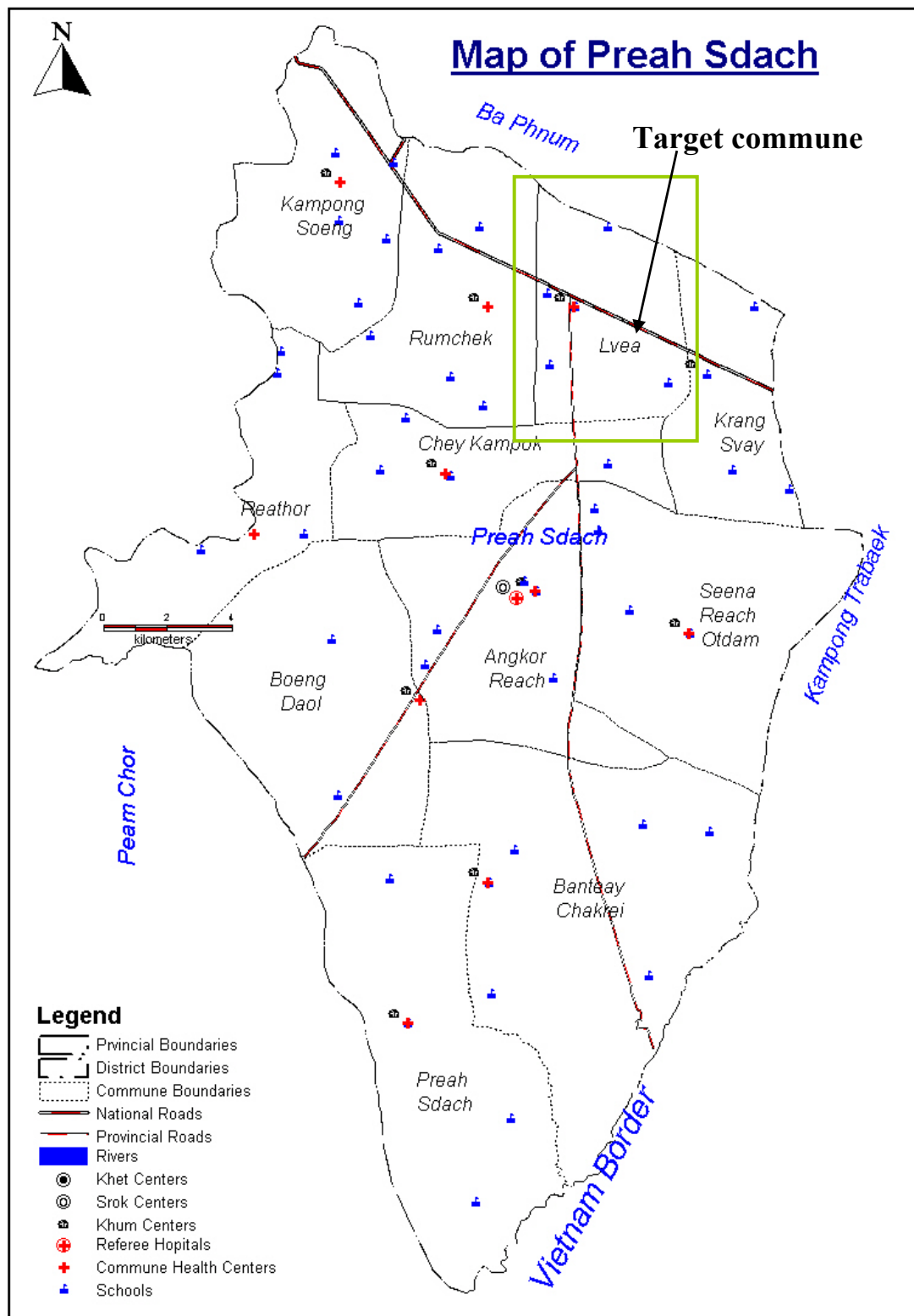
Freshwater aquaculture development/extension (Present and past)

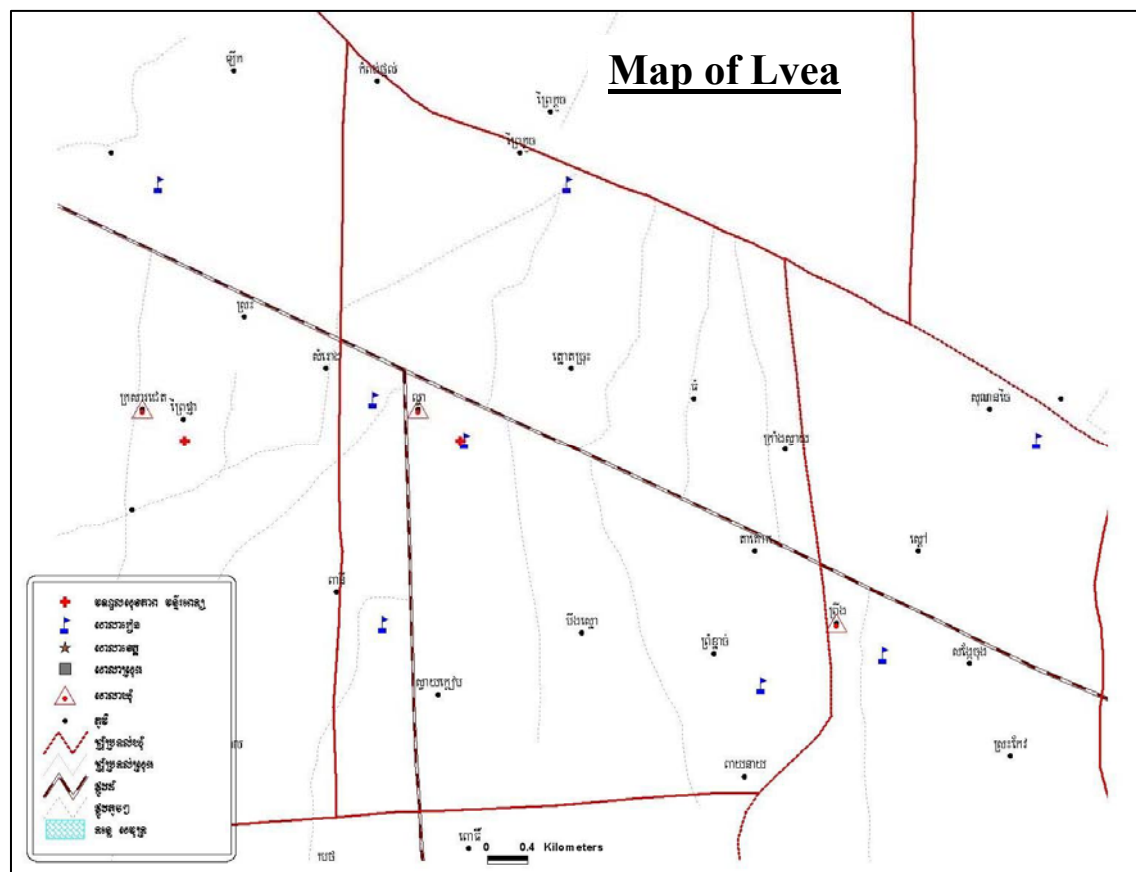
- In 1994 aquaculture development in the commune started with the support of PADEK-Fisheries program implemented under BFSPRS of Prey Veng DAFF. Trainings on "Small-scale aquaculture technologies" were provided to six selected farmers at BFSPRS. After training, the six farmers received lime to prepare their ponds and fish seed to stock their ponds from Bati FRFSPS. Follow up activity was also provided by BFSPRS and DoF staff. This piloting project was quite successful and led to an increase in number of fish culture farmers. Although PADEK had not supported this development since 2003, many fish farmers still continued stocking their ponds.
- In 1996, EU-PRASAC, in cooperation with BFSPRS /PADEK, provided training on "fish culture" and fish seed to selected farmers to stock their ponds. After the training, BFSPRS /PADEK and DoF staff monitored aquaculture activity in this commune. This project was ended in 2002. Many farmers continue stocking fish seed in their ponds. Moreover, farmers who have no ponds are interested in this activity too.
- In 2004, CEDAC encouraged rice farmers to grow fish in an integrated system, especially with rice, although this organization has no aquaculture expertise.
- Currently (2005), the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF under the FAIEX Project funded by JICA, has trained selected farmers from the village on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. Extension materials such as poster and brochure related to small-scale aquaculture technologies were also provided during the training. The FAIEX has provided all trained farmers digging instruments (hoc/grub-hoe, shovel and two-handle basket open at one end and made of silvers of bamboo), some inputs (lime and inorganic fertilizers) for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Not applicable







15 Profile SAMRONG village

15.1 Location

SAMRONG village is one of the nine villages located in Chrey commune, Kampong Trabaek district, Prey Veng province (See location maps attached below). It is adjacent to the northern boundary of Chambok village, the southern boundary of Chireay village, the eastern boundary of Svay Dounkei village and the western boundary of Svay Park village.

Geographical condition

SAMRONG village is located about 2 km from Chrey commune hall, 21 km Kampong Trabaek district town hall, 28 km from Neak Loeang, 77 km from Prey Veng provincial town hall, 107 km from Phnom Penh. SAMRONG village has a total land area of 176 ha, including an agriculture land area of 135 ha, a house land area of 34 ha and a public land area of 7 ha. There is no any river and lake. There was occasional flood detected during wet season in Samrong village and no severe disaster was, generally, resulted from the flood. In 2000, flood devastated rice field and houses of this village. There was severe and regular drought in the village. Sandy-loamy lowland is the most widely found land type in SAMRONG village.

Transportation accessibility

- There are two small roads connected from one major road in the village (See map attached). They are in good shapes; hence accessibility is not the problem in wet season.
- There are two main roads connected from National Road # 1, one to the commune hall with a distance of 12 km and another with 8 km. They are in good shape and accessible for the whole year.

15.2 General information

Name of commune chief and his term: Mr. Sor Chan; his term: No fixed term

Industry other than agriculture:

- Beside agriculture activity, two types of small business are found in the village, including iron/metal workshop, house constructing group.

Total number of population

- Total: 745
- Male: 350
- Female: 395

Total number of households

- Total: 162
- Male-headed households: 159
- Female-headed households: 3 headed household and 39 widows (some could be headed households)

Total number of farming households

- Total: 162
- Male-headed households: 159
- Female-headed households: 3 headed household and 39 widows (some could be headed households)

Total number of landless household

- No agricultural land: 2
- No house land: 0
- Male-headed households: 1
- Female-headed households: 1

Number of farmer's group

- No. of farmer's group: Rice bank, animal bank and cash saving bank
- Main activities: Increase rice, animal or cash in the bank and only member of the group can borrow rice, animal or cash from the bank with a very low interest for expanding rice cultivation activities, animal raising activity (including fish), digging drinking water well or making new small business. These banks were initiated and supported by CEDAC.

Rice production season

- Number of crops: 1 (i.e. wet season rice)
- Planting: June - September
- Harvesting: November – January
- Rice area: 135 ha
- Rice yield: 1-1.5 t/ha

Use of chemical/pesticide for rice production

- When: 2-3 months after transplanting
- What kind: FILIDOL
- Amount: 250 ml/ha

Nutrition status of the population

- Deficiency in consumption of fish and other animal meats (reduction rate, 60%) due to rapid population growth and natural disaster (i.e. regular and long drought). Farmers eat more vegetable in stead of meats and most of farmers could grow sufficient vegetable for their own family consumption.

Main source of animal protein

- Wet season: Fish protein intake (40%) and other animal protein intake (60%)
- Dry season: Fish protein intake (20%) and other animal protein intake (80%)

Total number of ponds (including trap ponds)

- Private: 31 ponds
- Community (public): 1 (50 m x 20 m x 3 m)
- Pagoda: 1 pond (80 m x 20 m x 3 m)

Number of trap ponds

- Number: 12

- Average size: 10 m x 5 m x 1.5 m

Major fish species caught in trap ponds

- Major fish species caught: Phtouk/Ros (Snakehead murrel, *Channa striata*), Kranh (climbing perch, *Anabas sp.*), Angdeng, (walking catfish, *Clarias sp.*), Chhlounh (eel, *Macrogathus sp.*), Kanchos (*Mystus sp.*), Changva (*Labocheilos sp.*), Kompleanh (*Trichogaster sp.*) and Kompeus (small shrimp).
- Productivity of trap ponds: 7-10 kg/pond/year

15.3 Freshwater aquaculture

How aquaculture started in the village?

- Aquaculture development in the village started in 1999 with the support of EU-PRASAC, in cooperation with BFSPRS/PADEK-Fisheries program. This project is implemented under Prey Veng DAFF. Trainings on "Small-scale aquaculture technologies" were provided to selected farmers. The trained farmers received fish seed from the project to stock their ponds. This project was ended in 2002 with little success because no better monitoring system was set up to follow up this aquaculture activity in the village.

Total number of aquaculture households

- Total: 6
- Male-headed: 6
- Female-headed: 0

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 6
- Male-headed: 6
- Female-headed: 0

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 6
- Community (public): 0

- Pagoda: 0

Major culture fish species

- Culture fish species: 3, Sutchi catfish (*Pangasianodon hypophthalmus*), tilapia (*Tilapia nilotica* or *Oreochromis aureus*), hybrid catfish (*Clarias batrachus* x *C. gariepinus*).
- Fish seed production: Not applicable
- Fish seed nursery: Not applicable

Main source of fish seed by major species and their availability

- Sutchi catfish and hybrid catfish bought from vendors who imported these fish seed from Viet Nam.
- Tilapia, bought from other fish farmer ponds.
- Not secure supply (i.e. fish seed availability is not constant).

Average price of seeds by major species and their size

- Tilapia: 2-3 cm, Riel 60 per fish
- Sutchi catfish: 5-7 cm, Riel 120 per fish
- Hybrid catfish: 3-5 cm, Riel 90 per fish

Aquaculture season (month)

- Stocking: July - August
- Harvesting: March - April

Major water source for aquaculture activity

- Major water source: Waiting for rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100% (especially in March and April)
- Extremely short: 0

Present condition of community (public) ponds

- One community pond, with a size of 50 m x 20m x 3 m, is located in Samrong village. This pond was dug in 2002 with the support of a local NGO named Chitthor to store water for plant/tree and animals use. This pond is managed by farmers of the Samrong village. Its name is Prey Kuy pond. Its depth is 3 m in wet season and 1.5-2 m in dry season. Pond water flow out from the pond to surrounded rice fields in September.

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: Inflammation leading to ulcer and disease infected fish were died as no any treatment was applied.
- Predation: Snakehead, bird and frog and snake.

Main destination of cultured fish by major species

- All cultured fish species were sold on farm.
- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable
- Dry season: Tilapia, Riel 4,000 – 6,000/kg; sutchi catfish, Riel 5,000/kg and hybrid catfish, Riel 6,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: Not applicable

Main feed stuff and its supplier

- Rice bran: Riel 300/kg, village's or farmer's owned rice mills
- Duck weed and termite collected by fish farmers in the village
- Pellet, Riel 2,000/kg from Kor Andaek market (imported from Viet Nam) for fry/fingerling of sutchi catfish and hybrid catfish

Main fertilizers stuff and its supplier

- DAP: Riel 1,500/kg, commune market (Kor Andaek market)
- UREA: Riel 1,200/kg, commune market (Kor Andaek market)
- Animal manure (cow, buffalo, chicken and duck), collected on farm, mostly from farmer's owned animals.
- Green manure collected in village or commune.

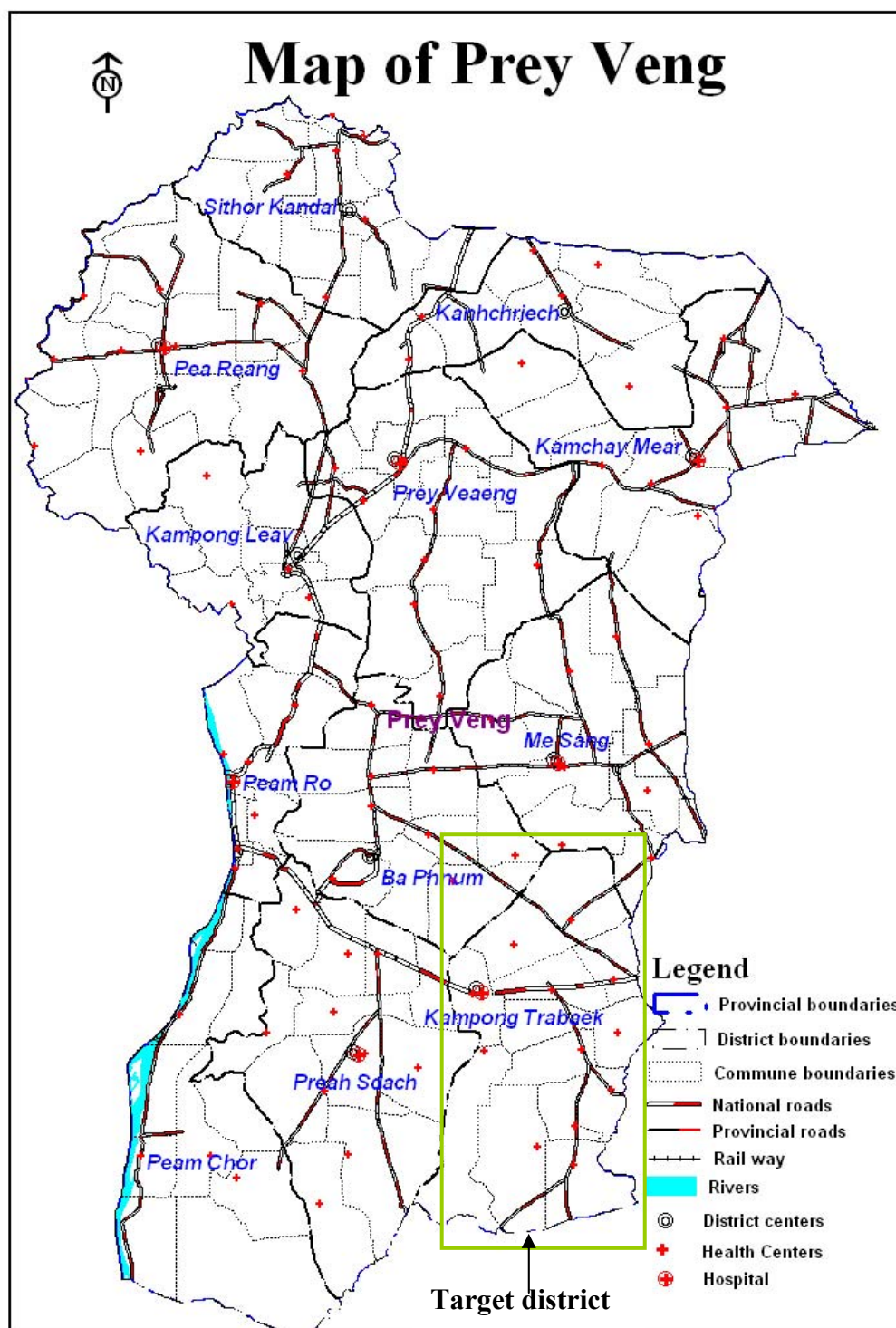
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

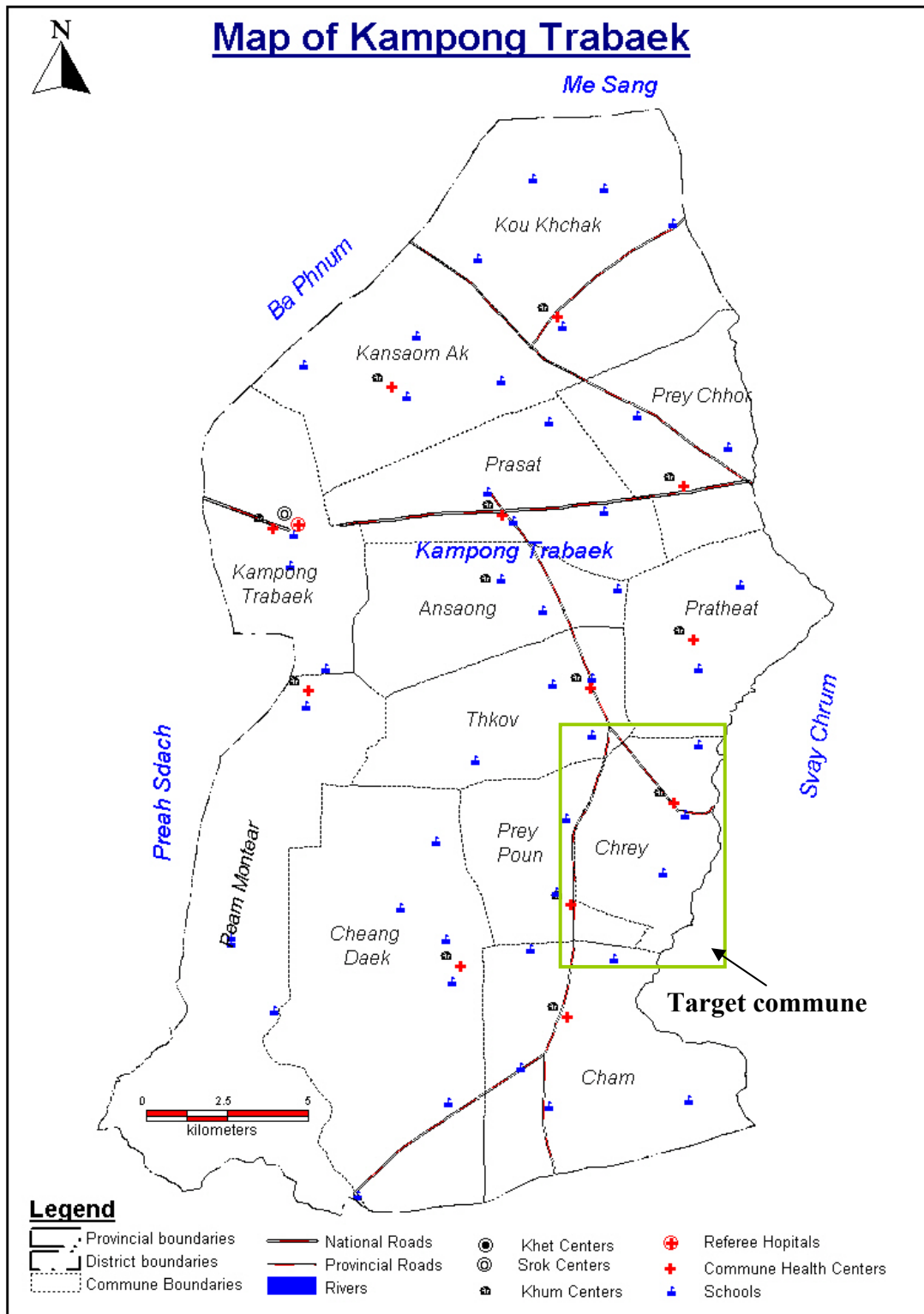
Freshwater aquaculture development/extension (Present and past)

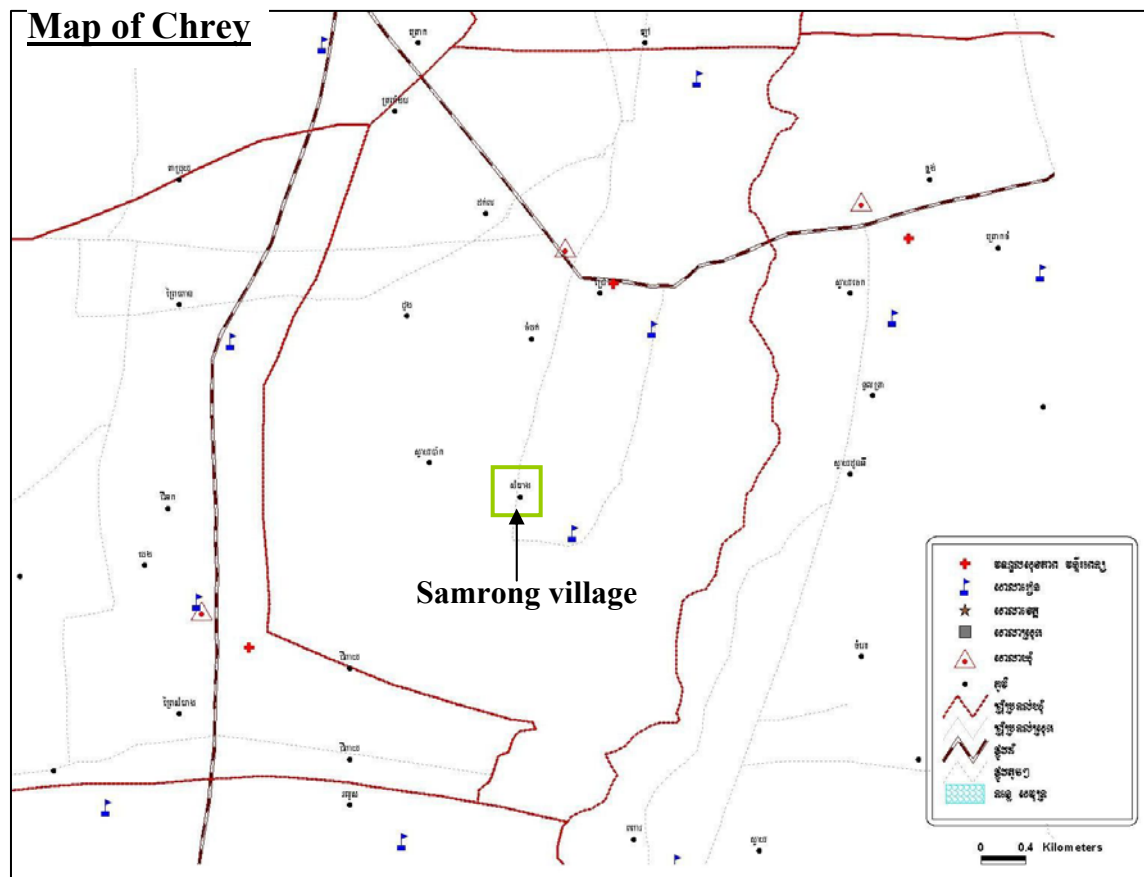
- In 1999 aquaculture development in the village started with the support of EU-PRASAC under Prey Veng DAFF and in cooperation with PADEK/BFSPRS. Trainings on "Small-scale aquaculture technologies" were provided to selected farmers. After training, farmers received fish seed from the project to stock their ponds. This project was ended in 2002 with little success because no better monitoring system was set up to follow up this aquaculture activity in the village. However, this year (2005) nineteen new farmers stocked their ponds with sutchi catfish and hybrid catfish (bought from Viet Nam) and tilapia (bought from neighbors' fish ponds) by themselves. The DoF-JICA-FAIEX project has selected any pilot pond to stock fish seed in this village.

Fish refuge pond management (Present and past)

- At present, one pond of a size of 50 m x 20m x 3 m is selected in this village to be a fish refuge pond. Management system and rule will be set up by the DoF-JICA-FAIEX project to protect fish in the pond and harvesting fish in rice field outside the pond in order to enhance natural fish stock in the village.







16 Profile ANGK PRASAT commune

16.1. Location

ANGK PRASAT commune is one of the communes located in Kiri Vong district, Takeo province (See location maps attached below). It is adjacent to the northern boundary of Treang district, the southern boundary of Preah Bat Choan Chum commune, the eastern boundary of Kaoh Andaet district and the western boundary of Kouk Prech and Ream Andaeuk communes. ANGK PRASAT commune is composed of ten villages.

Geographical condition

ANGK PRASAT commune center is located about 2 km from National Road # 2, 15 km from Kiri Vong district center, 27 km from Takeo provincial center, 120 km from Phnom Penh. ANGK PRASAT commune has a total agricultural land area of 2,500 ha. There was occasional flood detected during wet season in ANGK PRASAT commune and no severe disaster was, generally, resulted from the flood. In 2000, there was severe flood, lasting for about two months, which devastated rice fields and houses in the commune. There was severe drought detected in the commune for the past three years. Sandy-loamy lowland is the most widely found land type in ANGK PRASAT commune.

Transportation accessibility

- There are eight major roads in ANGK PRASAT commune. It is in a good shape and accessible in wet season.
- There are six small roads connected from the major roads into villages of the commune. They are in good shapes; hence accessibility is not the problem in wet season.

16.2 General information

Name of commune chief and his term: Mr. Noung Chun; his term: five years

Industry other than agriculture:

- Beside agriculture activity, many types of small business are found in the commune, including:
 - 48 rice mills and iron/metal workshops,
 - Four battery recharging workshops,
 - Four white wine making shops,
 - 125 garment workers,
 - Four house constructing groups (16 persons),
 - Seventeen motorbike taxi drivers,
 - Six (car) taxi drivers, and
 - Fifteen horse cart drivers.

Total number of population

- Total: 7,658
- Male: 3,747
- Female: 3,911

Total number of households

- Total: 1,482
- Male-headed households: 1,296
- Female-headed households: 186

Total number of farming households

- Total: 1,482
- Male-headed households: 1,296
- Female-headed households: 186

Total number of landless household

- No agricultural land: 32
- No house land: 3
- Male-headed households: 21
- Female-headed households: 11

Number of farmer's group

- No. of farmer's group: Two groups, one in Lumtaes village and another in Wath Svay village. Village banks (i.e. Cash Saving group).
- Main activities: Increase cash in the banks and only member of the group can borrow cash from these banks with a very low interest for expanding rice and vegetable cultivation activities, animal raising activity (including fish).

Rice production season

- Number of crops: 2 (i.e. wet and dry season rice)
- Planting: May – July for wet season rice and November – December for dry season rice
- Harvesting: December – January for wet season rice and February – March for dry season rice
- Rice area: 2,150 ha for wet season rice and 350 ha for dry season rice
- Rice yield: 1-1.5 t/ha for wet season rice and 1.5 – 2 t/ha for dry season

Use of chemical/pesticide for rice production

- When: 1-2 months after transplanting
- What kind: FILIDOL
- Amount: 300 ml/ha

Nutrition status of the population

- Deficiency in consumption of fish and other animal meats (reduction rate, 30-40%) due to rapid population growth and natural disaster (i.e. regular and long drought). Farmers eat more vegetable in stead of meats and most of farmers could grow sufficient vegetable for their own family consumption.

Main source of animal protein

- Wet season: Fish protein intake (40%) and other animal protein intake (60%)

- Dry season: Fish protein intake (80%), from trap pond and fish culture ponds and other animal protein intake (20%)

Total number of ponds (including trap ponds)

- Private: 155 ponds
- Community (public): 7 ponds
- Pagoda: 5 ponds

Number of trap ponds

- Number: 74
- Average size: 5 m x 3 m x 2.5 – 3.0 m

Major fish species caught in trap ponds

- Major fish species caught: Kranh (climbing perch, *Anabas sp.*), Angdeng (walking catfish, *Clarias sp.*), Phtouk/Ros (Snakehead murrel, *Channa striata*), Chhlounh (eel, *Macrognathus sp.*), Kanchos (*Mystus sp.*), Kompleanh (*Trichogaster sp.*), Slart (bronze featherback, *Notopterus notopterus*), crab and scallop/clam.
- Productivity of trap ponds: 100 - 200 kg/pond/year (nowadays) and 300-500 kg/pond/year (long times ago)

16.3 Freshwater aquaculture

How aquaculture started in the commune?

- Till 2004 there has been no any aquaculture development program supported by government or NGOs/IOs implemented in ANGK PRASAT commune.
- In 2004, two households stocked their ponds with tilapia and sutchi catfish. They did not succeed in this activity because they did not have any knowledge on fish culture technologies.

Total number of aquaculture households

- Total: 2
- Male-headed: 2
- Female-headed: 0

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 2
- Male-headed: 2
- Female-headed: 0

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 2
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 2, Sutchi catfish (*Pangasianodon hypophthalmus*), and tilapia (*Tilapia nilotica* or *Oreochromis aureus*).
- Fish seed production: Not applicable
- Fish seed nursery: Not applicable

Main source of fish seed by major species and their availability

- Sutchi catfish tilapia bought from vendor who imported these species from Viet Nam
- Not secure supply (i.e. fish seed availability is not constant).

Average price of seeds by major species and their size

- Tilapia: 2 cm, Riel 20 per fish
- Sutchi catfish: 6 cm, Riel 120 per fish

Aquaculture season (month)

- Stocking: June - August
- Harvesting: March - April

Major water source for aquaculture activity

- Major water source: Waiting for rainfalls

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100% (especially in March - April)
- Extremely short: 0

Present condition of community (public) ponds

- There are seven community ponds. These ponds are used to store water for human and animal consumption, especially in dry season.

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: Inflammation leading to ulcer and fish were died as no any treatment was applied.
- Predation: Snakehead and bird

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and commune market

- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable
- Dry season: All species, Riel 5,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: All species, Riel 6,000 per kilo

Main feed stuff and its supplier

- Rice bran: Riel 300/kg, bought from village's rice mills.
- Vegetable and other wastes collected on farm.
- Duck weed collected by fish farmers in the commune.

Main fertilizers stuff and its supplier

- No any fertilizer was applied because they did not have knowledge on fish culture technologies

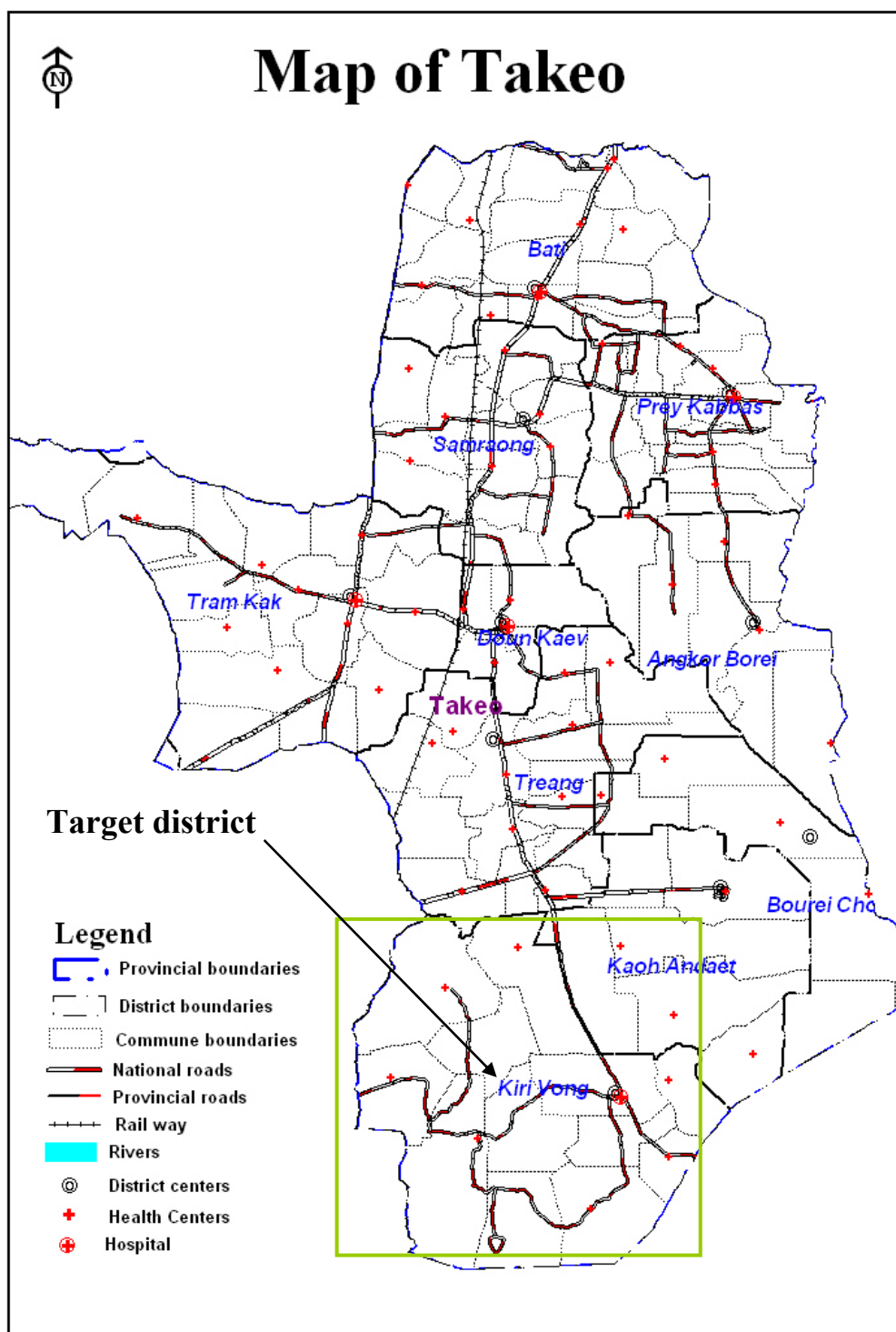
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

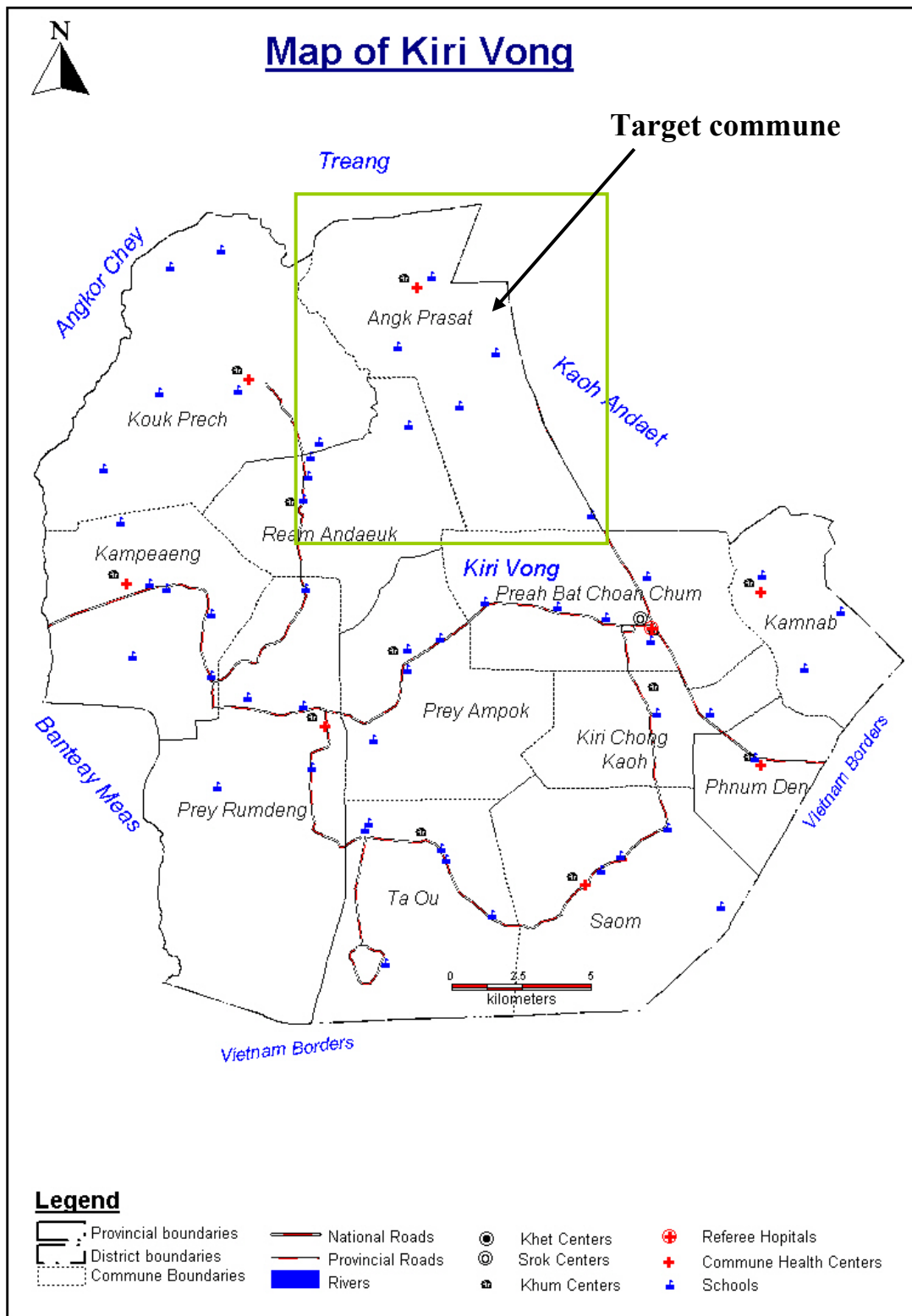
Freshwater aquaculture development/extension (Present and past)

- Till 2004, government and NGOs/IOs have not supported any aquaculture development program in ANGK PRASAT commune.
- Recently (2005) SEILA provided a training course on fish culture to 28 farmers in the commune. Four pilot ponds were selected to stock fish.
- In the same year, the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF under the FAIEX Project funded by JICA, has trained selected farmers from the village on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. Extension materials such as poster and brochure related to small-scale aquaculture technologies were also provided during the training. The FAIEX has provided all trained farmers digging instruments (hoc/grub-hoe, shovel and two-handle basket open at one end and made of silvers of bamboo), some inputs (lime and inorganic fertilizers) for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Not applicable.







17. Profile PONLEY commune

17.1 Location

PONLEY commune is one of the communes located in Angkor Borei district, Takeo province (See location maps attached below). It is adjacent to the northern boundary of Samraong district, the southern boundary of Treang and Doun Kaev districts, the eastern boundary of Prey Phkoam commune and the western boundary of Samraonh and Doun Kaev districts. PONLEY commune is composed of six villages.

Geographical condition

PONLEY commune is located 28 km from National Road # 2, 20 km from Angkor Borei district center, 43 km from Takeo provincial center, 78 km from Phnom Penh. PONLEY commune has a total land area of 5,849 ha, including a paddy land area of 3,326 ha, crop cultivation land area of 43 ha, public land area of 135 ha, house land area of 220 ha, natural lake and stream area of 2,079 ha, irrigation area (canals and dams) of 28 ha and trap pond area of 18 ha. Most of the land of the commune is lowland, flooding for six months every year. No severe disaster was, generally, resulted from the flood. In 2000, there was severe flood, lasting for about two months, which devastated rice fields and houses in the commune. Sandy-loamy land is the most widely found land type in PONLEY commune.

Transportation accessibility

- There are two major roads in PONLEY commune. It is in a good shape and accessible in wet season.
- There are three small roads connected from the major roads into villages of the commune. They are in good shapes; hence accessibility is not the problem in wet season.
- In addition, there is a dock (landing place) for small ferry-boats.

17.2 General information

Name of commune chief and his term: Mr. Prum Ngu; his term: five years

Industry other than agriculture:

- Beside agriculture activity, many types of small business are found in the commune, including:
 - o Eleven rice mills,
 - o Five battery recharging workshops,
 - o 150 garment workers,
 - o One small ferry-boat sailor, and
 - o One ice making shop

Total number of population

- Total: 6,921
- Male: 3,269

- Female: 3,652

Total number of households

- Total: 1,272
- Male-headed households: 1,225
- Female-headed households: 47

Total number of farming households

- Total: 1,272
- Male-headed households: 1,225
- Female-headed households: 47

Total number of landless household

- No agricultural land: 52
- No house land: 7
- Male-headed households: 41
- Female-headed households: 11

Number of farmer's group

- No. of farmer's group: Two groups, village banks (i.e. Cash Saving group) in Sramuk village
- Main activities: Increase cash in the banks and only member of the group can borrow cash from these banks with a very low interest for expanding rice and vegetable cultivation activities, animal raising activity (including fish).

Rice production season

- Number of crops: 3 (i.e. wet and dry season and recession rice)
- Planting: August – September for wet season rice, and January - February for dry season rice and May – June for recession rice.
- Harvesting: December – January for wet season rice and March - May for dry season rice and August – September for recession rice.
- Rice area: 984 ha for wet season rice and 2,342 ha for dry season and recession rice.
- Rice yield: average, 3.0 t/ha for wet season rice and 3.5 t/ha for dry season and recession rice.

Use of chemical/pesticide for rice production

- When: 1-2 months after transplanting
- What kind: FILIDOL (for killing insects)
- Amount: 250-300 ml/ha

Nutrition status of the population

- Deficiency in consumption of fish and other animal meats (reduction rate, 30-40%) due to rapid population growth and natural disaster (i.e. regular and long drought). Farmers eat more vegetable in stead of meats and most of farmers could grow sufficient vegetable for their own family consumption.

Main source of animal protein

- Wet season: Fish protein intake (70%) and other animal protein intake (30%)
- Dry season: Fish protein intake (60%), from trap pond and fish culture ponds and other animal protein intake (40%)

Total number of ponds (including trap ponds)

- Private: 50 ponds
- Community (public): 8 ponds
- Pagoda: 4 ponds

Number of trap ponds

- Number: 10
- Average size: 5 m x 3 m x 1.5 m

Major fish species caught in trap ponds

- Major fish species caught: Kranh (climbing perch, *Anabas sp.*), Angdeng (walking catfish, *Clarias sp.*), Phtouk/Ros (Snakehead murrel, *Channa striata*), Kanchos (*Mystus sp.*), Kompleanh (*Trichogaster sp.*), Slart (bronze featherback, *Notopterus notopterus*), Changva (*Labocheilos sp.*) and crab.
- Productivity of trap ponds: 20 - 30 kg/pond/year (nowadays) and 50-100 kg/pond/year (long times ago)

17.3 Freshwater aquaculture

How aquaculture started in the commune?

- Fish culture started in the commune in 1996. Farmers stocked only sutchi catfish (*Pangasianodon hypophthalmus*) into their ponds by themselves without receiving any training. They installed latrine in their ponds, which could partially supply inputs to ponds. This technique has been adopted from Viet Nam.
- In 2004, farmers who also did not receive any training course on fish culture techniques stocked their ponds with four exotic/introduced fish species, i.e. tilapia, silver barb, common carp and Indian carp. The outputs from the activity were not as they expected because they did not know how to culture fish technically.

Total number of aquaculture households

- Total: 40
- Male-headed: 40
- Female-headed: 0

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 40
- Male-headed: 40
- Female-headed: 0

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 41
- Community (public): 0
- Pagoda: 4

Major culture fish species

- Culture fish species: 5, Sutchi catfish (*Pangasianodon hypophthalmus*), tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*), common carp (*Cyprinus carpio*), and mrigal (*Cirrhinus cirrhosus*),
- Fish seed production: Not applicable
- Fish seed nursery: Not applicable

Main source of fish seed by major species and their availability

- Sutchi catfish was bought from vendor who imported these species from Viet Nam
- Others were bought from a farmer's hatchery, Mr. Prum Vath.
- Not secure supply (i.e. fish seed availability is not constant).

Average price of seeds by major species and their size

- Sutchi catfish: 5-6 cm, Riel 100 per fish
- Other fish species: 2-3 cm, Riel 60 per fish

Aquaculture season (month)

- Stocking: July - September
- Harvesting: March - April

Major water source for aquaculture activity

- Major water source: Waiting for rainfalls (95%) and others pump water from dug well

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100% (especially in March - April)
- Extremely short: 0

Present condition of community (public) ponds

- There are eight community ponds. These ponds are used to store water for human and animal consumption, especially in dry season.

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: Inflammation leading to ulcer and fish were died as no any treatment was applied.
- Predation: Snakehead

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and commune market
- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Tilapia, Riel 7,000/kg
- Dry season: other species, Riel 4,000 – 6,000/kg

Average market price of major cultured fish species

- Wet season: Not applicable
- Dry season: All species, Riel 6,000 per kilo

Main feed stuff and its supplier

- Rice bran: Riel 300/kg, bought from village's rice mills.
- Vegetable and other wastes collected on farm.
- Duck weed collected by fish farmers in the commune.

Main fertilizers stuff and its supplier

- No any fertilizer was applied by most farmers because they did not have knowledge on fish culture technologies
- A few applied animal and green manure, urea and DAP before stocking fish seed. Organic fertilizers were collected on farmers' farms and inorganic fertilizers were bought at commune market.

Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

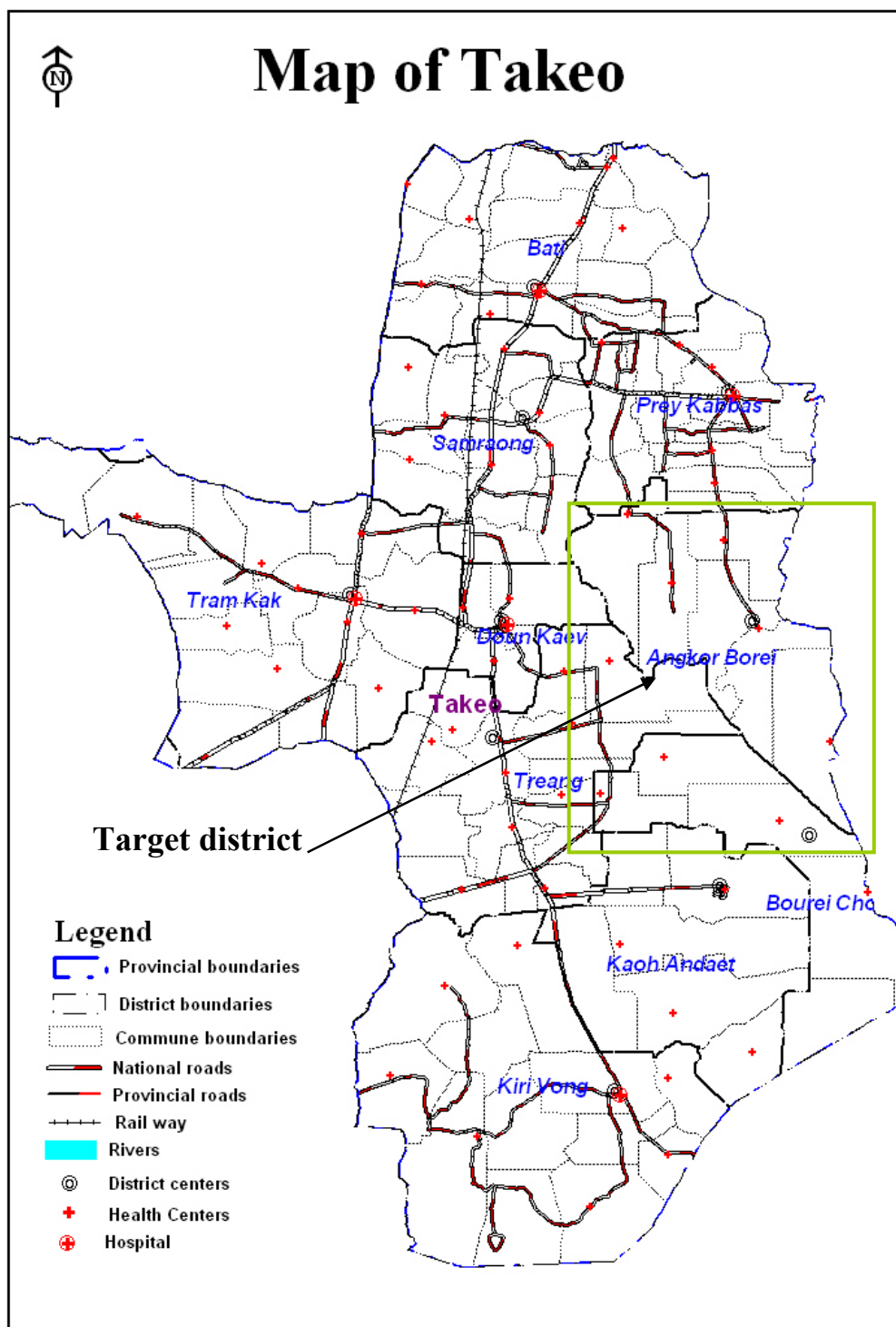
Freshwater aquaculture development/extension (Present and past)

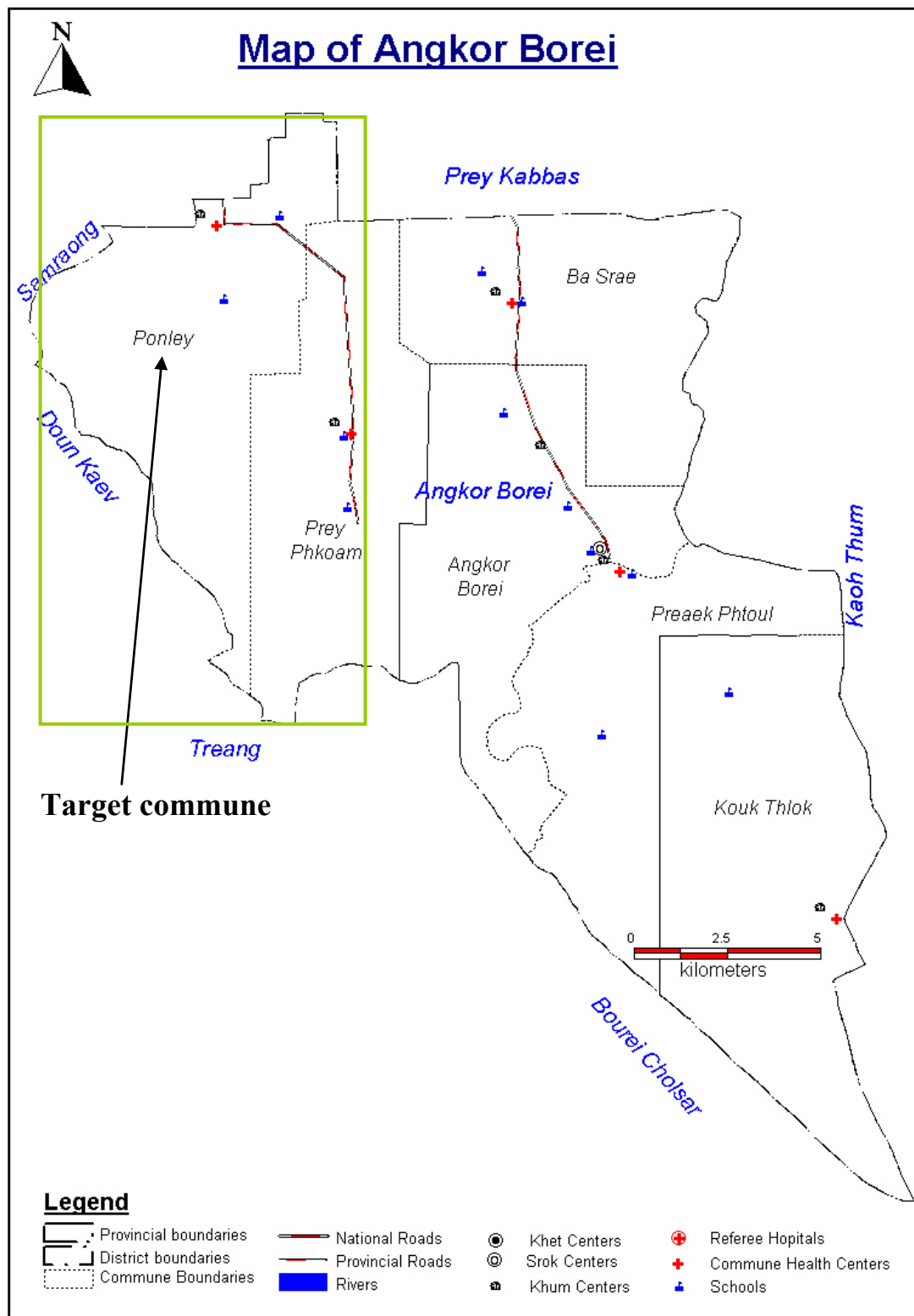
- Till 2004, government and NGOs/IOs have not supported any aquaculture development program in PONLEY commune. Farmers who were interested in fish culture stocked fish seed into their ponds without attending proper training courses.
- In 2005, SEILA program in cooperation with DAFF provided training on fish culture to 28 selected farmers. After the training, four ponds were selected as pilot ponds to stock fish. Lime, inorganic fertilizers and fish seed were provided by SEILA.
- In the same year, the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF has trained 40 farmers selected from the commune on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. This project is named as Freshwater Aquaculture Improvement and Extension Project (FAIEX) funded by JICA. Extension materials such as poster and brochure related to small-scale aquaculture technologies were also provided during the

training. The FAIEX has provided all trained farmers digging instruments (hoc/grub-hoe, shovel and two-handle basket open at one end and made of silvers of bamboo), some inputs (lime and inorganic fertilizers) for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Not applicable.





18. Profile TRAPEANG THUM KHANG CHEUNG commune

18.1 Location

TRAPEANG THUM KHANG CHEUNG commune is one of the communes located in Tram Kak district, Takeo province (See location maps attached below). It is adjacent to the northern boundary of Basedth district, the southern boundary of Trapeang Thum Khang Tboung commune, the eastern boundary of Cheang Tong commune and the western boundary of Ou Saray commune. TRAPEANG THUM KHANG CHEUNG commune is composed of eleven villages.

Geographical condition

TRAPEANG THUM KHANG CHEUNG commune is located 12 km from Tram Kak district center, 24 km from Takeo provincial center and 90 km from Phnom Penh. TRAPEANG THUM KHANG CHEUNG commune has a total land area of 2,592 ha, including a paddy land area of 1,130 ha, crop cultivation land area of 21 ha, house land area of 200 ha, and public, natural stream, irrigation dam and canal and trap pond areas of 1,241 ha. Most of the land of the commune is lowland. Occasional flood was detected, but no severe disaster was, generally, resulted from the flood. Regular and severe drought was detected for the last five years. Sandy-loamy land is the most widely found land type in TRAPEANG THUM KHANG CHEUNG commune.

Transportation accessibility

- There are five main roads in TRAPEANG THUM KHANG CHEUNG commune. It is in a good shape and accessible in wet season.
- There are eight small roads connected from the major roads into villages of the commune. They are in good shapes; hence accessibility is not the problem in wet season.

18.2 General information

Name of commune chief and his term: Mr. Chhay Nheng; his term: five years

Industry other than agriculture:

- Beside agriculture activity, many types of small business are found in the commune, including:
 - o 34 rice mills,
 - o three battery recharging workshops,
 - o 164 garment workers, working in garment factories in Phnom Penh,
 - o Five sellers at the commune market,
 - o Seven local white wine making shops,
 - o Three house constructing workers, and
 - o 45 motorbike taxi drivers

Total number of population

- Total: 8,029
- Male: 3,692

- Female: 4,337

Total number of households

- Total: 1,601
- Male-headed households: 960
- Female-headed households: 641

Total number of farming households

- Total: 1,494
- Male-headed households: 897
- Female-headed households: 597

Total number of landless household

- No agricultural land: 5
- No house land: 2
- Male-headed households: 3
- Female-headed households: 2

Number of farmer's group

- No. of farmer's group: Twelve groups, rice banks (i.e. Rice Saving group)
- Main activities: Increase rice in the banks and only member of the group can borrow rice from these banks with a very low interest for expanding rice. This project is supported by CEADC.

Rice production season

- Number of crops: 2 (i.e. wet season and recession rice)
- Planting: July – September for wet season rice and May – June for recession rice.
- Harvesting: December – January for wet season rice and August – September for recession rice.
- Rice area: 1,130 ha for wet season rice and 99 ha for recession rice.
- Rice yield: average, 2.0 t/ha for wet season rice 3.5 t/ha for recession rice.

Use of chemical/pesticide for rice production

- When: 1-2 months after transplanting
- What kind: FILIDOL (for killing insects); Noting that only two families used pesticide
- Amount: 250-300 ml/ha

Nutrition status of the population

- Deficiency in consumption of fish and other animal meats (reduction rate, 40-50%) due to rapid population growth and natural disaster (i.e. regular and long drought). Farmers eat more vegetable in stead of meats and most of farmers could grow sufficient vegetable for their own family consumption.

Main source of animal protein

- Wet season: Fish protein intake (60%) and other animal protein intake (40%).
- Dry season: Fish protein intake (40%), other animal protein intake (60%).

Total number of ponds (including trap ponds)

- Private: 534 ponds

- Community (public): 31 ponds
- Pagoda: 8 ponds

Number of trap ponds

- Number: 22
- Average size: 3 m x 3 m x 1.5 m

Major fish species caught in trap ponds

- Major fish species caught: Kranh (climbing perch, *Anabas sp.*), Angdeng (walking catfish, *Clarias sp.*), Phtouk/Ros (Snakehead murrel, *Channa striata*), Kanchos (*Mystus sp.*), Kompleanh (*Trichogaster sp.*), Changva (*Labocheilos sp.*) and crab.
- Productivity of trap ponds: 3-5 kg/pond/year (nowadays) and 10-20 kg/pond/year (long times ago)

18.3 Freshwater aquaculture

How aquaculture started in the commune?

Fish culture started in the commune in 2000. This activity was supported by CIDSE. CIDSE stocked farmers' ponds with exotic fish species (see below) without providing any training and follow up.

Total number of aquaculture households

- Total: 54
- Male-headed: 40
- Female-headed: 14

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 50
- Male-headed: 40
- Female-headed: 10

Rice-cum-fish culture households

- Total: 4
- Male-headed: 4
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 62
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: 4, tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*), common carp (*Cyprinus carpio*), and silver carp (*Hypophthalmichthys molitrix*).
- Fish seed production: Not applicable
- Fish seed nursery: Not applicable

Main source of fish seed by major species and their availability

- All fish species were bought from Phnom Penh public hatcheries, most of the farmers bought fish seed vendors and some receive fish seed from Minister of MAFF, HE Mr. Chan Sarun.
- Not secure supply (i.e. fish seed availability is not constant).

Average price of seeds by major species and their size

- Tilapia and silver barb: 2-3 cm, Riel 55 per fish
- Common carp and silver carp: 4-5 cm, Riel 70 per fish

Aquaculture season (month)

- Stocking: June - September
- Harvesting: February - April

Major water source for aquaculture activity

- Major water source: rainfall, canals/dams and reservoirs.

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100% (especially in March - April)
- Extremely short: 0

Present condition of community (public) ponds

- There are 31 community ponds. These ponds are used to store water for human and animal consumption, especially in dry season.

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: Inflammation leading to ulcer and fish were died as no any treatment was applied.
- Predation: Snakehead and mouse. Fish were lost from the ponds without any reasons.
- Growth: Stunted fish

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and commune market
- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Tilapia, Riel 4,000/kg
- Dry season: Tilapia, Riel 5,000/kg; silver carp, Riel 6,000/kg; silver barb, Riel 5,500/kg; and common carp, Riel 6,000/kg

Average market price of major cultured fish species

- Wet season: Tilapia, Riel 4,000/kg
- Dry season: Tilapia, Riel 5,000/kg; silver carp, Riel 6,000/kg; silver barb, Riel 5,500/kg; and common carp, Riel 6,000/kg

Main feed stuff and its supplier

- Rice bran: Riel 300/kg, bought from village's rice mills.
- Vegetable and other wastes collected on farm.
- Duck weed and earth worm collected by fish farmers in the commune.

Main fertilizers stuff and its supplier

- DAP: Riel 1,200/kg, commune market
- UREA: Riel 1,000/kg, commune market
- Animal manure (cow, buffalo, chicken, pig and duck), collected on farm, mostly from farmer's owned animals.
- Green manure collected in village or commune.

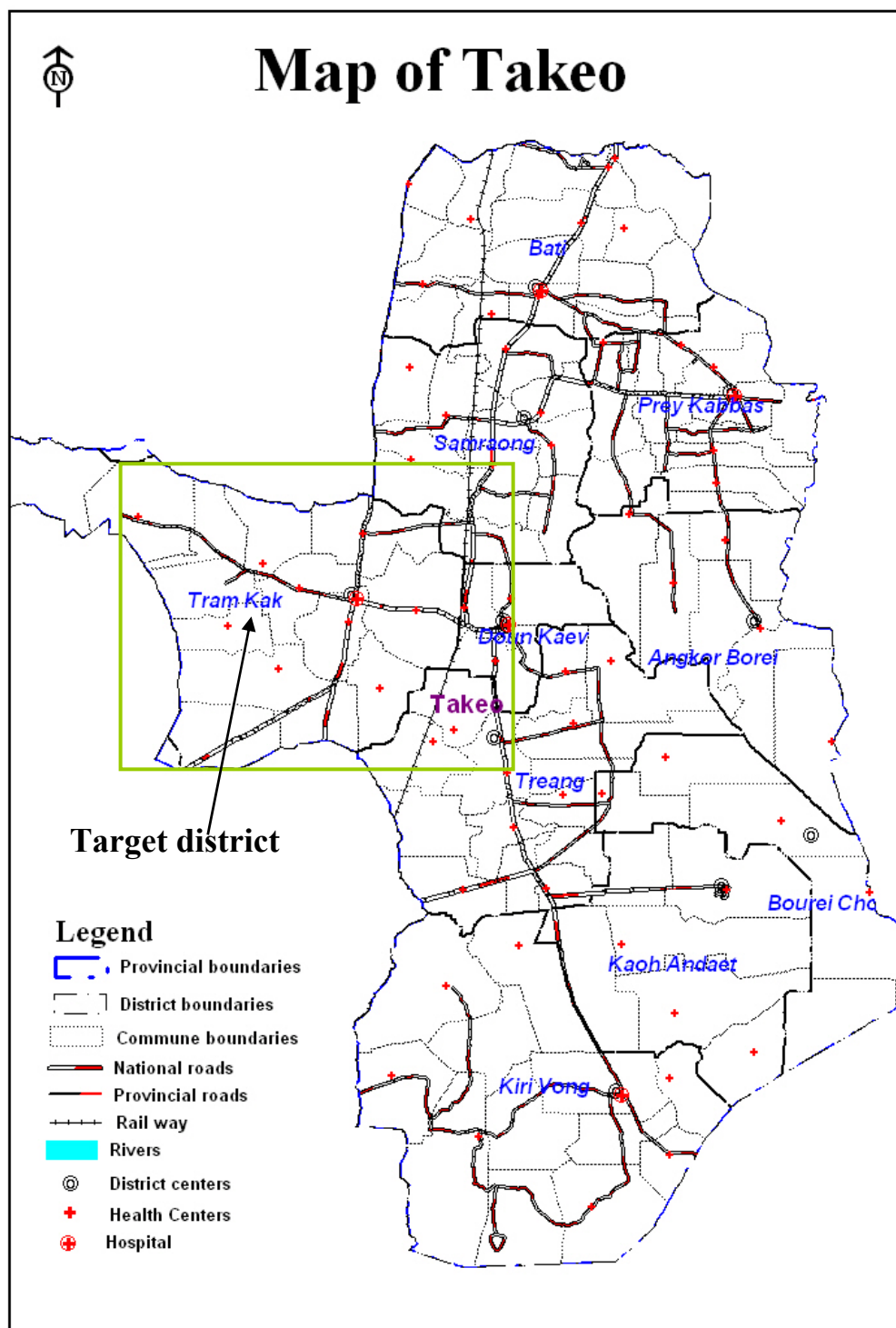
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

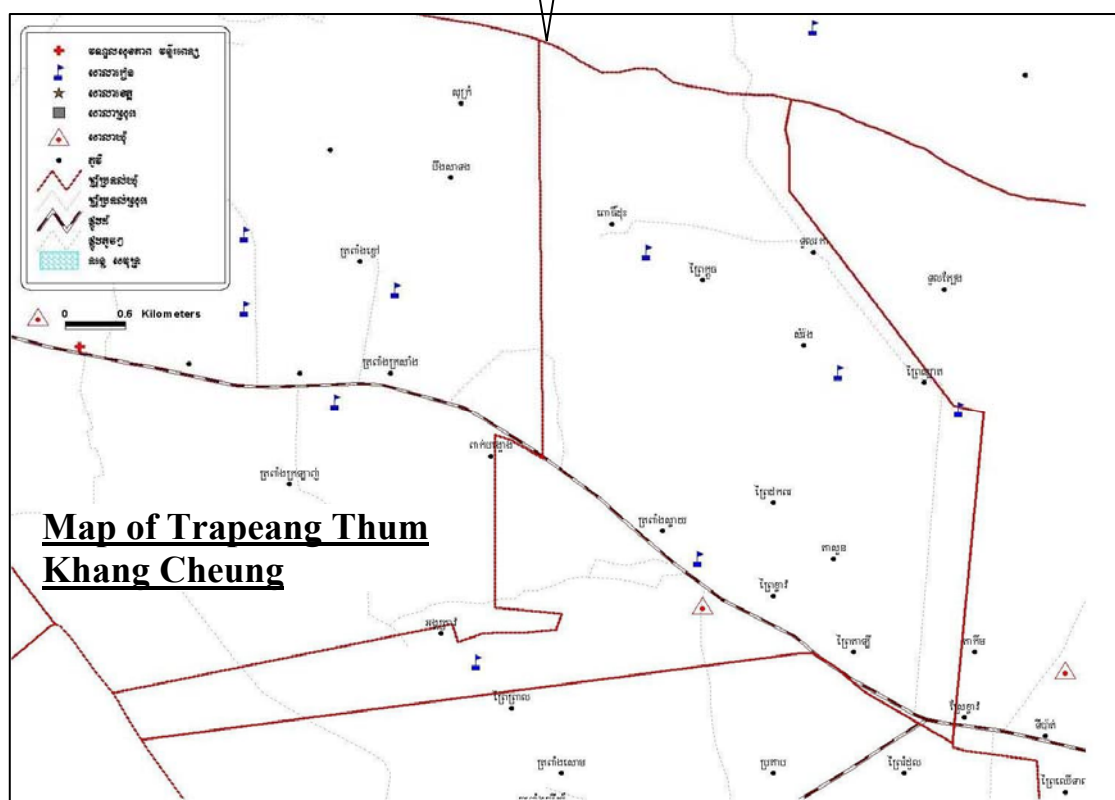
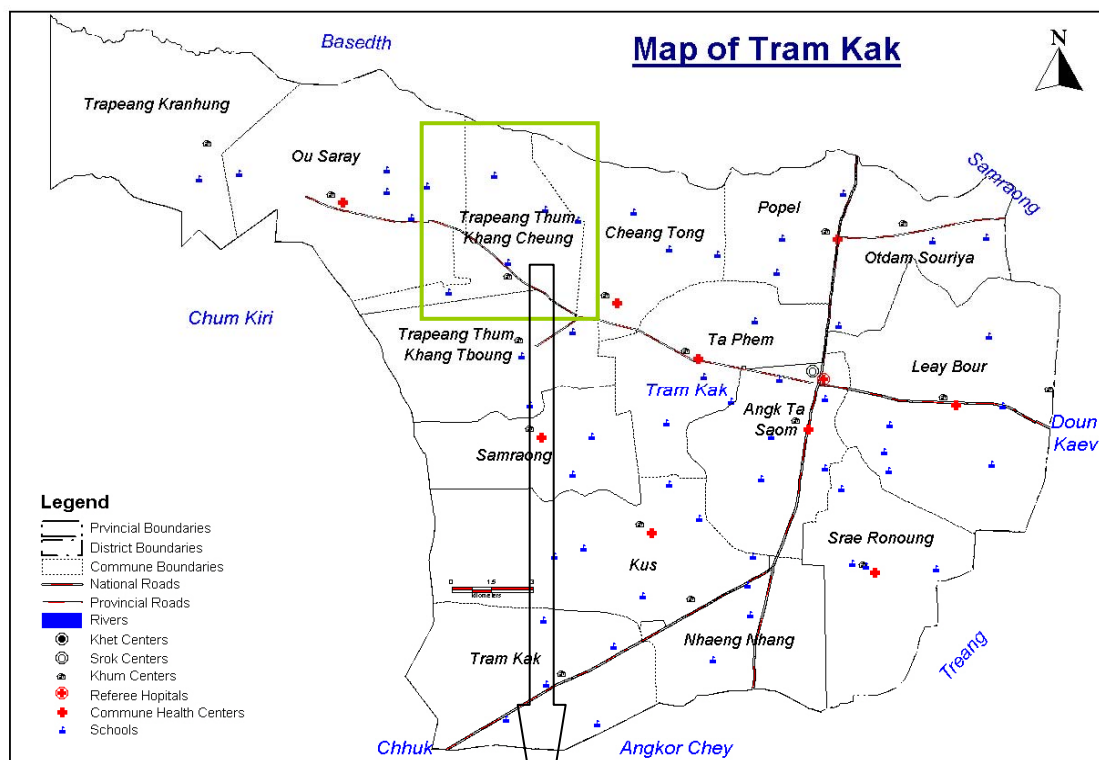
Freshwater aquaculture development/extension (Present and past)

- In 2000, CIDSE program in cooperation with DAFF provided fish seed to farmers to stock their ponds without providing any training on fish culture technologies.
- Local authorities, especially commune council, encouraged farmers to culture fish in order to secure their family fish food and nutrition. Study tours were conducted by taking farmers to visit successful fish culture farmers and fish seed producers in the commune.
- In mid 2005, the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF has trained 40 farmers selected from the commune on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. This project is named as Freshwater Aquaculture Improvement and Extension Project (FAIEX) funded by JICA. Extension materials such as poster and brochure related to small-scale aquaculture technologies were also provided during the training. The FAIEX has provided all trained farmers digging instruments (hoc/grub-hoe, shovel and two-handle basket open at one end and made of silvers of bamboo), some inputs (lime and inorganic fertilizers) for pond preparation and fingerling for stocking the prepared ponds. The follow up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Not applicable.





19 Profile TRAPEANG THUM KHANG TBOUNG commune

19.1 Location

TRAPEANG THUM KHANG TBOUNG commune is one of the communes located in Tram Kak district, Takeo province (See location maps attached below). It is adjacent to the northern boundary of Trapeang Thum Khang Cheung commune, the southern boundary of Samraong commune, the eastern boundary of Cheang Tong and Ta Phem communes and the western boundary of Chum Kiri district. TRAPEANG THUM KHANG TBOUNG commune is composed of thirteen villages.

Geographical condition

TRAPEANG THUM KHANG TBOUNG commune is located 15 km from National Road # 3, 15 km from Tram Kak district center, 17 km from Takeo provincial center and 92 km from Phnom Penh. TRAPEANG THUM KHANG TBOUNG commune has a total paddy area of 1,763 ha. There are ten reservoirs; of which nine are dried out in dry season. There are ten irrigation canals constructed in the commune. Most of the land of the commune is lowland. Occasional flood was detected, but no severe disaster was, generally, resulted from the flood. Regular and severe drought was detected for the last five years. Sandy-loamy land is the most widely found land type in TRAPEANG THUM KHANG TBOUNG commune.

Transportation accessibility

- There are three main roads in TRAPEANG THUM KHANG TBOUNG commune. It is in a good shape and accessible in wet season.
- There are 22 small roads connected from the major roads into villages of the commune. They are in good shapes; hence accessibility is not the problem in wet season.

19.2 General information

Name of commune chief and his term: Mr. Ouch Hoeun; his term: five years

Industry other than agriculture:

- Beside agriculture activity, many types of small business are found in the commune, including:
 - 54 rice mills,
 - Four battery recharging workshops,
 - 213 garment workers, working in garment factories in Phnom Penh,
 - 52 sellers at Cambodian-Thai border market,
 - Twelve local white wine making shops,
 - Twelve house constructing workers,
 - 25 motorbike taxi drivers,
 - Three furniture workshops, and
 - 31 ox cart making shops.

Total number of population

- Total: 8,176
- Male: 3,845
- Female: 4,331

Total number of households

- Total: 1,636
- Male-headed households: 1,135
- Female-headed households: 501

Total number of farming households

- Total: 1,613
- Male-headed households: 1,112
- Female-headed households: 501

Total number of landless household

- No agricultural land: 56
- No house land: 2
- Male-headed households: 11
- Female-headed households: 45

Number of farmer's group

- No. of farmer's group: Four groups, village banks
- Main activities: To promote agricultural development, including rice and other crop cultivation, fish raising and tree planting. This development is supported by CEDAC.

Rice production season

- Number of crops: 1 (i.e. wet season rice)
- Planting: July – September
- Harvesting: December – January
- Rice area: 1,763 ha
- Rice yield: 1.5-2.0 t/ha

Use of chemical/pesticide for rice production

- When: Pesticide not used
- What kind: Not applicable
- Amount: Not applicable

Nutrition status of the population

- Deficiency in consumption of fish and other animal meats (reduction rate, 40-50%) due to rapid population growth and natural disaster (i.e. regular and long drought). Farmers eat more vegetable in stead of meats and most of farmers could grow sufficient vegetable for their own family consumption.

Main source of animal protein

- Wet season: Fish protein intake (70%) and other animal protein intake (30%).
- Dry season: Fish protein intake (40%), other animal protein intake (60%).

Total number of ponds (including trap ponds)

- Private: 427 ponds
- Community (public): 130 ponds
- Pagoda: 3 ponds

Number of trap ponds

- Number: 0
- Average size: Not applicable

Major fish species caught in trap ponds

- Not applicable

19.3 Freshwater aquaculture

How aquaculture started in the commune?

Fish culture started in the commune in 2002. This activity was supported by MRC/AIMS project to encourage fish farmers to stock their ponds with indigenous fish species, such as sutchi catfish, silver barb and snakeskin gourami. This program ended in 2004. In 2003 and 2004, DoF-AIT and DAFF-SEILA provided support to develop small-scale aquaculture in this commune too.

Total number of aquaculture households

- Total: 57
- Male-headed: 44
- Female-headed: 13

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 51
- Male-headed: 39
- Female-headed: 12

Rice-cum-fish culture households

- Total: 6
- Male-headed: 5
- Female-headed: 1

Number or area of aquaculture ponds

- Private: 74
- Community (public): 0

- Pagoda: 0

Major culture fish species

- Culture fish species: 7, tilapia (*Tilapia nilotica* or *Oreochromis aureus*), silver barb or Java barb (*Barbodes gonionotus* or *Barbonymus gonionotus*), common carp (*Cyprinus carpio*), silver carp (*Hypophthalmichthys molitrix*), mrigal (*Cirrhinus cirrhosus*), Sutchi catfish (*Pangasianodon hypophthalmus*) and snakeskin gourami (*Trichogaster pectoralis*).
- Fish seed production: Not applicable
- Fish seed nursery: Not applicable

Main source of fish seed by major species and their availability

- All fish species were bought from Phnom Penh public hatcheries by AIMS and SEILA projects, from village hatcheries in Taphem commune
- Donation of HE Mr. Chan Sarun, Minister of MAFF.
- Not secure supply (i.e. fish seed availability is not constant).

Average price of seeds by major species and their size

- Tilapia: 2 cm, Riel 30 per fish
- Silver carp, common carp, mrigal and silver barb: 3 cm, Riel 40 per fish
- Sutchi catfish: 5 cm, Riel 100 per fish
- Snakeskin gourami: 3 cm, Riel 50 per fish

Aquaculture season (month)

- Stocking: July - August
- Harvesting: March - April

Major water source for aquaculture activity

- Major water source: Waiting for rainfall.

Water availability for aquaculture activity

- Extremely enough: 0
- Enough: 0
- Short: 100% (especially in March - April)
- Extremely short: 0

Present condition of community (public) ponds

- There are 130 community ponds. These ponds are used to store water for human and animal consumption, especially in dry season.

Experience/present situation on fish disease outbreak and predations

- Disease outbreak: Inflammation leading to ulcer and fish were died as no any treatment was applied.
- Predation: Snakehead and mouse.
- Growth: Silver barb grew very slow.
- Fish were lost from the ponds without any reasons, especially tilapia.
- Fish were died in ponds without any reason.

Main destination of cultured fish by major species

- All cultured fish species were sold on farm and commune market
- Most fish production was for family consumption.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Tilapia and gourami, Riel, 4,000/kg
- Dry season: All species, Riel, 5,000/kg

Average market price of major cultured fish species

- Wet season: Tilapia and gourami, Riel 3,500/kg
- Dry season: Tilapia and gourami, Riel 4,000/kg; silver carp, Riel 4,000/kg; silver barb, Riel 5,000/kg; common carp, Riel 5,000/kg; mrigal, Riel 5,000/kg; sutchi catfish, Riel 4,500/kg

Main feed stuff and its supplier

- Rice bran: Riel 350/kg, bought from village's rice mills.
- Rice: Riel 1,000/kg from farmers' owned rice.
- Vegetable collected on farm.
- Wastes, i.e. kitchen and rice wine wastes collected from farmers' kitchen and white wine making shops.
- Duck weed and termite collected by fish farmers in the commune.

Main fertilizers stuff and its supplier

- DAP: Riel 1,400/kg, commune market
- UREA: Riel 1,200/kg, commune market
- Animal manure (cow, buffalo, chicken, pig and duck), collected on farm, mostly from farmer's owned animals.
- Green manure collected in village or commune.

Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

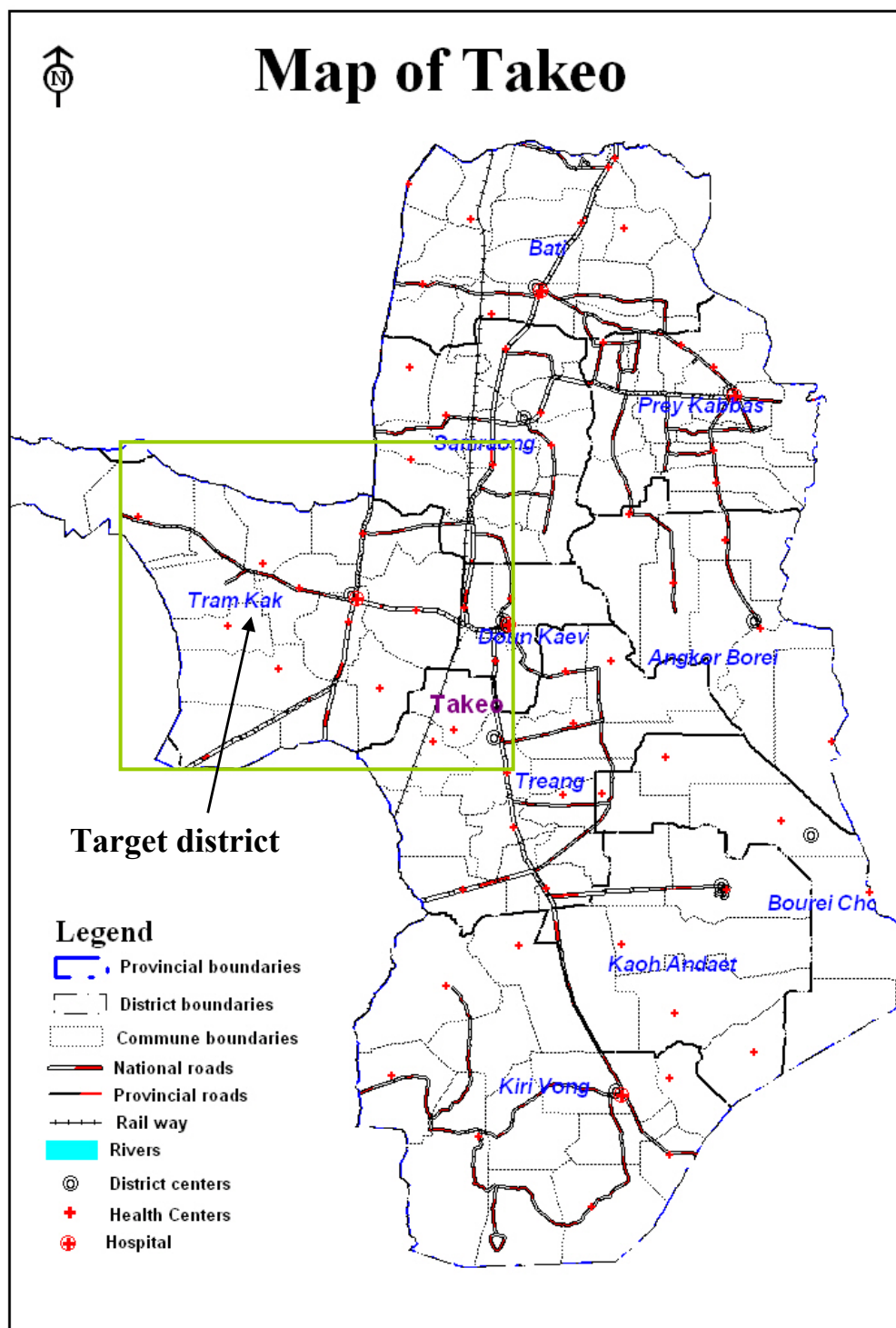
Freshwater aquaculture development/extension (Present and past)

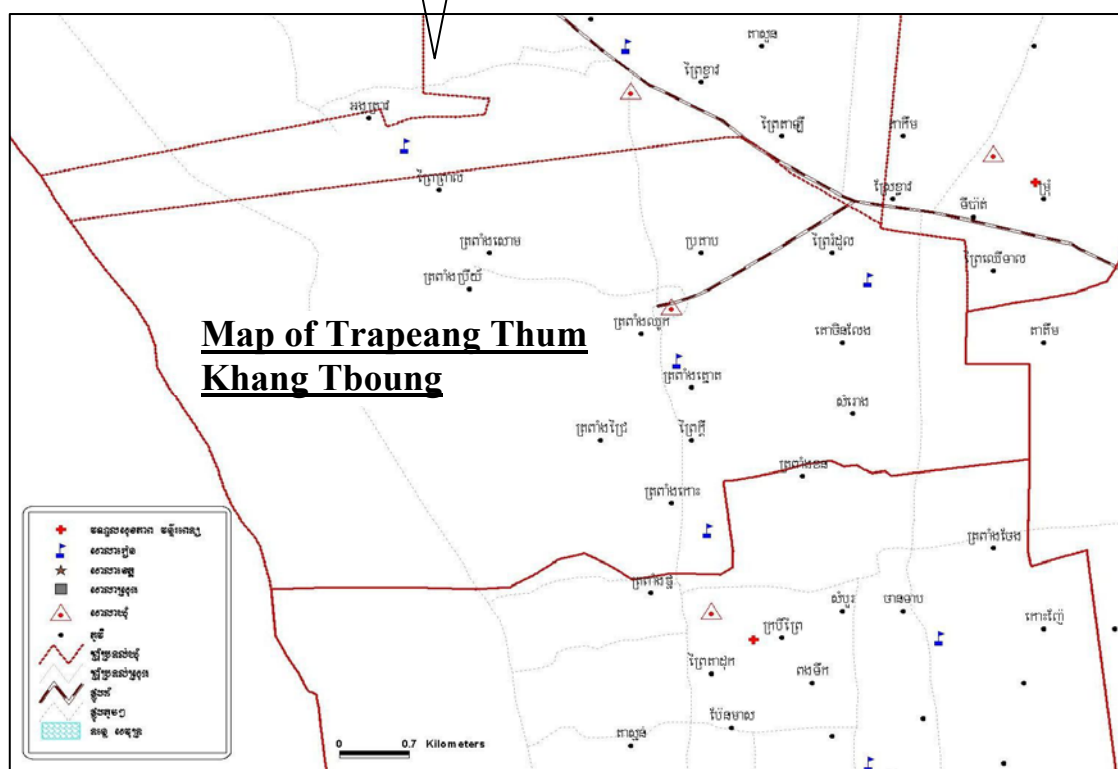
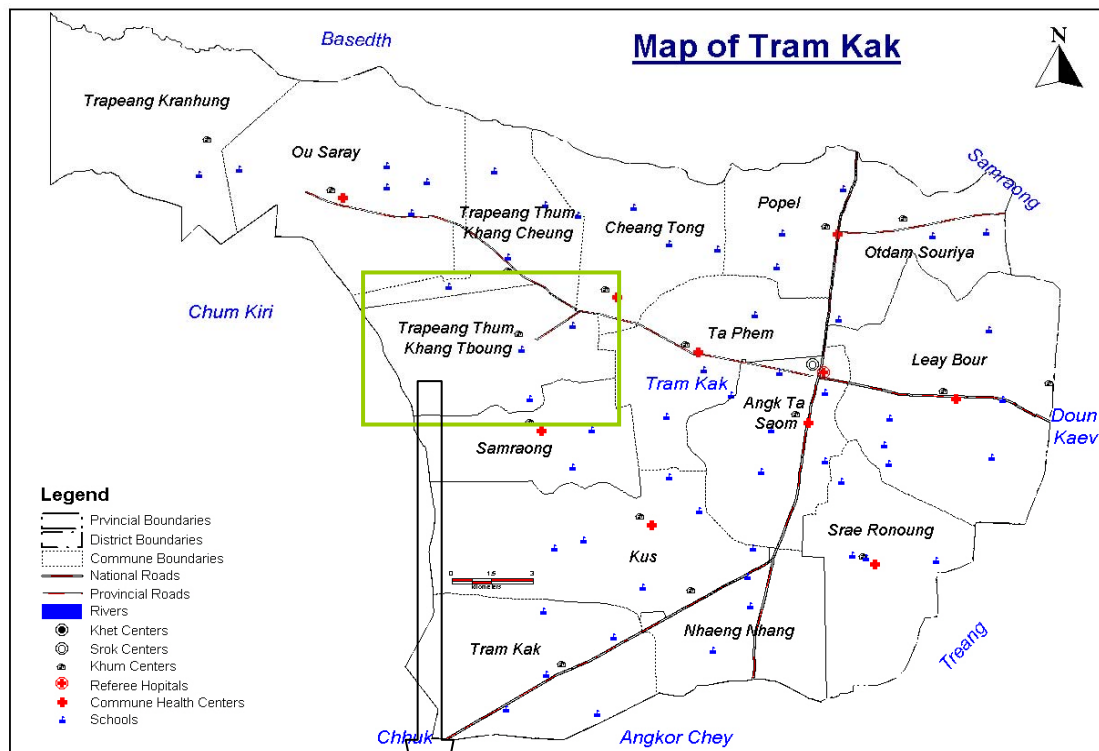
- Aquaculture development in the commune has been supported by various international organizations such as DoF-MRC-AIMS (2002-2004), DAFF-SEILA (2003-2004), DoF-AIT (2003-2004) and MAFF (initiatives of HE Mr. Chan Sarun, minister of MAFF, till date). Various extension materials and training courses on fish culture and fish pond management have been provided by DoF. Experienced fish farmers have extended their fish culture knowledge to other farmers who were interested in fish culture to enhance fish food security of their families and generate additional family income.
- In the middle year of 2005, the provincial aquaculture extension staff in cooperation with Aquaculture Division staff of the DoF has trained 40 farmers selected from the commune on how to culture fish with low inputs for increasing family fish consumption and generating additional family income. This project is named as Freshwater Aquaculture Improvement and Extension Project (FAIEX) funded by JICA. Extension materials such as poster and brochure related to small-scale aquaculture technologies were also provided during the training. The FAIEX has provided all trained farmers digging instruments (hoc/grub-hoe, shovel and two-handle basket open at one end and made of silvers of bamboo), some inputs (lime and inorganic fertilizers) for pond preparation and fingerling for stocking the prepared ponds. The follow

up of this activity will be provided by provincial aquaculture extension staff in cooperation with AD staff.

Fish refuge pond management (Present and past)

- Not applicable.





20. Profile PREY KDUACH village

20.1 Location

PREY KDUACH is one of the villages located in Trapeang Kranhung commune, Tram Kak district, Takeo province (See location maps attached below). It is adjacent to the northern boundary of Ta Arm village, the southern boundary of Trapaing Rabang village, the eastern boundary of Plov Louk village and the western boundary of Chum Kiri district, Kampot province and Basedth district, Kampong Speu province.

Geographical condition

PREY KDUACH village is located 3 km from commune center, 25 km from Tram Kak district center, 46 km from Takeo provincial center. PREY KDUACH village was born 1973 and has a total agricultural land area of 346 ha. There are nine dam/reservoirs; of which only two reservoirs do not dry up during dry season. The two reservoirs are named as Prey Kduach reservoir and Krang Ampil reservoir. Their sizes vary from 20-35 ha in dry season to 50-70 ha in wet season. The depth of each reservoir varies from 2 to 5 m. People fish in the two reservoirs in both wet and dry seasons. Most of the land of the village is upland. No flood has been detected. Severe drought was detected for the past years. Upland soil of PREY KDUACH village is important for field crops.

Transportation accessibility

- Trapeang Kranhung commune is located next to a main road (i.e. road # 33). There is a secondary road connected the road # 33 to PREY Kduach village or to Prey Kduach reservoir, which has been selected to be a pilot refuge pond of DoF-JICA-FAIEX project.
- Both roads are in good shape; hence accessibility is not the problem in wet season.

20.2 General information

Name of commune chief and his term: Mr. Mut Hun; his term: 2002-2005

Industry other than agriculture:

- Beside agriculture activity, many types of small business are found in the commune, including:
 - o Eighteen rice mills,
 - o Two battery recharging workshops,
 - o Three local white wine making shops,

Total number of population

- Total: 3,140
- Male: 1,529
- Female: 1,611

Total number of households

- Total: 650
- Male-headed households: 592
- Female-headed households: 58

Total number of farming households

- Total: 650
- Male-headed households: 592
- Female-headed households: 58

Total number of landless household

- No agricultural land: 25
- No house land: 8
- Male-headed households: 21
- Female-headed households: 5

Number of farmer's group

- No. of farmer's group: 22 groups, rice banks
- Main activities: To promote agricultural development, including rice and other crop cultivation.
-

Rice production season

- Number of crops: 1 (i.e. wet season rice)
- Planting: June – September
- Harvesting: November – December
- Rice area: 346 ha
- Rice yield: average, 1.5t/ha

Use of chemical/pesticide for rice production

- When: Pesticide not used
- What kind: Not applicable
- Amount: Not applicable

Nutrition status of the population

- Deficiency in consumption of fish and other animal meats and rice (reduction rate, 50-60%) due to rapid population growth and natural disaster (i.e. regular and long drought). Farmers eat more vegetable in stead of meats and most of farmers could grow sufficient vegetable for their own family consumption.

Main source of animal protein

- Wet season: Fish protein intake (70%) and other animal protein intake (30%).
- Dry season: Fish protein intake (30%), other animal protein intake (70%).

Total number of ponds (including trap ponds)

- Private: 28 ponds
- Community (public): 3 ponds
- Pagoda: 0

Number of trap ponds

- Number: 0

- Average size: Not applicable

Major fish species caught in trap ponds

- Not applicable

20.3 Freshwater aquaculture

How aquaculture started in the village?

There has been no aquaculture development in PREY KDUACH village.

Total number of aquaculture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed production households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish seed nursery households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Fish grow-out pond households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Rice-cum-fish culture households

- Total: 0
- Male-headed: 0
- Female-headed: 0

Number or area of aquaculture ponds

- Private: 0
- Community (public): 0
- Pagoda: 0

Major culture fish species

- Culture fish species: Not applicable
- Fish seed production: Not applicable
- Fish seed nursery: Not applicable

Main source of fish seed by major species and their availability

- Not applicable

Average price of seeds by major species and their size

- Not applicable

Aquaculture season (month)

- Stocking: Not applicable
- Harvesting: Not applicable

Major water source for aquaculture activity

- Not applicable

Water availability for aquaculture activity

- Extremely enough: Not applicable
- Enough: Not applicable
- Short: Not applicable
- Extremely short: Not applicable

Present condition of community (public) ponds

- There are three public ponds/reservoirs. Two of them do not dry during dry season. These ponds are called Prey Kduach pond and Krang Ampil pond. Fishing activities are operated in the two ponds in both dry and wet season. Moreover, the two ponds are used to store water for human and animal consumption, especially in dry season. The surface water area of each pond varies from 20 ha to 35 ha in dry season and from 50 ha to 70 ha in wet season, while the depth varies from 2 m to 5 m.

Experience/present situation on fish disease outbreak and predations

- Not applicable.

Main destination of cultured fish by major species

- Not applicable.

Average selling (on-farm) price of major cultured fish specie

- Wet season: Not applicable.
- Dry season: Not applicable.

Average market price of major cultured fish species

- Wet season: Not applicable.
- Dry season: Not applicable.

Main feed stuff and its supplier

- Not applicable.

Main fertilizers stuff and its supplier

- Not applicable.

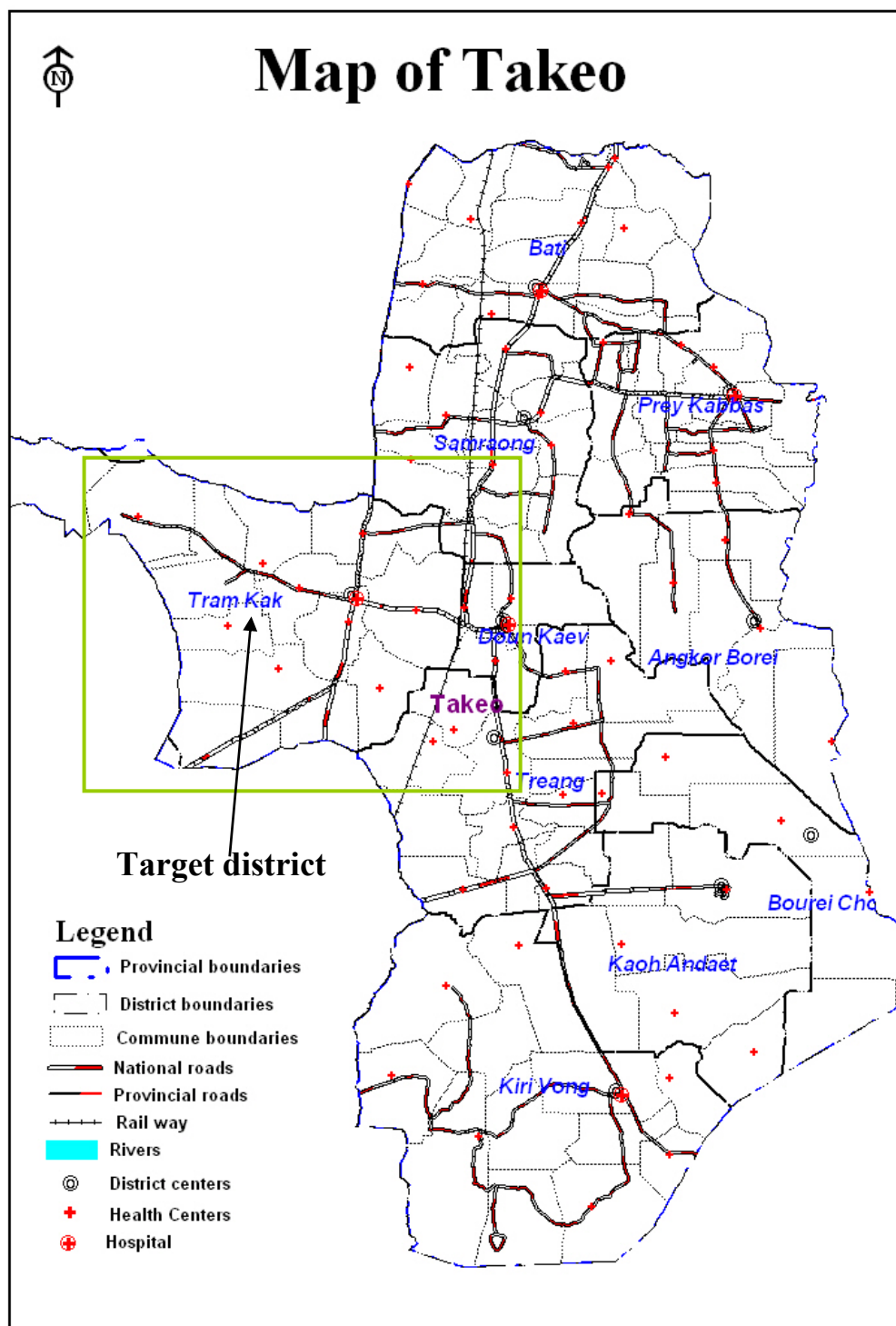
Present situation and past experience of assistance on freshwater aquaculture development/extension including refuge pond management from the government, NGOs and/or donor's agencies

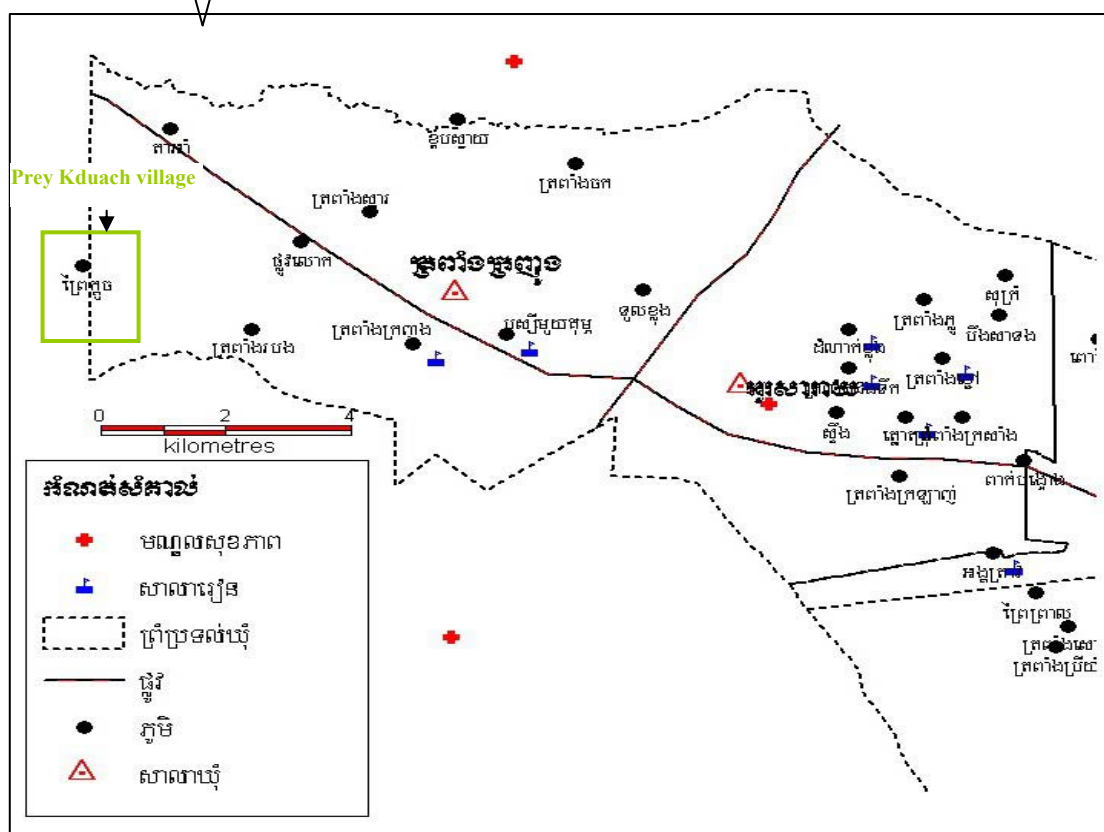
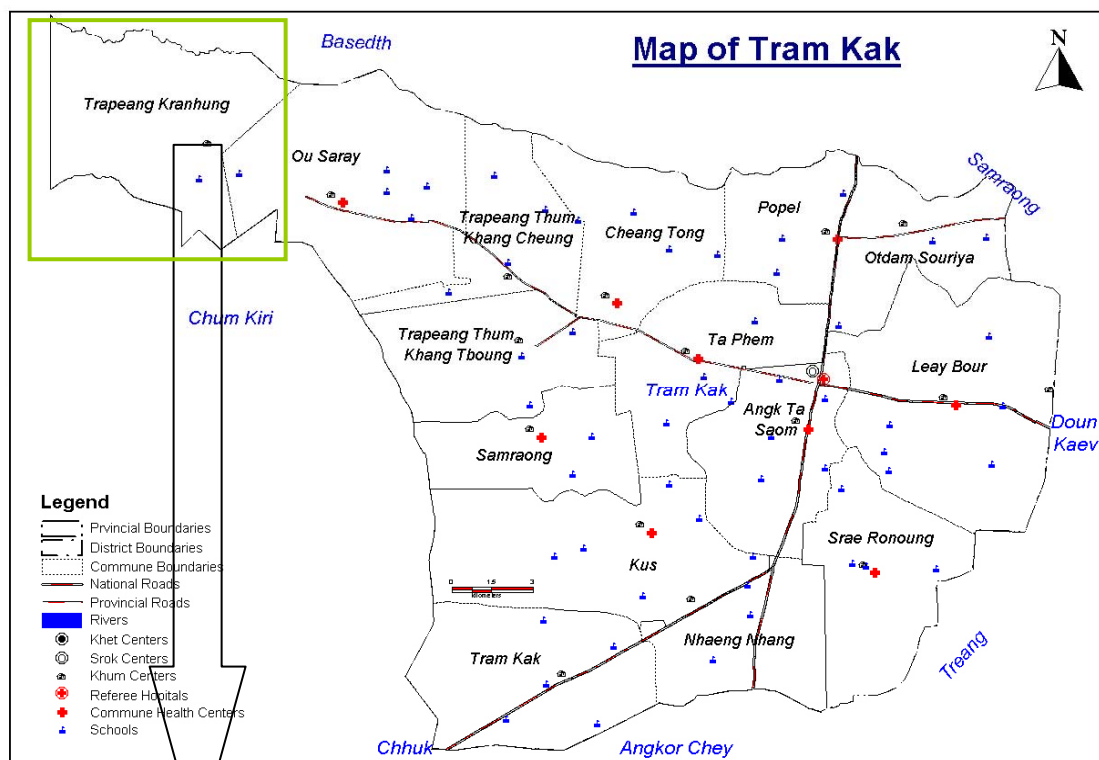
Freshwater aquaculture development/extension (Present and past)

- So far, there has been no aquaculture development found in PREY KDUACH village. There has been no support of aquaculture extension/development from the government, NGO and other donor's agencies.

Fish refuge pond management (Present and past)

- DoF-JICA-FAIEX has recently selected Prey Kduach reservoir as a community fish refuge pond. Management system will be set up using participatory approach in order to utilize and protect fish in the pond. This is to enhance natural fish stock in this pond as well as in the village for present and future generations.





APPENDIX 1 Questionnaire survey format

Commune profile

Commune: C District: B Province: A

I. LOCATION

<p>Map</p>	
<p>Geographical Condition (including flood situation in wet season):</p>	<p>Transportation Accessibility (Available means of transportation, especially in wet season):</p>

II. GENERAL INFORMATION

Name of the Commune Chief and his/her Term	Industry other than Agriculture:
Total No. of Population: (Male: Female:)	Nutrition Status of the Population:
Total No. of H/Hs: (Male-Headed: Female-Headed:)	Main Source of Animal Protein Wet Season: Dry Season:
Total No. of Farming H/Hs: (Male-Headed: Female-Headed:)	
Total No. of Landless H/Hs: (Male-Headed: Female-Headed:)	
No. of Farmers' Groups: Main Activity:	Total No. or Area of Ponds (including trap ponds) Private : Community (Public) : Pagoda :
Rice Production Season (month): from (planting)	No. of Trap Ponds: Average Size of Trap Pond:

to _____ (harvesting)	Major Fish Species Caught in Trap Ponds:
Use of Chemicals/Pesticide for Rice Production When: What Kind: Amount:	Productivity of Trap Ponds:

III. FRESHWATER AQUACULTURE

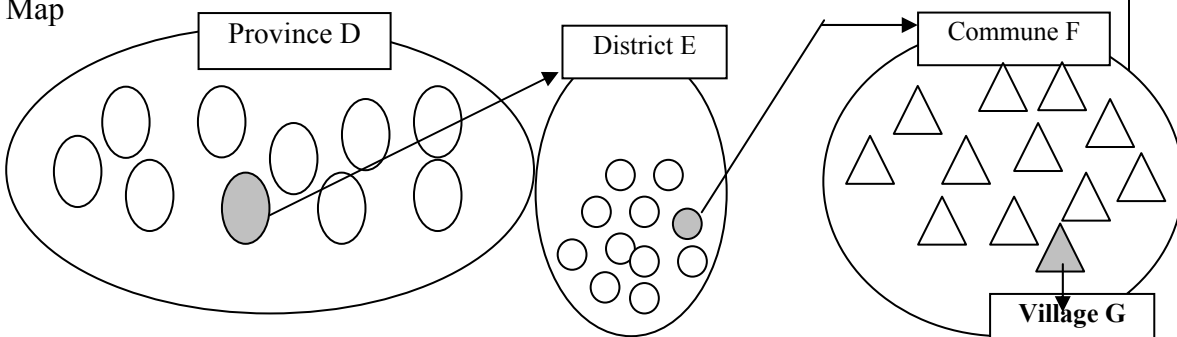
How aquaculture started in the commune?	
Total No. of Aquaculture H/Hs: H/Hs (Male-Headed: Female-Headed:)	Major Culture Species Seed Production: Seed Nursery: Grow-Out:
Seed Production: H/Hs (Male-Headed: Female-Headed:)	
Seed Nursery: H/Hs (Male-Headed: Female-Headed:)	
Grow-out with Earthen Ponds System: H/Hs (Male-Headed: Female-Headed:)	Main Source of Seeds by Major Species and their Availability (constant or not):
Grow-out with Rice-cum-Fish Culture System: HHs (Male-Headed: Female-Headed:)	
No. or Area of Aquaculture Ponds Private : Community (Public) : Pagoda :	Average Price of Seeds by Major Species and their Size:
Aquaculture Season (Month): from _____ to	Main Destination of Cultured Fish by Major Species:
Major Water Source for Aquaculture Activity:	
Water Availability for Aquaculture Activity (extremely enough, enough, short, extremely short)	Average Selling Price of Cultured Fish by Major Species Wet Season: Dry Season:
Present Conditions of Fish Refuge Pond Management, if any:	

	Average Market Price of Cultured Fish by Major Species Wet Season:
Experience/Present Situation on Fish Disease Outbreak and Predators:	Dry Season:
	Main Feed Stuff and its Supplier:
	Main Fertilizer and its Supplier:
Present situation/past experience of assistance on freshwater aquaculture development/extension including fish refuge pond management from the government, NGOs and/or donor agencies:	

Village profile

Village: _____ G _____ Commune: _____ F _____ District: _____ E _____ Province: _____ D _____

I. LOCATION

<p>Map</p> 	
<p>Geographical Condition (including flood situation in wet season):</p>	<p>Transportation Accessibility Available means of transportation, especially in wet season:</p>
<p>Season of Inundation and Area Season (month): Beginning Peak End Area : Maximum _____ m² Minimum _____ m²</p>	<p>Accessibility to/from the Project target communes nearby:</p>

II. GENERAL INFORMATION

Name of the Commune Chief and his/her Term	Industry other than Agriculture:
Total No. of Population: (Male: _____ Female: _____)	Nutrition Status of the Population:
Total No. of H/Hs: (Male-Headed: _____ Female-Headed: _____)	
Total No. of Farming H/Hs: (Male-Headed: _____ Female-Headed: _____)	Main Source of Animal Protein Wet Season:
Total No. of Landless H/Hs: (Male-Headed: _____ Female-Headed: _____)	Dry Season:
No. of Farmers' Groups: Main Activity:	Total No. or Area of Ponds (including trap ponds) Private: Community (Public) : Pagoda:

Rice Production Season (month): from _____ (planting) to _____ (harvesting)	No. of Trap Ponds:
	Average Size of Trap Pond:
	Major Fish Species Caught in Trap Ponds:
Use of Chemicals/Pesticide for Rice Production When: What Kind: Amount:	Productivity of Trap Ponds:

III. FRESHWATER AQUACULTURE

How aquaculture started in the commune?	
Total No. of Aquaculture H/Hs: H/Hs (Male-Headed: Female-Headed:)	Major Culture Species Seed Production: Seed Nursery: Grow-Out:
Seed Production: H/Hs (Male-Headed: Female-Headed:)	
Seed Nursery: H/Hs (Male-Headed: Female-Headed:)	
Grow-out with Earthen Ponds System: H/Hs (Male-Headed: Female-Headed:)	Main Source of Seeds by Major Species and their Availability (constant or not):
Grow-out with Rice-cum-Fish Cultures (Male-Headed: Female-Headed:)	
No. or Area of Aquaculture Ponds Private : Community (Public) : Pagoda :	Average Price of Seeds by Major Species and their Size:
Aquaculture Season (Month): from _____ to	Main Destination of Cultured Fish by Major Species:
Major Water Source for Aquaculture Activity:	
Water Availability for Aquaculture Activity (extremely enough, enough, short, extremely short)	Average Selling Price of Cultured Fish by Major Species Wet Season:

Present Conditions of Fish Refuge Pond Management, if any:	Dry Season:
	Average Market Price of Cultured Fish by Major Species Wet Season:
Experience/Present Situation on Fish Disease Outbreak and Predators:	Dry Season:
	Main Feed Stuff and its Supplier:
	Main Fertilizer and its Supplier:
Present situation/past experience of assistance on freshwater aquaculture development/extension including fish refuge pond management from the government, NGOs and/or donor agencies:	