No.

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF COMMERCE
ROYAL GOVERNMENT OF CAMBODIA

THE STUDY
ON
REGIONAL DEVELOPMENT
OF
THE PHNOM PENH – SIHANOUKVILLE
GROWTH CORRIDOR
IN THE KINGDOM OF CAMBODIA

FINAL REPORT

VOLUME 3: APPENDIX

JUNE 2003

NIPPON KOEI CO., LTD.
INTERNATIONAL DEVELOPMENT CENTER OF JAPAN
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Exchange Rate

US $ 1.0 = C Riel 3924 = J Yen 120.9, as of 2001

THE STUDY ON REGIONAL DEVELOPMENT OF THE PHNOM PENH-SIHANOUKVILLE GROWTH CORRIDOR IN THE KINGDOM OF CAMBODIA

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THE STUDY ON REGIONAL DEVELOPMENT OF THE PHNOM PENH-SIHANOUKVILLE GROWTH CORRIDOR IN THE KINGDOM OF CAMBODIA

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APPENDIX A AGRICULTURE, FORESTRY AND FISHERIES

A.1 NATIONAL LEVEL

Agriculture is the largest economic sector in the country contributing 36 percent of the GDP in 2000. Components of it are 20% by crops, 6% by livestock and poultry, 7% by fisheries and 2% by forestry. Rice is the most important crop and the staple food of the country. Rice is self-sufficient in the country. More than one-half of the cultivated land is planted with rice. Rubber is another important crop for export and is grown in the eastern part of the country. But its productivity is decreasing due to the overage. Corn, cassava, sugar cane and soybeans are important upland crops for local consumption and export. Mangoes, palm nuts, coconuts and bananas are important fruit crops. While, tomatoes, cucumbers, watermelons and cabbage are important vegetables. Chicken and pigs are grown as cash source , while cattle and water buffalo are used for agricultural work.

Cambodia is the fourth largest producer of freshwater fish producing about 400,000 tons of fish. More than 80% of fish production come from catches from inland water such as Tonle Sap Lake and the Mekong. Ten percent comes from marine fishing and the remaining 10% from aquaculture. Fish covers about 70% of total protein intake in the country.

Table A-1 Agricultural and Fisheries Production in the Country in2001

(unit: ton)

Items	ton
Paddy	4,026,092
Maize	156,972
Cassava	147,763
Sweet potatoes	28,178
Vegetables	195,894
Mung beans	15,100
Peanuts	7,490
Soya beans	28,111
Sugar cane	164,176
Sasame	9,855
Jute	180
Caster beans	204
Tabacco	7,665

Items	ton
Fruit and permanent crops	164,159
Total cattle	2,992,640
Draught cattle	1,327,976
Total buffaloes	693,631
Draught buffaloes	412,628
Pigs	1,933,930
Poultry	15,249,201
Fresh water fish caught	85,600
Aquaculture production	14,431

Source:MAFF

A.2 STUDY AREA

A.2.1 Land use

The present land use was identified by digital data from the geographical department of the ministry of land management, urban plan and construction. The data were based on then1:100,000 topographical maps, which were made on the SPOT images taken from November 1996 and March 1997, and Landat images taken in 1996. The simplified map was made by the study team and presented in the following figure.

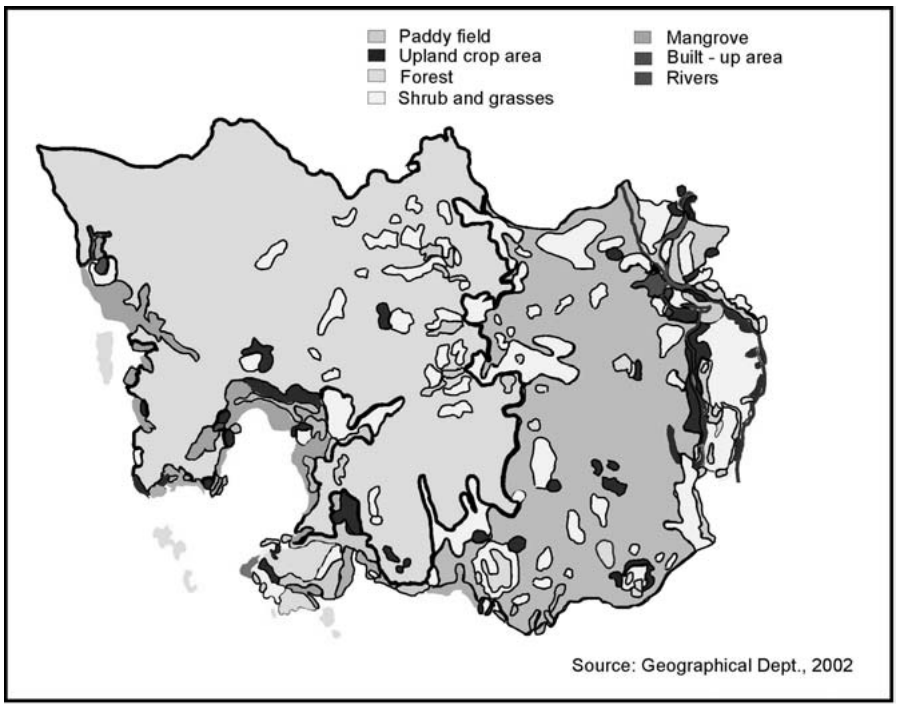

Figure A-1 Current Land Use in the Study Area

As shown in the figure, out of the total area of 30,471 square km approximately two third of the total is covered by forest, shrubs and grasses, and the remaining a third is paddy fields including residential and scattered upland areas, on which a single season paddy rice and some upland crops are grown under rainfed condition in most cases. Large scale upland crop areas and mangrove areas are respectively found along the Mekong and Bassac rivers, and the coastal areas. The forest, shrub and grass lands are owned mostly by the ministry of agriculture, forestry and fisheries. In the paddy areas farmers have not been given formal land titles, on which they can claim exclusive sustainable land use right. So, paddy fields are under constant threat of appropriation by the powerful figures in the capital.

According to the socio-economic household survey by the present study team, average landholding size of an owner farmer is 0.96ha, which consists of upland area of 0.22ha and paddy area of 0.74ha. There are substantial number of landless farmers in the villages, i.e., about 10% of. the total households. There are big difference in land tenure and landholding among provinces. Kampot has a large percents of landlesses, i.e.24% of the total. Takaev has the smallest landholding of 0.63 ha and Sihanouk Ville has the biggest landholding of 2.41 ha among related provinces as shown in the next table.

Table A-2 Landholding and Land Tenure

Province	Ratio of landowners, %	Total Landholding size of an owner, ha	of which upland, ha
Kandal	88	0.65	0.04
Takaev	100	0.63	0.05
Kampot	76	0.87	0.22
Kampong Spueu	94	0.59	0.16
Kaoh Kong	94	1.02	0.37
Sihanouk Ville	87	2.41	0.58
Average	**90**	**0.94**	**0.22**

In Kampong Spueu province, most of the forest areas have been given to private developers under 70 years concession contracts. But, no substantial development activities have been started. Such cases are found in the other forests areas.

The alluvial plain along the Mekong River are constant threat of floods and huge damages have been annually inflicted to human lives, crops, animals and properties. But, people in the flood plain appear to be adopted to the floods and take allowance some damage as inevitable. The inundation map along the Mekong River is given in the next figure.

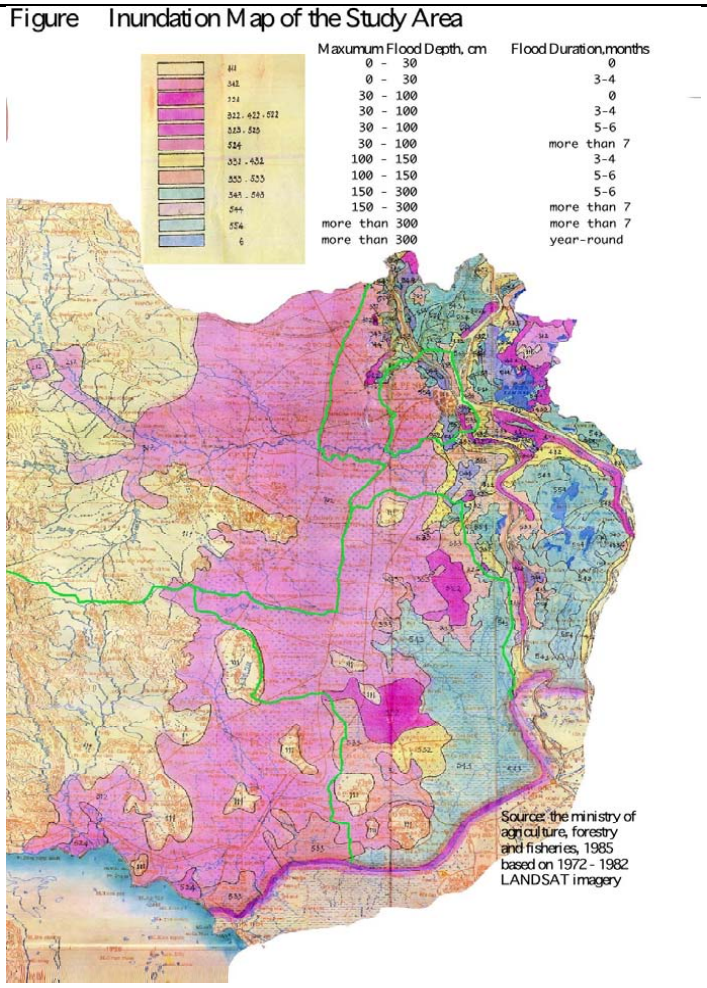

Figure A-2 Inundation Map

Kandal and Takaev provinces were under water more than 3 to 4 months. In the peak flood season, September and October, Phnom Penh is the single visible island in the flood plain.

A.2.2 Soils

Soil information for the study area was obtained from the soil maps and the report made by USAID in 1963. There were 16 great soil groups identified in the whole country, but 14 groups are found in the study area. Plinthitic hydromorphics and Regurs were not found in the study area. Soil units found and their agricultural potentials are as follows.

Table A-3 Soil Characteristics in the Study Area

No.		ACRICULTURAL POTENTIAL -REMARKS
a.	RED YELLOW PODZOLS	**Poor**: Structure easily destroyed. Soils rapidly leached Needs chemical and organic fertilizers
b.	LATOSOLS	**Generally good**: Soil needs protection against erosion and fire. Needs phosphate and organic fertilizers (Rock phosphate).
c.	PLANOSOLS	**Good**: enough for rice when irrigated.
d.	PLINTHITE PODOLS	**Poorer**: -Low agricultural potential Covered with open forest . Be reserved for extensive grazing cultivation not advisable.
e.	CULTURAL HYDROMORPHICS	**Degraded** : Needs organic and chemical fertilizers Needs rotation with marketing crops and beans.
f.	GREY HYDROMORPHICS	**Better soil than type e**: Scattered in distant areas. Difficult in access exists in depressions and hollows.
g.	BROWN HYDROMORPHICS	**Very good rice soil** : Arboriculture on higer elevession
h.	ALUMISOLS	**Good soil**: Needs organic fertilizers ,rock phosphate & urea Lime and drainage are necessary for other crops than rice.
I.	ACID LITHOSOLS	**Optimum Use**: Recommended for national park and for grazing in open forest areas
j.	BASIC LITHOSOLS	**Optimum Use**: be used forest reserve
k.	ALLUVIALS	**Good soil**: Potential acidity: Recommend colmatage canals. Cultivation concordance with the water regime. Green manure,phosphate,and potash (avoid the use of sulphate fertilizers).
m.	BROWN ALLUVIALS	**Rich soils**: Need phosphate and potash. Flood protection.
n.	LACUSTRINE ALLUVIALS	**Rich soils**: Need phosphate for better yield. Possible inprovement by irrigation

The distribution of the soils are given in the next figure.

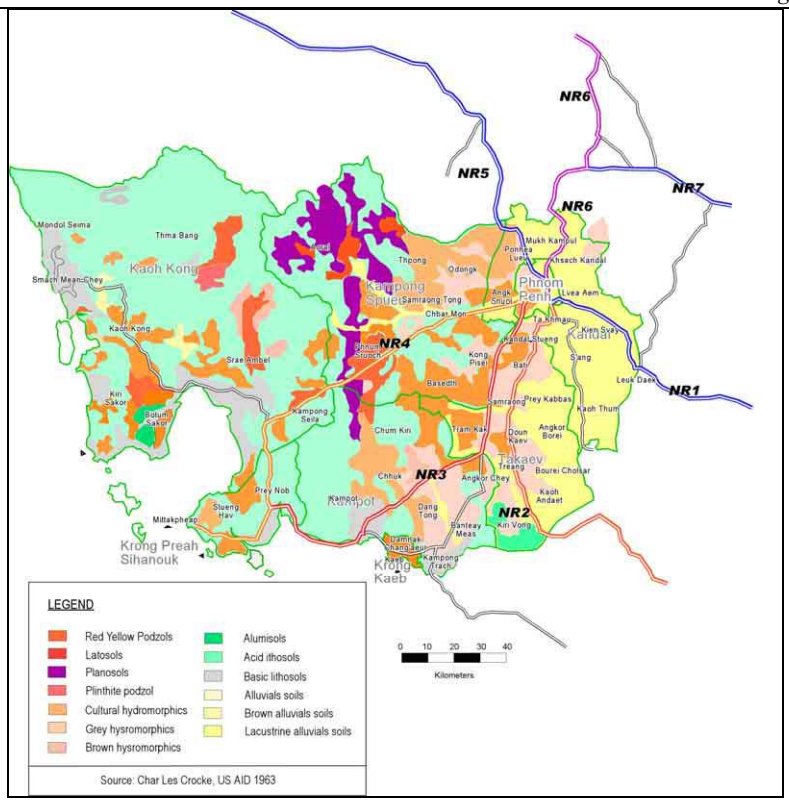

Figure A-3 Soil Map

Mountain areas are mostly on acid lithosols, which are unsuitable for field crop operation. Colluvial plains in Kampong Spueu and Kampot are on red yellow podzols, of which fertility is poor with sandy texture. Alluvial soils in Kandal and Takaev are the most fertile, but are under water in the wet season.

A.2.3 Policies

According to the socio-economic development priorities and the official development assistance needs by CDC, May 2002, the government is pursuing the following agricultural development policies

(a) the continued implementation of agricultural water policy and expansion from 16.62 percent to 20 percent of rice cultivated areas,

(b) expansion of cultivated areas, ensuring safety of land occupation and land utilization, and preventing illegal and violent land occupation,

(c) promoting the establishment of rural finance to provide the needed credit to farmers for buying agricultural materials,

(d) direct public investments by using external assistance and increasing private sector development and investment in the agricultural sector,

(e) strengthening extension services, natural resource utilization and management, and agricultural techniques to meet the requirement of the domestic market and for exports,

(f) strengthening sustainable utilization of fishery resource and increasing support for investment in agro-industries, animal husbandry and fish raising

(g) accelerating the pace of privatization of rubber production,

(h) promotion of forestry policies and laws on forest management, and promoting of fast growing and higher yield trees for utilization as fuel wood and charcoal,

(i) stopping and eliminating all illegal fishing activities, and

(j) cooperating with local authorities and other competent bodies to stop prevent illegal activities and strengthening inspection through administrative penalties.

Agricultural sector development targets to the year 2005 include:

(a) a continuing focus in food security, especially at community and household level, and reducing poverty in the agricultural sector,

(b) increasing food production, especially rice production and subsidiary crops,

(c) increasing the exports of surplus agricultural products,

(d) improving the quality of agricultural products and increasing the value added by promoting the development of ago- industrial processing to foster the creation of new jobs for rural area,

(e) increasing family incomes and reducing poverty by supporting diversified crop production with high yields and low production costs, and

(f) managing the natural resource through regulation and technical measures for sustainable exploitation.

Policy directions appear to be fairly favorable for the development of market economy.

A.2.4 Production

Paddy rice is the main crop in the study area and its production was 1.16 million ton in 2001/02. The trend in the production is downward in the recent years as shown in the next table. According to the result of the socio-economic study of the study area by the present study team, the study area is not self-sufficient in rice. Approximately 10 to 50 % of the interviewed households face rice shortage for 1 to 6 months per year. To overcome the rice shortage, farmers suggested three methods, namely irrigation development, the increase in the fertilizer application and the adoption of high yielding varieties.

There are substantial production of fruits such as coconut and palm nuts. Their outputs was 116,000 ton in 2000/01. Vegetables, sugar cane, cassava and maize are the subsidiary crops.

There are a fairly great number of cattle and poultry, namely 1.2 million and 5.5 million in 2000/01. The number of draught cattle has been stable, but draught

buffaloes are decreasing in number. The number of pig also is decreasing. Catching fisheries is predominant producing 25.9 thousand ton in 2000/01. Aquaculture is not popular in the study area producing only 5,550 ton in 2000/01.

Table A-4 Agricultural and Fisheries Production in the Study Area

Agricultural and Fisheries Production in the Study Area, ton

Items	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Paddy	1,098,180	1,212,825	1,025,701	1,303,914	1,190,777	1,163,976
Maize	25,531	20,227	18,013	30,368	17,004	
Cassava	18,248	13,479	-	32,637	27,587	
Sweet potatoes	15,419	10,723	8,300	10,189	7,270	
Vegetables	139,315	75,781	80,745	66,625	84,231	
Mung beans	2,387	2,873	1,670	2,255	1,912	
Peanuts	1,579	2,791	2,422	1,085	1,427	
Soya beans	-	-	190	215	0	
Sugar cane	69,080	59,130	56,538	62,333	80,273	
Sasame	1,012	117	24	115	335	
Jute	200	80	0	25	25	
Caster beans	0	0	0	0	19	
Tabacco	263	600	258	73	98	
Fruit and permanent crops					115,588	
Total cattle	1,105,611	1,080,073	1,126,818	1,114,122	1,208,287	
Draught cattle	483,327	557,153	512,842	509,477	481,555	
Total buffaloes	73,036	41,014	39,445	34,617	31,044	
Draught buffaloes	24,024	24,047	23,226	22,959	15,488	
Pigs	875,835	909,078	862,903	834,908	630,999	
Poultry	3,332,448	4,440,299	5,390,424	5,519,497	5,565,403	
Fresh water fish caught	17,600	23,480	24,360	18,950	25,905	
Aquaculture production	3,207	2,933	5,296	5,100	5,552	

Source:MAFF

In terms of area cultivated, paddy rice is predominant covering 93 % of the total followed by maize and vegetables, respectively 2.2 % and 2.2 %.

Table A-5 Harvest Area in the Study Area

Harvested Area in the Study Area, ha

	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Paddy	529,770	550,369	531,832	563,083	492,049	503,734
Maize	18,644	14,257	15,637	17,678	11,604	
Cassava	2,891	2,402	-	2,287	3,260	
Sweet potatoes	3,839	3,649	2,719	3,507	2,101	
Vegetables	19,595	16,099	15,536	12,134	11,682	
Mung beans	4,869	5,942	3,057	3,681	2,993	
Peanuts	2,949	4,340	2,554	1,563	2,003	
Soya beans	-	-	216	215	-	
Sugar cane	2,522	3,219	2,659	3,301	3,312	
Sasame	2,328	279	80	257	668	
Jute	103	80	0	25	58	
Caster beans	0	0	0	0	19	
Tabacco	310	856	369	102	130	

Source:MAFF

Yields of crops are low. Paddy yield was 2.31 ton/ha in 2001/02. Details of them are shown in the next table. There are much room in improvement in yields by the improvement in fertilizer application method including amounts, the introduction of quality seeds and seedlings and irrigation water.

Table A-6 Crop Yields in the Study Area

Cop Yields in the Study Area, ton/ha

	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Paddy	2.07	2.20	1.93	2.32	2.42	2.31
Maize	1.37	1.42	1.15	1.72	1.47	
Cassava	6.31	5.61	-	14.27	8.46	
Sweet potatoes	4.02	2.94	3.05	2.91	3.46	
Vegetables	7.11	4.71	5.20	5.49	7.21	
Mung beans	0.49	0.48	0.55	0.61	0.64	
Peanuts	0.54	0.64	0.95	0.69	0.71	
Soya beans	-	-	0.88	1.00	-	
Sugar cane	27.39	18.37	21.26	18.88	24.24	
Sasame	0.43	0.42	0.30	0.45	0.50	
Jute	1.94	1.00	-	1.00	0.43	
Caster beans	-	-	-	-	1.00	
Tabacco	0.85	0.70	0.70	0.72	0.75	

Source: MAFF

The application of fertilizers for paddy was surveyed by interviews in the study team. The result of the survey is shown in the next table. The fertilizer application in Sihanoukville and Koah Kong is almost nil resulting in the low yields of paddy. An application of N at 100kg/ha is an ordinary amounts in the modern rice cultivation. Takaev has reached to that level but low yields. There may be problems in paddy varieties, application timing, pest/diseases, weeds or irrigation water availability.

Table A-7 Fertilizer Application in the Study Area, 2001

Fertilizer Application in the Study Area, 2001

	No. of Samples	Paddy Yield kg/ha	N kg/ha	P_2O_5 Kg/ha	Manure Kg/ha
Takaev	15	2,001	87	17	233
Kampot	29	1,782	41	9	305
Sihanouk ville	15	743	5	0	19
Koah Kong	16	1,432	5	0	0
Kandal	16	2,317	46	7	215
Kampong Spueu	31	2,649	45	1	993
Overall	122	1,642	32	4	273

Source: the present JICA study team, 2002

Details of the crop production statistics are shown in the annex.

The details of the characteristics of the provincial agriculture, forestry and fisheries are given hereunder.

(1) Kaoh Kong

According to the physical framework plan of the province, GRDP distribution in 2002 is 38.7 % for agriculture/forestry/fisheries, 20.3 % for services, and 41 % for manufacturing. The employment by sector in 1998 was 32.2% for agriculture, 4.2% for forestry, 16% for fisheries, 7.3% for manufacturing, 38.7% for service sector and 1.6% for others unidentified.

Agriculture

The main crop of the province is paddy. In 2001/02 7,708 ha of land along the coastal line was used for paddy cultivation. Garden crops are also grown. In the eastern districts such as Kampong Seila, Srae Ambel, Botum Sakor, and in the

western districts such as Thma Bang and Koh Kong, vegetables, chilies, egg-fruits, pineapples, papaya, sesame, pepper are grown.

Small cashew plantations of 2-3 ha are found in Srae Ambel and Kampong Seila districts. Pepper is planted in plots of 1-2 ha in Srae Ambel district. Rubber plantations operated by families are found in Thma Bang district. Coffee plantations for local needs and export are found in Thma Bang district producing high quality product. Coconut trees are planted in the islands in Kiri Sakor district. About a half of open land are covered with grasses with a height of 1-3 m.

The agricultural productivity is low due to low farm inputs, to the degradation of natural resources, to limited technologies on agriculture, to the influx of products from Thailand discouraging farmers to grow.

Fisheries

Fishing ground of Kaoh Kong are Kok Krao Island, Thmar Sor estuary and Koh Cha'lam island groups. Fishing activities are generally carried out in the 1-8 meter depth water mostly by families. Commercial fishing is found Koh Sdach commune in Kiri Sakor district and Thmar Sor commune in Botum Sakor district.

There were 8,103 fishermen in Kaoh Kong province according to the 1998 census. The majority of them live in Dorng Tung commune in Smach Mean Chey, Koh Sdach commune in Kiri Sakor district, Thmar Sor commune in Botum Sakor district and Chrouy Svay commune in Srae Ambel district.

There were 2,663 motor fishing boats in total in 1998: Seventy nine percent of them have engines of less than 10 HP. The total landing of fish in 1998 was 10,700 ton, which consist of 4,020 ton of classified fish such as groupers, snappers and mackerel, 3,600 ton of painted sweetlip, 1,840 ton of shrimp, 520 ton of crabs, 510 ton of squid, 180 ton of cockles and 30 ton of jellyfish. Within the coastal line of 237 km, rare species such as dugong, sea turtle and dolphins are found. Spectacular views such as corals and sea grasses are found in marine coast and Sdech island groups.

In the wet season, the wind comes from the west or from the sea that can cause storms with a duration of 3 to 7 days rendering travel by sea difficult. During strong winds and storms waves reach 2-3.5 m in height.

(2) Kampot

The GRDP distribution in 2002 is 38.7% for agriculture sector, 20.3% for service sector and 41% for manufacturing sector. The employment distribution by sector in 1998 was 86.1% for agriculture, 0.1% for forestry, 1.3% for fisheries, 1.7% for manufacturing, 10.8% for service sectors.

Agriculture

Paddy is the main crop in the province covering 117,000ha in 2001/02. Upland crops such as maize, vegetables and sugar cane are planted in small extents. Fruit

production of the province, durian in particular is famous over the nation. Durians are mostly grown at Snam Prampir in Kampot district. The planted area of durian is estimated at about 100ha. The market outlet is domestic markets. Small scale cashew plantations with a scale of 2-3 ha per unit are found mostly in Chhouk district. Coconut plantations are found mostly in Kampot, Chhouk and Kampong Trach districts.

The productivity of agriculture is lower than other sectors due to insufficient irrigation systems, low farm inputs, and limited supply of seedlings and technologies.

Fisheries

According to the 1998 census, there were 3,007 fishermen in the province. The majority of them stay in Trapaing Rorpov, Boeng Touk, Kdat and Kbal Meas communes in Kampot district, Kompong Bay town and Lork commune in Kampong Trach district. The living standard of fishers is very low due to decreasing fishery resources and decreasing landing amounts of fish. Most of them are disparate to continue fishing and wish to shift to non-fisheries occupations such as agriculture.

There were 613 fishing boats in 1998, of which 32.3% were non-powered and 24.5% were powered with less than 10 HP. There are three fishing zones delineated by the fisheries department; Trapang Rorpov quarter in Kampot district, the town of Kampong Bay and Lork quarter in Kampong Trach district. Fishing is done in shallow water of 1-3 m in depth. There was 10,700 ton of fish landing in 1998. High valued fish such as groupers, snappers and mackerel covered 39.3% and painted sweetlip covered 26.5% of the total landing. Others were crabs, shrimp, squids, cockle, oysters, jelly fish and sea cucumber. Fishing, brackish aquaculture for such as shrimp and crabs, pond aquaculture for fish are increasing in production as a income generating activities.

There are 69 ha of fish ponds: 55ha in Koh Toch, 8ha in Prek Thnaut, 4ha in Koh Tragnol and 2ha in Koh She. They grow shrimp and cockle. There are several fish-processing factories; at least three fish sauce making houses, peeling crab flesh houses and shrimp drying houses. A fish sauce making house produces at least 10ton of sauce per year.

There was 7,900ha of mangrove forests in Kampot in 1994 according to the analysis of LANDSAT imagery. However, these forests depleted substantially in 1992 when a salt pan venture started on the major mangrove forests by joint enterprise of the ministry of industry, mine and energy and a private company. MIME withdrew the venture because of its low profitability. Then, the ownership of land for the salt pans went to the private company because the company occupied the land for certain years. The remaining mangrove forests lie in the periphery of the salt pans with a width of around 10m and in islands difficult to communicate by roads. The almost all of the remaining mangrove forests were given to private as concessions. There is no other

suitable areas for mangrove development than shallow sea(30-100cm in depth), which extents to 2-3 km from seashore.

(3) Sihanouk Ville

The GRDP composition was 38.7% by agriculture, 20.3% by service sector and 41% by manufacturing in 2002. The employment distribution by sector in1998 was 40.4% by agriculture, 1.4% by forestry, 8.7% by fisheries, 11.3% by manufacturing and 38.2% by service sector.

Agriculture

Paddy and oil palm are the main crops in the province covering respectively 7,400ha and 3,700ha in 2001/02. Besides these, various horticultural crops such as potatoes, beans, watermelon, pineapple, coconuts, banana and papaya are grown in homesteads. The municipality authorities have areas of about 20,000ha for tropical crops such as pepper, coconuts and oil palm. The Mong Reththy group has planted oil palm on 3,700ha with a ultimate plan of 11,000ha at Srae Ambel in the Prey Nob district. The group started planting in 1997. The palm trees started to bear fruits, of which yield is 5ton in fresh fruit bunches per ha per year. The oil content is around 14%. This yield is a half of the target yield. The low yield is attributable to poor sandy soils, the dry spell in April and May, the intrusion of sea water into canals, fungus diseases caused by too much rainfall and no application of fertilizers due to financial difficulty. The group started operation of an Malaysian made oil extraction plan with a capacity of 5 ton/hr. Refinery plan has not been yet constructed. The crude oil is planted to export to Thailand. A tapioca processing factory of the estate is under suspension due to unfavorable marker situation and a low yield of 9ton/ha. The wholesale price of cassava pellets at Bangkok in January 2001 dropped to US$49/ton from the US$121/ton in January 1995. The applied fertilizers are washed away by heavy rainfall on sandy soils.

A rubber plantation under the management of MAFF is found on the hilly areas in the Ream National Park. The number of rubber trees is decreasing due to the land encroachment. Encroachments of forests are found in Stueng Hav and Kbal Chhay and some parts of mangroves within the national park.

Fisheries

The Sihanoukville coastal area is over 19.5 square km. But, there is no clear determination of fishing areas. The majority of fishing is done in shallow areas, in some of which, dredging is done to collect sand. The number of fishermen was 4,891 in 1998. The total landing of fish in 2000 was 16,500ton, of which 70% by trawling, 20% by floating nets and 10% by traps and fishing poles. Most of the fishing boats, namely 80%, are motorized. The commercial fishing is predominant. Twenty percent of the boats are powered with more than 50HP. It is estimated that 65-70% of the total catches of sea fish are exported, particularly to Thailand. Frozen shrimps, living sea basses and lobsters are exported to Thailand and Hong Kong.

In Prey Nob and Mittakpheap districts, aquaculture is practiced for freshwater fish, mud crabs and shrimps, of which fry and fingerlings are from wild. Cage marine culture is popular in Koh Rong, Koh Rong Sanlem islands as well as Mittakpheap, Stueng Hav districts using sea bass, grouper, sea cucumber and mud crabs. The crocodile culture is popular in all districts. The total production from the aquaculture in 2000 were 3 ton from sea fish, 58 head of crocodile and 0.5 ton of turtle.

(4) Kampong Spueu

Paddy is the main crop of the province. In 2001/02, the harvested area of paddy in the dry season was 83,400ha with an average yield of 2.18ton/ha. Upland crops such as cassava, vegetables, mung beans and maize also grown in the wet season, but at small extents. In the dry season, cropping is limited without irrigation systems.

Floods are among the important limitations on agricultural development. The downstream of the Prek Thnot, Sla Kou and Krung Ponley rivers is a flood prone area. In the late June and early July in 2001, a crop area of 1,876ha was destroyed by floods. Sporadic rainfall in the last three years delayed planting of paddy ended in low yields. In normal years, transplanting of paddy starts from early May to late June, but in 2002 the transplanting starts in August. The average rainfall in 2001 was 1,196.4mm.

There was a government tea estate of 7ha at an altitude of 400m to 500m in Kirirom. The estate had been producing high quality green tea till 1991, but was devastated due to the internal war. Sometimes the estate exported tea to Vietnam in 1980s. The yield was 3ton/ha in green leaf, 0.7ton/ha in processed leaf. Varieties used were from Laos and India. The annual rainfall there is around 1980 mm. Tea technicians at that time are working at DAFF in the province. There are some small growing tea stocks in the past estate, in which shifting cultivation is practiced damaging tea trees. The remain of the tea estate is in the national park.

There are several cashew estates along Route 4. These estates were emerged just after the cease fire in 1992. Large areas were given to private as concessions with long term contracts, 70 years in most cases. The cashew was appeared to have been damaged by insects in the flowering stage ending in low yields of around 0.1ton of shells per ha. The estates are also infested with vicious weeds such as Imperata Cylindrica (coarse grass).

Most of the mountain forests were given to private as concession in the province. Only lowland rice areas have been left untouched by concessionaires. The biggest concession area is 4,000 ha in area under management of a Korean company for the production of potato chips. However, the company has not yet invested in their land.

Hamorrhagic septicemia, foot and mouth disease and black leg are the main diseases of cattle , pigs and buffaloes. Newcastle diseases often inflicts devastating damages to chicken and ducks. So, poultry population is low in the province. There is no enough vaccination services in the province.

The province had 99 fish ponds but now has only 10 operating ponds. The fish ponds can grow fish only in the wet season. The average yield of fish is 37 kilograms of fishes per 100 square meters.

(5) Kandal

Agriculture

The Kandal province is in the flood prone area. Every year the province suffers from flood damage. The floods inflict almost all districts except Luek Dek district. However, the floods bring good silt for agricultural production. So, this province not only has a lot of fish but also a lot of natural outputs such as fruits and all kind of vegetables and sugar cane, and is also a center of dry rice cultivation as well as wet season rice. The harvested area of paddy in 2001/02 was 40.3 thousand ha. The main problems in the paddy cultivation are flood damage and insect damage.

Water also flooded some 15.623 hectares of rice fields, which resulted 11.505 hectares destroyed. Flood claimed 6.969 hectares of supportive vegetable gardens and killed 35 cows, 514 pigs. Animal industry has been developed substantially with the big near-by market in the capital, of which population in 2002 is almost 1million. Animal population in 2000/01 was 1.2 million head for poultry and 136 thousand head for pig. Industrial chicken raising are popular in Saang district, Kean Svay district, and Koh Thom district. During 2001 animal diseases occurred in some districts, especially the districts along the rivers, which encountered flood. The area has 280,000 palm trees, which contribute to improve standard of living of people in the area.

Fisheries

There are 19 fishing lots, 38 catching net lots, 951ponds equal to 438,410m2 and 22 Beh (pond made after explosion of bomb) equal to 7,818m2 throughout the province. Crocodile culture is also popular. Their stock in 2001 were 754 heads of male, 195 heads of female and 37 heads of small crocodiles.

(6) Takaev

The province can be divided geographically into two parts, namely the eastern part and the western part. 40 percent of the land on the eastern part considered as a lower land, which affected by the Mekong River flooding with the six months occupied by the water in 2 to 2.5 meters deep and another six months dry. The people in this area makes livelihood by the dry season rice growing and fishing. The western part consists of the plain and upper land, which linked to the elephant mountain in Tramkak district and other mountains in Kiri Vong district. The population in this area derive living from the wet season rice growing, palm sugar making, handicraft and animal husbandry.

Floods and draughts are the main constraints of agriculture and animal husbandry. In 2001, rice fields of 34 360 ha were entirely damaged by floods. But, areas of 5470 ha

of them at the end of the rice growing season were recovered by replanting. Growing of upland crops is limited by the unfavorable soil condition caused by floods and poor drainage. Animal raising is also difficult to sustain under flood over a half year. In 2001, 3185 families, equal to 13015 villagers, were evacuated to the higher land for their safety and 22109 families, equal to 100756 villagers, were facing of shortage of food and 12 persons were death in the flood.

Animal diseases are prevalent due to unavailability of resistant breeds and insufficient dosages of vaccines and medicines. The main diseases are hemorrhagic septicemia, black leg, anthrax and new castle disease.

A.2.5 Profitability

The marketing margins of the main agricultural commodities at different stages in marketing were studied by MAFF in 1998. The summary of them are given in the next table.

Table A-8 Profitability of Agricultural Commodities

Marketing Margins, %

	Rice	Soybean	Live Chicken	Banana	Fish	Imported Cabbage
Producer	71	82	76	46	57	62
Miller	13	-	-	-	-	-
Collector	-	-	5	28	17	-
Impoter	-	-	-	-	-	19
Wholesaler, commissionaire	7	5	8	5	6	8
Retailer	9	13	11	20	20	11

Source:Final report on agricultural marketing costs and margins, MAFF, 1998

Marketing Net Profits

Unit:% of retail prices

	Rice	Soybean	Chicken	Banana	Fish	Cabbage
Miller	9	-	-	-	-	-
Collector	-	-	2	16	3	-
Impoter	-	-	-	-	-	2
Wholesaler, commissionaire	3	2	6	3	2	3
Retailer	6	11	10	18	17	4

Source:Final report on agricultural marketing costs and margins, MAFF, 1998

As for rice, the highest profits were obtained by millers. This may be due to buying paddy at lower prices in the harvesting seasons and selling at higher prices to the consumers in the latter times after storage. Soya bean retailers enjoy higher profits in the similar way as rice millers. The fish collectors have a margin of 17% but a low profit of 3%. Because, the collectors have to pay expensive market fees equal to 60% of their total costs. The fish commissioners also have to pay market fees equal to 50% of their total costs. The cabbage importers have high margins of 19%, but low

profits of 3%. Because, they have to pay various taxes and fees to authorities and monopolistic transporters.

A.2.6 Marketing

Agricultural marketing is formally liberalized except some items requiring export and import licensing, namely processed wood products, chemical fertilizers, pesticides and insecticides. Government fertilizer subsidies we abolished in 1997. Most inputs are supplied by the private sector. Prices of farm inputs such as fertilizers and chemicals, and produce are determined by market mechanism. However, some government agencies still are operating in marketing of agricultural commodities. The army buys domestic and imported rice for soldiers and their families as parts of soldier's salaries. Green Trade Company (GTC), a state company, are monopolized in purchasing and storing rice on behalf of the state with reported higher transport and operating costs than the private. GTC is also engaged in the food aid distribution and trading activities required by the ASEAN Food Security Reserve Agreement WFP and other donors buy rice from domestic as well as foreign markets for food for work programs.

There appears substantial smuggling of fertilizers, chemicals and fuel as well as farm products for export to avoid taxes. The main cause of the smuggling resides in irregularities in obtaining trading permits. In the case of rice, for example, according to the report on the Cambodian rice millers conference by Enterprise Development Cambodia in 2000, the total cost of export procedures come to US$14/ton of rice. While, the costs of unofficial export of paddy add up to US$10-15/ton of paddy, i.e.,$6-9/ton of rice. The expenses without proper receipts go to custom director, custom inspector, custom export document officer, Camcontrol inspector, photo sanitary inspector, economic police, border police, handling workers, and commissioner. The difference of $5-8/ton of rice would become a great motivation for the smuggling. These irregularities rest in trading permits regulation. The aim of the trade permits for rice, for example, is to secure food security. But, the food security would not have been substantially improved when large quantity of paddy are smuggled and the buying power of the rural poor is weak.

Larger shares of products by the study area in the national markets are observed in paddy, vegetables, sugar cane, fruits and animal products such as cattle, poultry and pigs as shown in the next table. The study area has an advantage having the largest market in the country, namely Phnom Penh. Takaev, Kampot and Kandal have good access to the Vietnamese market and Koah Kong has a good access to the Thai market.

Table A-9 Production Share of the Study Area

Share in Agricultural Products by the Study Area

Items	Study Area 2000/01	National Total 2000/01	Share of the Study Area, %
Paddy	1,190,777	4,026,092	30
Maize	17,004	156,972	11
Cassava	27,587	147,763	19
Sweet potatoes	7,270	28,178	26
Vegetables	84,231	195,894	43
Mung beans	1,912	15,100	13
Peanuts	1,427	7,490	19
Soya beans	0	28,111	0
Sugar cane	80,273	164,176	49
Sasame	335	9,855	3
Jute	25	180	14
Caster beans	19	204	9
Tabacco	98	7,665	1
Fruit and permanent crops	115,588	164,159	70
Total cattle	1,208,287	2,992,640	40
Draught cattle	481,555	1,327,976	36
Total buffaloes	31,044	693,631	4
Draught buffaloes	15,488	412,628	4
Pigs	630,999	1,933,930	33
Poultry	5,565,403	15,249,201	36
Fresh water fish caught	25,905	85,600	30
Aquaculture production	5,552	14,431	38

Source:MAFF

Typical flows of agricultural products within the countries are:

- rice from Battambang, Takaev, Prey Veng, Kampong Spueu to Phnom Penh,
- banana from Kampong Cham to Phnom Penh and other provinces,
- watermelon from Kampong Thom to Phnom Penh and other provinces,
- vegetables from Kandal to Phnom Penh,
- pulses and tobacco from Kampong Cham to Phnom Penh,
- sugarcane from Kampong Cham and Kandal to Phnom Penh,
- fresh fish from Tonle Sap to Phnom Penh,
- dried or smoked fish from Tonle Sap to Phnom Penh,
- sea fish from Kampot to Phnom Penh.

The main external trade flows of the agricultural products are:

Export

- fresh fish from Tonle Sap to Thailand,

- dried or smoked fish from Tonle Sap to Thailand,
- sea food from Kampot and Sihanouk Ville to Thailand,
- soybean from Kampong Cham to Thailand and Vietnam,
- chilli from Kandal, Kampong Chhnang and other provinces to Thailand.
- paddy export from Battambang to Thailand, and from Takaev, Prey Veng to Vietnam,

Import

- rice import from Thailand and Vietnam,
- oranges and pineapple from Vietnam to Phnom Penh and other provinces,
- durian, rambutan and mangosteen from Thailand,
- pineapple from Vietnam in the dry season
- sugar from Thailand and Vietnam.
- dairy products from Thailand
- tea from Vietnam

A.2.7 Government supporting services in agriculture

The ministry of agriculture, forestry and fisheries(MAFF) is the main organization for the administration in agriculture. The organizational structure of MAFF is shown in the attached figure. The department of agriculture, forestry and fisheries (DAFF) in each province are responsible for the implementation of agricultural policies under MAFF. The typical organizational structure of DAFF in a case of the Kampong Spueu province are given in the next table.

Table A-10 DAFF Organization in Kampong Spueu Province

Description	High Level	Medium	Primary	Trainee	Others	Total
Administration	2	1	1	6/3	Staff 8	18
Agronomy	4/1	9/2	6	14	Staff 12/1	45
Animal Husbandry	4	6/1	3/2	5/2	Staff 26/2	44
Forestry	7	12/2	15/2	15/2	Staff 23/3	72
Fisheries	2	1/1	1	6/2	Staff 3/1	13
Agricultural Extension	2	5/1	1/1	5	Staff 5/1	18
Machinery	1	4		12	Staff 14/2	31
Accounting		3	2/1	2	Staff 1/1	8
Meteorology		1				1
Equipment			3		Staff 2/1	5
Staff				12/4	Staff 2	14
Planning				3/2	Staff 1	4
District offices		4/1	9/5	24	Staff 59/2	96
Quantity Equipment	1	1				2
Total	23/1	47/8	41/11	104/15	Staff 156/14	371

A dominator in the table shows a number of people who have no continuous jobs. So, there are 371 staffs in total, of which 49 have no permanent jobs. Active staffs are 322. Active extension workers in the district offices for agriculture, forestry and fisheries can be 94 at most. The government services to farmers and fishers are very limited due to budgetary and man-power shortage.

However, a very few farmers and fishers can get assistance through overseas assistance projects if their villages happens to be included in these projects. The case study of eight villages in the study area showed the following eight projects were available.

- APHEDA / FFP: Fish raising (15 F), training on fish raising and providing fingerling in 1997/98.
- ARON RAS: Providing credit with 15 families in 2000 with the amount 150 000 riels/family. ARON RAS have been quitted its activity since 2000 (It implement around 3 months only in the village) due to farmers did not pay back loan.
- AFSC: In Ban Tiet village, implement the agricultural program in Prek Tnaot village, support community mobilization and leadership training.
- DANIDA : Supporting the Mangrove planting activity. Providing one pond in Pagoda; and provide chicken and vegetable seeds.
- AQUIP : It is a company who produces improved rice seed.
- GRET/ANS: Agricultural development and dam repair in the polder area of

Prey Nob district of Sihanoukville.

- IPM: Provides training on IPM (Integrated Pest Management) techniques.
- SEILA: Training on VDC to village development program workers.

Three projects are available for agricultural development within eight villages. Their implementation periods are very short of less three months except AFSC and GRET/ANS .

Table A-11 Existing Agricultural Development Program in Each Village

Exiting development program in each village

No	NGO/Credit Institution	V1	V2	V3	V4	V5	V6	V7	V8
1	APHEDA/FFP	-	-	+	-	-	-	-	-
2	GRET/ANS	-	-	-	√	-	-	-	-
3	DANIDA	-	+	-	-	-	-	-	-
4	AFSC	-	+	-	-	+	-	-	-
5	IPM	+	-	-	-	-	-	+	-
6	AQUIP	-	-	-	-	-	√	-	-
7	ARON RAS	-	-	-	-	-	-	+	-
8	SEILA	√	-	-	-	-	-	-	-

Source: Key informant and group discussion

+: Accessible before -: Non accessible √: Presently working

Besides the projects above mentioned, the Rural Development Project, PRASAC and CAAEP are among the big projects in the study area. The biggest problems of these projects are lack of sustainability. There are no foreign assisted projects found being implemented by beneficiaries after the withdrawal of financial assistance by donors.

A.2.7 Past and on-going projects

Past and on-going projects are very important sources of lessons for planning projects. The same mistakes do not have to be repeated in new projects.

(1) PRASAC

PRASAC(Rehabilitation and Support Program for Agricultural Sector of Cambodia) has an overall objective of improving living conditions of rural people in the six target provinces. Its immediate purpose is to empower communities and local authorities to be able to plan and implement sustainable rural development measures on their own. The project started by EU from January 1995 with a budget of approximately $44 million to June 1997, but extended to April 1999. Takaev and Kampong Spueu were covered by the project within the study area. The overall expenditure of the project was Eurocurrency 39.8 million. Main accomplishment of the project is shown in the next table. Technical assistance was given by Mott MacDonald and IPP Consultants.

Table A-12 Physical Output PRASAC Phase I

Physical Output PRASAC Phase I (5/1995 to 4/1999)

Activity	Kampong Speu	Takeo
Domestic Water Supply		
Wells successful (number)	567	292
Rain water storage jars (number)	31	49
Water points (well+jars)	598	341
Rain water storage tanks (number)		1
Village ponds	1	32
Beneficiaries - wells (families)	38,783	14,601
Beneficiaries - jars (families)	31	49
Beneficiaries - tanks (families)		95
Beneficiaries - ponds (families)	88	4,216
Beneficiaries - total (families)	38,902	18,961
WPC(Water point committee) member women	353	278
WPC member men	740	982
Community Development		
New VDCs (Village Development Committee)	130	85
Irrigation Boreholes		
Increase in irrigated area (ha)	56	802
Beneficiaries (families)	183	1,070
WUG members women (Water user's group)	-	1
WUG members men	-	625
Agricultural Trials/Crops		
Area (ha)	87	167
Seed produced (ton)	174	604
Trainnees	1,624	13,240
Trainees women (%)	56	44
Credit		
Accumlative disbursement (000 Riel)	2,399,584	7,336,944
Outstanding loans (000 Riel)	375,703	1,443,016
Number loass	189	288
Number SCAs (Saving & Credit Association)	100	128
Member SCAs	4,405	8,901
Percentage female (%)	35	27
Training		
Trainees beneficiaries (families)	5,822	5,047
Trainees beneficiaries women (number)	1,864	1,188
Training days beneficiaries (number)	19,321	11,286
Graduates MEC" (Micro-enterprise center)		
Trainees staff (number)	974	570
Trainees PRASAC staff women (number)	117	98
Training days PRASAC staff (number)	6,956	3,885

Source:PRASAC

In conclusion the physical targets of the project were achieved. Substantial areas became irrigable. Rice production reached to the self-sufficiency supported by the agricultural extension activities. However, the maintenance of the irrigation system has not yet reached to the sustainable level. Without establishing workable organizational mechanism, the system will not be able to sustain rice self-sufficiency.

A rural credit system was established under the local village organizations for the fund disbursement. Rural poor are able to get loans to procure agricultural inputs and to start some income generating activities. However, there was no exit strategy for the rural credit component. What eligible organization should undertake the rural credit system had not been decided at the end of the project as well as at the start of the project. Loan recovery were high enough to meet operation costs, however, the credit component was neither self-financing nor sustainable.

Crop diversification such as through seed multiplication made some progress. But, the long term supply of guaranteed seed based on the market demands was not established.

Extensive training was given to farmers, local staff and government staff to improve institutional capacity of the government. However, there was no clearly defined exit strategy of the donor at the start of the project.

(2) CARERE II/SEILA Project

The CARERE I project was started in 1992 following the 1991 Paris Peace Accord, by UNDP to provide emergency relief and support for the refugees, and in 1996 the CARERE II project was started to include development concept in the CARERE I project. A huge amount of money was spend in building infrastructure in the CARERE II. But, the CARERE II is considered to be an experiment in decentralized planning and financing of participatory rural development, in restructuring local government institutions, in building their capacity, and in strengthening civil society.

The overall objectives of the CARERE II is to alleviate poverty and consolidate peace in the country.

The four immediate objectives are:

1) To establish decentralized government system that plan, finance and manage development,
2) To create a secure environment conductive to reconciliation between government and Khmer Rouge communities,
3) To assist government and non-government entities in providing essential basic services, and
4) To create national support for decentralized planning, financing and management.

The main target areas were the five provinces, namely, Battambang, Banreay Meanchey, Siem Reap, Pursat and Ratanakiri. The partners of the project were RGC (SEILA task force, MOF, MOI, MOP, MORD, MAFF, MOWA), UNDP, UNCDF, WB, IFAD, EC, SIDA, Government of Japan, Government of Netherlands, DFID, AusAID, AFD, IDRC, international NGOs and local associations. The executing agency was UNOPS(the United Nations Office for Project Services). The CARERE II was completed in June 2001.

The total expenditure of the project from February 1996 to June 2001 was US $69.6 million. Inputs of the project was summarized in the following table.

Table A-13 Feature of CARERE II

The Feature of CARERE II

	Input Items	Amounts
1 .	Provincial Rural Development Committee(PRDC) established	12
2 .	District Development Committee(DDC) established	61
3 .	Communal Development Committee(CDC) established	318
4 .	Village Development Committee(VDC) established	2,814
5 .	No. of provinces where Khmer Rouge authorities joined in PRI	6
6 .	No. of VDCs functioning in former Khmer Rouge areas	747
7 .	No. of NGOs and International Organizations(IOs) joined in District Integration Workshops	100
8 .	No. of projects supported by NGOs/IOs	over 6,000
9 .	No. of PRDC members trained in Seila management systems	263
10 .	No. of PRDC executive committee and unit staffs trained	579
11 .	No. of CDC members trained in Seila management systems	4,968
12 .	No. of person trained in planning	12,463
13 .	No. of persons trained in M&E	931
14 .	No. of CDC members trained in the local planning process	4,968
15 .	No. of VDC members trained in the local planning process	15,709
16 .	No. of wells constructed/repaired	1,578
17 .	No. of ponds constructed/repaired	146
18 .	No. of latrines constructed/repaired	120
19 .	Length of rural roads constructed/repaired, km	808
20 .	No. of culverts constructed/repaired	1,843
21 .	No. of bridges constructed/repaired	723
22 .	Length of irrigation canals constructed/repaired, km	99
23 .	No. of primary school classrooms constructed/repaired	446
24 .	No. of farmers received support for crop production	44,700
25 .	No. of farm level demonstrations conducted	1,627
26 .	No. of animal vaccinated	376,600
27 .	Area brought under irrigation in wet season, ha	216,000
28 .	Area brought under irrigation in dry season, ha	10,300
29 .	No. of medical staff trained in management and health topics	5,300
30 .	No. of persons trained on HIV/AIDS awareness and prevention	277,341
31 .	No. of health centers built and equipped	34
32 .	No. of patients used CARERE funded health centers	547,000
33 .	No. of persons attended in health education sessions	273,848
34 .	No.of water point committees formed	2,360
35 .	No. of persons received literacy training	26,062
36 .	No. of children attended in CARERE constructed schools	30,819
37 .	No. of non-formal education classes established	197
38 .	No. of village libraries established	124

Source:CARERE office

The United Nations Capital Development Fund(UNCDF) prepared a evaluation report in August 1999. The report drew the following evaluation:

1) The project has more than achieved all of its goals and objectives and the outputs described in the main phase document.

2) It has assisted the government in the five SEILA provinces in establishing a participatory decentralized local government planning and development system in a government/society known for its top down hierarchical style of rule.

3) It has established a precedent in local government in the country whereby a certain percentage of government committee members must be women.

4) The system is formally accepted by the government and is looked upon by most government officials as the model for decentralized local government in all provinces.

5) It has had a major influence in the drafting of new local government laws and in the formulation of the Commune Councils in the year 2000, which is seen as a move towards the democratization of local government.

6) Due to the lack of baseline data, it was difficult to measure impact.

7) Maintenance of completed projects is a big problem.

8) The project was costly, for not only had to provide staff for capacity building, M&E, and management support, it also had to provide salary supplements to government staff. This raised questions as to the sustainability of the project.

9) CDCs and VDCs are demonstrating the ability to make plans for their communities in a participatory and transparent manner and beneficiaries are consistently making adequate local contribution to all projects.

A.2.8 Information from the forum on cash crops

On 31 July 2002 there was a forum on cash crops (called as agro-industry in the country) promotion under the coordination of a NGO (the Center for Social Development in Cambodia). Many stakeholders for the cash crop promotion attended from MOC, MAFF, DAFF, WB, NGOs, parliament, business companies and villages.

Stakeholders such as farmers claimed that cash crops were indispensable for getting cash for food, education, health, farm inputs, etc. But, there are many problems such as shortage in extension services, credit, market outlets, roads, irrigation services, quality seed/seedlings, quality control and market information, and smuggling, lack of growers associations.

The details of the proceeding of the forum were given in the annex.

A.3 PROSPECT FOR THE FUTURE DEVELOPMENT

A.3.1 Development constraints and potentials

Based upon the analysis of information and data collected by primary sector expert and other experts, the cause/effect of the problems in the agriculture/forestry/ fisheries in the study area were presented in the next figures.

Cause-Effect Analysis of Agricultural Problems

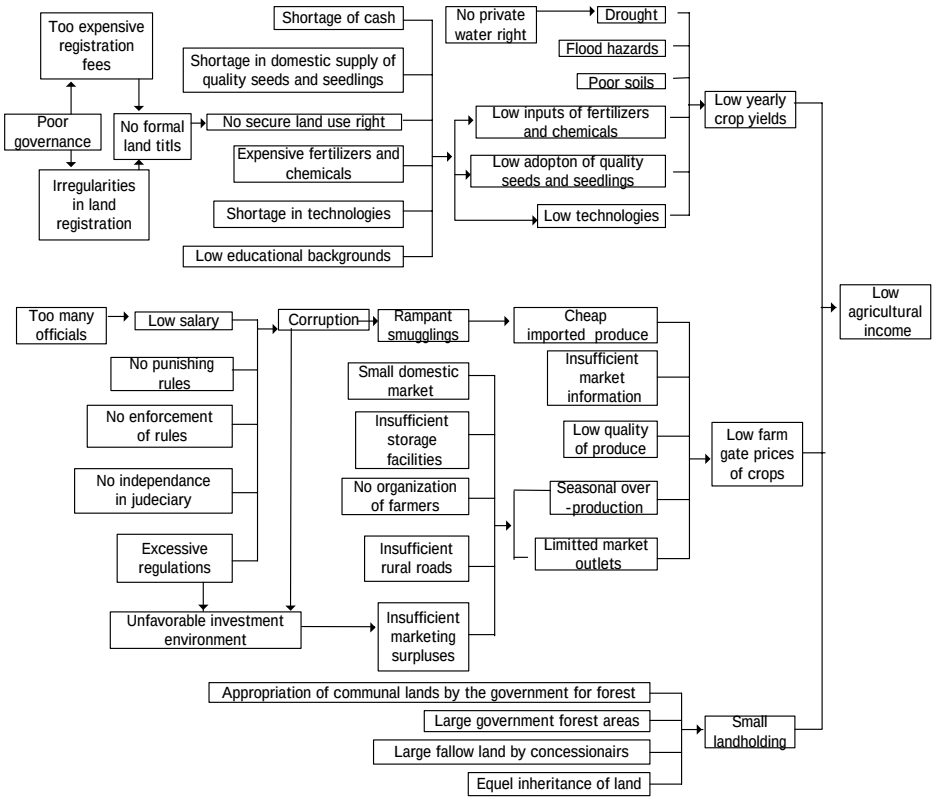

Figure A-4 Cause-Effect Analysis of Agricultural Problems

The key problem in the agriculture in the study area was identified as the low income, of which causes were judged as the low yearly crop yields, the low farm gate prices of crops and the small landholding. There are numerous causes for these. However, problems in governance such as the low salary, lack of land titles, weak judiciary system and smuggling are the central issue in the agricultural sector.

There are no cadastral maps for the agricultural land, which causes land conflicts among stakeholders. Land concessions are given without proper consultation with villagers. Formal land titles given by the Department of Cadastre and Geography to farmers are very rare. Most farmers were given land titles by their commune heads, but these titles have no legal power over other claimants. There are cases, in which farmers were taken legally their land by big figures after the land or crops become productive. Formal land titling is complicated, time-consuming and expensive. The poor cannot afford to apply for land registration.

Enforcement of contracts is difficult due to poor judicial system. Because of this, farmers tend to be reluctant to make contacts with merchants or traders. Without solving these problems, projects to be planned would not be able to improve farm income substantially in sustainable manners.

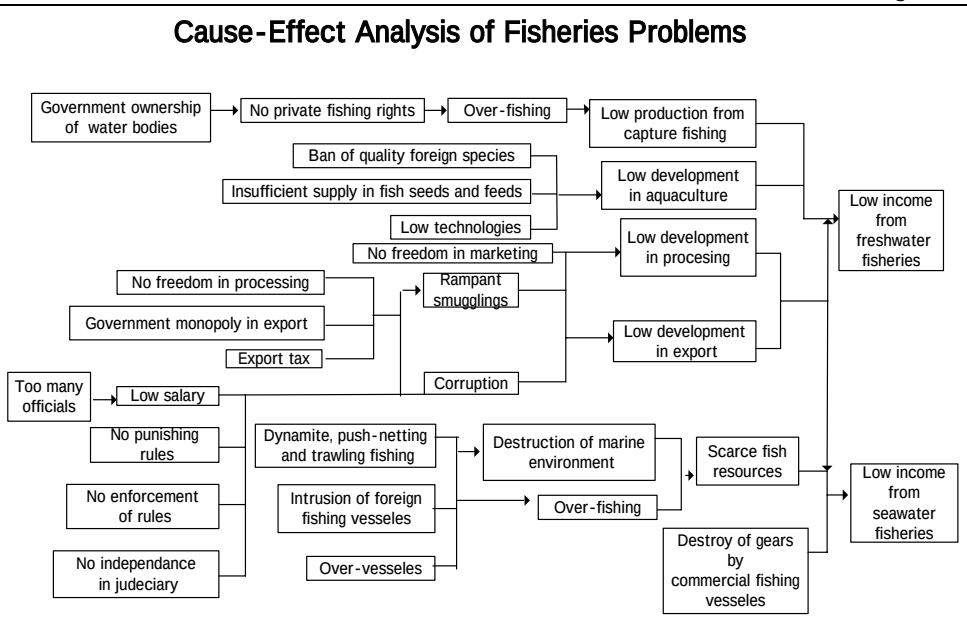

Figure A-5 Cause-Effect Analysis of Fisheries Problems

The low income from fisheries was judged as the key problems in the fisheries sector. The governance is the central issue in increasing income from fisheries. On-going methods for the government to develop fisheries are regulations rather than market mechanism. There are excessive government controls over private activities. Every water body such as ponds and rivers as well as water resources such as ground water belong to the government. Their exploitation of water bodies by the private is prohibited without proper permits from the authorities. Inland fisheries in the study area is less developed due to the excessive government regulations through licensing and taxing, etc.

Cause-Effect Analysis of Forestry Problems

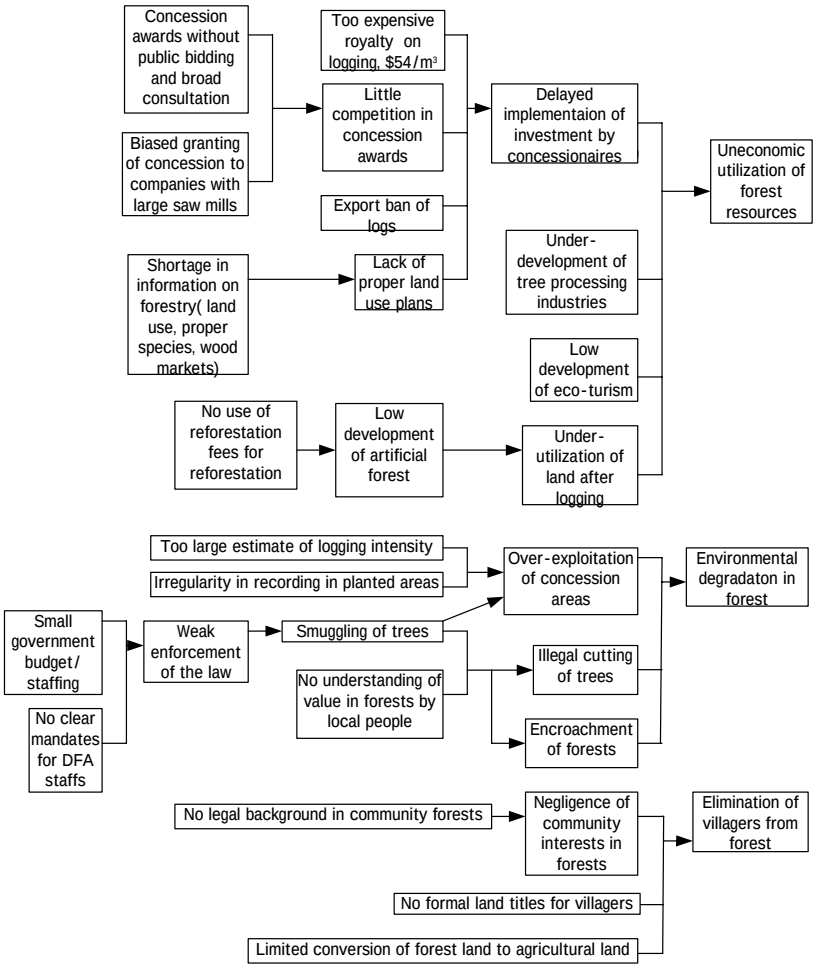

Figure A-6 Cause-Effect Analysis of Forestry Problems

The cause-effect analysis of forestry problems was based on the information from the Cambodia Forest Policy Assessment by WB in 1996, the project document on the capacity building for the forest sector in the kingdom of Cambodia made by DFW/JICA in 2001 and some information obtained in the field survey by the primary sector expert. The key problems in the forestry sector were identified as the uneconomic utilization of forests resources, the environmental degradation in forest and the elimination of villagers from forest. The biggest causes of them appear to be the rampant smuggling of timber, the total export ban of logs, no formal land titles for villagers and weak enforcement of the law.

There is rapid close downs of many saw mills by the enormous increase of logging royalty from \$14 to 54/m^3 . However, there is a steady supply of raw material to domestic tree processing factories. The present concessionaires stopped investment and their vast lands were left fallow without producing any economic benefits.

Other issues in the agricultural sector including fisheries sector are:

(1) Subsistent agriculture is prevalent with small surplus for marketing. Foods are

self-sufficient in the country. But, there is a persistent substantial food shortage with a duration of 1-6 months in the rural areas. To mitigate food shortage most farmers give priority in the increase rice production through irrigation, the increase in application of chemical fertilizers and the adoption of high-yielding varieties. As for market outlets for the agricultural products, there would be more potential in external markets than domestic markets. Domestic markets are small with small population and low income. Raw material supply from farmers for agri-business is apt to be unreliable, because farmers in the weak judiciary system tend to sell their produce to traders with higher price bits even farmers have obligation to sell under the contracts with traders.

(2) Small landholding of 0.9 ha/ household including a paddy field of 0.7ha. A single rain-fed paddy cultivation is the main cropping. There are no substantial areas irrigated. Rice yield is low of around 2-2.4 ton/ha due to low inputs such as fertilizers. In dry season farm land is left fallow in most cases.

(3) There are substantially no government agricultural extension, credit, marketing services for farmers due to limited budgets and man power. Farming technologies are mostly given by parents. Credit is given informally through moneylenders and relatives. Marketing is done through middlemen and merchants.

(4) Ocean territory of the country is small with over-vessels and over-fishing.

(5) Animal raising such as pig and cattle are very important source of income for farmers in the study area. But their raising are inefficient and very risky because of poor genetic resources of animal, prevalence of diseases such as new-castle and foot-and mouse diseases, poor supply of medicines such as vaccine, poor supply of feeds, insufficient veterinary services and small domestic markets due to low income of people.

A.3.2 Master plan

Strategy

According to the report on the socio-economic development priorities and the official development assistance needs, the government gives the highest priority to the achievement of equitable growth and to the alleviate of poverty by the socio-economic development. So, overall objectives of the primary sector development is set as the achievement of equitable growth and the alleviate of poverty.

In the first socio-economic development plan, the government gives highest priority to the development in agriculture sector to improve living condition of the people, most of whom are staying in the rural area. The basic goals of the government in the agriculture sector are:

- to improve food security through expansion in the production of rice and other

crops,

- to contribute to economic growth and to foreign earning through export,
- to improve opportunities income for farm households by diversifying crop production, particularly those headed by women, and
- to add value to crop and livestock production by developing agro-industries.

Regarding to the food production increase for food security improvement, substantial efforts have been and will be devoted through the following major projects.

- PRASAC II in Kampong Spueu and Takaev
- SEILA program in Takaev
- Prey Nup Polder project in Sihanouk Ville
- PADAP(polder project) in Kandal
- Rehabilitation of Kandal Stung irrigation system
- Slakou irrigation project in Takaev

Therefore, the goals of the primary sector in the present study area were set as:

- to increase cash income by the export promotion of product and
- to add value by the development of agro-manufacturing industry.

To fulfill the above objectives the main issues to overcome are mainly the institutional, financial, and technical issues, namely;

(1) Formal land titles for farmers

(2) Shortage of cash for farm operation

(3) Shortage in technologies

(4) Rampant smuggling

(5) Excessive regulations in fisheries

(6) Delayed implementation of investment by concessionaires (vast idle land)

The counter measures for the issues were summarized in the following table.

Table A-14 Countermeasures to Dissolve Problems

Main Issues	Counter Measures
1 . Formal land titles for farmers	Agreement with Land Titles Department, Issue of sub-decree, Public display of cadastral maps, Land registration, Conflict settlements
2 . Shortage of cash for farm operation	ACLEDA, micro-financing
3 . Shortage in technologies	Private initiatives such as contract-farming,
4 . Rampant smuggling	Strong commitment by the top government executives
5 . Excessive regulations in fisheries	Deregulation such as allowing permanent fishing right to fishers
6 . Delayed implementation of investment by concessionaires (vast idle land)	Default Claim, Land holding taxes

On the other hand, natural resources such as under-utilized land and under-utilized surface and under-ground water resources are plentiful in the study area.

As stated in the preceding section, the agri-business environment in the study area is unfavorable from view points of excessive government regulations, small domestic market, weak contract enforcement, land use insecurity, poor government credit services, poor extension services and marketing services.

To overcome some of these problems, nuclear estate production system, in which major necessary parts of the law produce are produced from their own estates and supplemental supply of raw material is from small holders. Main parts of the farm inputs such as seed/seedlings, fertilizers, chemicals and husbandry technologies are given by the nuclear estates. Contract farmers have to supply their produce to the estates. This is one of the working agri-business models of overseas Chinese to ensure steady supply of raw material under the weak contract enforcement environment such as Cambodia. Provision of credits, extension and marketing services can be made through the nuclear estate system and micro-credit services by NGOs. Tobacco industry development in Kampong Cham province by British American Tobacco may be a good example in the contract farming.

The land use security is a fundamental condition for business development and will have to be guaranteed by land survey, issuing land titles and land registration. Communal management of land issues such as land surveys, registration and issuing titles under project will be practical, smooth and effective than the central management of land.

Target agricultural development commodities for export including forestry and fisheries products would be better selected among the existing crops, trees or fish, of which suitability to the existing climate and soils has been assessed. The introduction of exotic species will have to be determined after field tests for several years, and therefore more risky. The following produce would be some advantages to be developed, namely, aroma rice, frozen shrimp/prawn, frozen/chilled vegetables (asparagus, baby corn, taro, carrot, okra, green soybeans, green peas, broccoli,

Chinese radish, pumpkin), tropical fruits such as durian, cashew, mangos and mango-steen, mushroom, fish meal, oil-palm, and dry fruits/vegetables such as of banana chip, mango, dorian, onion.

There is substantial development potential for reforestation of useful trees such as tea, mahogany and teak in the secondary forest areas by the management of communities in related areas. Range development in the present grass or secondary forest areas will also have some potential by introducing forage crops such as elephant grass and stylo.

Fish pond development in coastal areas and inland areas will have some development potential for shrimp/prawn, mud-crab, milk fish, carps and catfish.

Projects

The following projects were proposed for the implementation in the agriculture, forestry and fisheries sector taking the above-mentioned strategic points into account.

(1) Agriculture reform program study

(2) Fishery market development project

(3) Mangrove aquaculture pilot project

(4) Outer city agriculture promotion program

(5) Cashew plant protection and processing project

(6) Agro-forestry development pilot project

(7) Vegetable and fruit processing training center

(8) Border trade project

Details of them are presented in the following logical frameworks.

Project Design Matrix: Mangrove Aquaculture Pilot Project

Drafted date: Sep. 2002
Target area: Kampot Bay, 10ha — Project period:5 years
Target group: Poor fishers — Executing organization: MAFF then fisher community

Profile of the Project	Indicators	Data collection methods	External conditions
Overall Objective:			
Poverty reduction	Household income	Base line survey	
Objectives:			
*Income generation	ditto	Monitoring survey	
*Mangrove developmen	Area reclaimed	ditto	
*Formulation of a suitable system for mangrove aquaculture	Manuals	ditto	
*Training of fishers	No. of trainees	ditto	
Results:			
*Increase in income	$6/kg x 1200kg x 2crop/ha=$14400/ha	ditto	
*Mangrove development	10ha	ditto	No encroachment, no cutting of trees
*Mud-crab production	1.2ton/ha x2crop/yr x 10ha=24ton	ditto	No serious outbreak of crab diseases
*Land titles	50 households	ditto	
*Export of mud-crab	24ton	ditto	
*Tranining of fishers	10 persons/5month x 2semisters/year x 2yrs=40 persons	ditto	
Activities:	**Inputs:**		
*Reclamation of seashore for planting platforms	$10,000/ha x 10ha=$100,000	Monitoring of project	
*Planting mangroves	Special decree by Department of fisheries	ditto	Acceptance by NGOs and other stakeholders
*Issuing of land titles	Special decree by Land Title Department	ditto	External assistance
*Organization of	Acceptance by fishers	ditto	ditto
*Credit supply		ditto	ditto
*Construction of net enclosure	3-4 m wooden poles, horizontal bamboo crossbars, polyethylene netting, plastic sheeting, catwalks	ditto	ditto
*Mud crab raising	Extension services	ditto	ditto
*Export of mud-crab	Special decree by Department of fisheries	ditto	Availability of foreign markets
*Preparation of manuals	On land reclamation, mud crab husbandry,		
*Training of fishers	Expatriate experts, 2years		Availability of donors

Project Design Matrix: Vegetable and Fruit Processing Trainging Center

Drafted date: Sep. 2002
Target area: Kien Svay dis., Kandak pro., 3ha — Project period: 3 years
Target group: Entrepreneurs — Executing organization: MAFF

Profile of the Project	Indicators	Data collection methods	External conditions
Overall Objective:			
*Income generation	Household income	Monitoring survey	
Objectives:			
*Preparation of manuals on vegetables and fruit processing	Manuals	ditto	
*Taining for vegetables and fruit processing		ditto	
Results:			
*Training of entrepreneurs	50persons/3month x 4semisters/year x 3yrs=600 persons	ditto	
*Extension of the technology of the processing		ditto	
Activities:	**Inputs:**		
*Construction of a plant house	20m x 20m x 2 x $1300=1,040,000	Monitoring of project	External assistance
*Installing of a processing plant	Washing, blanching, chilling, freezing, drying, canning, bottling, juice extraction machines, etc. LS $80,000	ditto	ditto
*Construction of a lecture house	20m x 20m x $1300=520,000	ditto	ditto
*Construction of a vegetable and fruit garden under drip irrigation system	Farm: 2ha x $4000=8000, fence: 800m x $50=4000, a tractor: $25,000.	ditto	ditto
*Preparation of manuals on the processing	Expatriate experts, 2years	ditto	ditto
*Training of entrepreneurs	ditto	ditto	ditto
*Test marketing of the produce	ditto	ditto	ditto

Project Design Matrix: Agro-forestry Development Pilot Project

Drafted date: Sep. 2002
Target area: Kardamon and Elephant mountains — Project period:5 years
Target group: Land expropriated landless farmers — Executing organization: MAFF

Profile of the Project	Indicators	Data collection methods	External conditions
Overall Objective:			
Poverty reduction	Household income	Monitoring survey	
Objectives:			
*Income generation	ditto	ditto	
*Dairy farm development	Area reclaimed, milk productio	ditto	
*Import substitution of dairy products	Milk production	ditto	
*Training of farmers	No. of trainees	ditto	
*Forest conservation			
Results:			
*Farm income	$0.5/litre x 4000litre/head/year x 5head x 50 household=$500,000	ditto	
*Agro-forestry development(forage crops + teak, mahogany)	5ha/household x 50 household=250ha	ditto	No encroachment, no cutting of trees
*Milk production	4000litre/head/year x 5head x 50=1,000,000litre	ditto	No serious outbreak of diseases
*Land titles	50 households	ditto	
*Tranining of farmers	50 households	ditto	
Activities:	**Inputs:**		
*Clearing of bush and grass areas, de-mining	$1/man-day x man-day/0.1ha x 5ha x 50=$2500	Monitoring of project	Acceptance by NGOs and other stakeholders
*Planting of grass and seedlings of trees	$1/man-day x man-day/0.1ha x 5ha x 50=$2500	ditto	
*Issuing of land titles	Special decree by Land Title Department	ditto	
*Organization of farmers	A dairy farm association	ditto	
*Credit supply		ditto	External assistance
*Construction of a milk processing plant	Bulk cooler, sterilizer, homonizer, bottling machine, refrigerato: LS $40,000, a house: 25m x 25m x $1300=$812,500	ditto	ditto
*Transportation of milk	A refrigerating tank track: $40,000	ditto	ditto
*Introduction of quality dairy cows	50household x 5head/household x $1000=250,000	ditto	ditto
*Construction of a tree nursery center	Shade; $2 x 10ha x 100m x 100=200,000, drip irrigation system; $3000 x 12.5ha=37,500, soil mixture; $2000, tillers; 10 unit x $2000=20,000,	ditto	ditto
*Construction of cow houses	$7m^2$ /head x 50household x 5head x $1300=2,275,000	ditto	ditto
*Preparation of manuals	Expatriate experts, 2years	ditto	ditto
*Training of farmers	Expatriate experts, 2years	ditto	ditto

Project Design Matrix: Border Trade Project

		Drafted date: Sep. 2002	
Target area:	Dan Loap or Vinh Xuang near Vietnam border	Project period:2 years	
Target group: common farmers		Executing organizaton: MOC then NGO	
Profile of the Project	**Indicaters**	**Data collection methods**	**External conditions**
Overall Objective:			
Poverty reduction	Household income	Monitoring survey	
Objectives:			
Income generation	ditto	ditto	
Results:			
*Activation of trading with Vietnam	MOC statistics	ditto	no smuggling
*Export of produce	ditto		
*Import of farm inputs	ditto		
Activities:	**Inputs:**		
*Construction of a wholesale market	50m x 30m x $1300=1,950,000	Monitoring of project	External assistance
*Construction of parking lots	100m x 100m=1ha	ditto	ditto
*Construction of office and lodging	30 spaces x 3.3m^2 x3 x $2800=831,600	ditto	ditto
*Construction of warehouses	5m x 10m x 30 x $1300=1,950,000	ditto	ditto
*Provision of a weighing and a packing facility	LS $17,000	ditto	ditto
*Provision of trucks	10 trucks x $20,000=200,000	ditto	ditto
*Inspection, custom and quarantine services		ditto	Acceptance by MOC, MOH and custom offices

Project Design Matrix: Cashew Plant Protection and Processing Project

		Drafted date: Sep. 2002	
Target area:	Koah Kong, Kampot, Takaev and Kampong Spueu	Project period:1 years	
Target group: Cashew growing farmers		Executing organization: Project Executing Unit(MAFF,	
Profile of the Project	**Indicators**	**Data collection methods**	**External conditions**
Overall Objective:			
Poverty reduction	Household income	Monitoring survey	
Objectives:			
*Income generation	ditto	ditto	
*Cashew protection	No. of cashew trees sprayed	ditto	
*Promotion of cashew processing	Weight of cashew nuts and cashew nut shell liquid	ditto	
Results:			
*Farm income	1530ton x 10times x 0.21x $4000/ton=$12,852,000	ditto	
*Cashew production	1530ha x 10times x 0.21=3,213ton	ditto	
*Tranining of	10 enterprises	ditto	
Activities:	**Inputs:**		
*Entomorogical surveys	Entomologist: 2men-month	Monitoring of project	External assistance
*Organization of cashew farmers	Extension workers: 4provinces x 3 persons=12	ditto	
*Spraying insecticides	10motorized sprayers x $2600 x 4provinces=104,000	ditto	
*Installation of cashew processing plants	Mechanical shellers, curing ovens, steamers, packaging machines: 4place x $1000=4000	ditto	External assistance
*Construction of processing houses	10m x 20m x $1300 x 4=1,040,000	ditto	ditto
*Preparation of manuals	Expatriate experts, 1years	ditto	ditto
*Training of farmers	Expatriate experts, 1years	ditto	ditto

Annex : The details of the proceeding of the forum on agro-industry

Purpose: To exchange ideas on the development of agro-industry and cash crops among the people from organizations concerned.

Farmer from Chouk village, Samaky village, Meanchey district, Kampong Chnang Province.

- Possibilities of commercial cropping lie in maize, chilly, sugar palm, rice but the most promising crop is maize.
- In the past years, agriculture is bound by the tradition. Farmers produce the traditional produce such as maize and rice without market outlets. The farmers is lacking for vehicle passable roads, transportation means and planting technique etc. So the farmers cannot plant many potential crops mention above.
- Farmers have to make money by cash crops such as vegetables in order to reduce poverty. So farmer needs to diversify to cash crops from rice crop.
- Suggestion: I request the government, NGOs and companies to take care of farmers by providing seeds, finding markets, giving instructions of planting technique, because farmers grow cash crops to get cash, without which farmers cannot keep livelihood.

Farmer from Kampong Chnang Province:

- The farmers in my village are very poor. They depend on cash crops because this year the long dry season and floods caused great damage to paddy. However, cash crops had low yields and low prices. So, the farmers have to migrate to cities for looking for a job after harvests. The most potential cash crop is sugar palm.
- Our problem is the shortage of firewood, with which palm juice is condensed to sugar. However, the firewood became expensive than palm sugar. Palm sugar is sold at the low price in the market. Transportation costs of palm sugar to Phnom Penh are expensive. I can say that the incomes from palm sugar are spent on firewood. The yield of palm sugar is 2 tones per 1 season giving 1 million riel but consumes firewood of 30-40m^3.
- The total income from palm sugar is about 1,000,000 riel per year but we have to use firewood about 30-40 m^3 every year. But recently the government announced to prohibit cutting of the wood any more to conserve environment. So, we decided not to use firewood.
- I call for Ministry of Agriculture Forestry and Fisheries, Ministry of Industry Mine and Energy, Ministry of Commerce and others investors to teach how to increase price of palm sugar. If possible please find the best way to sell the palm juice without processing in order to reduce deforestation.

Farmer from Kiri Chulsa district, Takeo Province:

- My district has the border close to Vietnam and is inflicted by draught for 6 months and by floods for 6 months. My district is the main area of the PRASAC program that has been present in my district for 7 years. PRASAC is assisting digging canals and in animal husbandry in my district. Agriculture land is enough but our capital is very limited. The farmers borrow fund from PRASAC program or ACLEDA, but after collection final products, the money return to PRASAC program is not enough because the rice price is going down.
- It is not easy to find local markets. There's only one markets leading to Vietnam. Lack of infrastructure, transportation, capital to buy seeds, and fertilizer are also problems.
- On behalf of the farmers in Kiri Chulsa, I would like to request PRASAC to continuous their program for more 10 years. I call for the government, especially the Ministry of Commerce, to find markets and to control prices of local products. Post harvest activities such as drying and the arrangement of places for the animals during the flooding time should be improved.

Farmer from Koh Tom district, Kandal Province

- The potential of agriculture products in my district is beans, sweet potatoes corn, herbal seeds and mungbean. The bean yield is 3-4 tones per 2 ha. The bean price is 1300-1350 riles/Kg. But the prices of insecticides imported from Vietnam are so expensive. The markets size is too small in the country we rely on only one market leading to Vietnam. The Vietnamese traders always show lower prices but we have to sell because we have no options.
- We are facing with the long dry season in which most of crops can't grow without irrigation. There is no market to sell cash crops. The price of crops fluctuates significantly every year.
- I would like to suggest for Ministries concerned to train the farmers how to take care of the plants, how to use insecticides because farmers don't know to use them. The people who got the training on agriculture succeeded in agriculture production, but the people who never participated in training on agriculture always ended up in small harvests. Please find stable market.

Farmer from west border, Malai, Samlote, Pailin

- Our agriculture is different from the central plaint; we never meet with flood disaster like central plain. Maize has a high potential, so we grow maize up to 56,130 hectare. In Sampouvloon, in Samlot that was a gems field now everything was changed. Farmers have been transferred into agriculture fields. Agriculture estate in Pailin and Samlot has 2,640 hectare. Malai has 14,752 hectare, Sampouvloon has 14,238 hectare. Pnom Preouk has 18,500 hectare, Kamring has 900 hectare. The high potential crop is corn. Corn variety,

CP888 and CP 989 provides best return followed by cashew nuts, peanuts, sesame, cassava, mangosteen, rumbutans, jackfruit, coconuts, mangos and durians.

- There are many kinds of problems such as lack of seeds, lack of capital, lack of irrigation, lack of technique to produce rice, lack of markets, luck of infrastructure and luck of transportation and insect damages. We exported 50 tones of corn to South Korea, but failed. We exported corn to Thailand, but met with problems in border checkpoints.
- MAFF should broadcast agricultural programs like neighboring countries to train farmers how to use insecticides, how to select good quality seeds and how to harvest corn before over-mature. Details on fertilizer bag must be written in Khmer because all these bags are imported from Thailand. Ministry of commerce must control them. Even if I can't read or our children can read.

Farmer from Ta Oh district, Takeo province

- PRASAC program covers only Kiri Vong district, but, our Ta oh commune has no irrigation canals and reservoirs for rice field. So farmers in this commune can't plant any crops. Foods have occurred in consecutive 3 years. People who suffered had to make livelihood by cutting firewood, breaking stones or making charcoal.
- We have problem such as no irrigation system, flood disaster in the consecutive years, long dry season, no dams to stock water and lack of paddy seed.
- We need irrigation systems, reservoirs, water supply systems, the continuation of PRASAC program and social funds to dig wells.

Farmer from Kandalsteung district, Kandal province

- My district has one river, which has much sediment. Flood disaster occurred in the consecutive years, 2000, 2001,2002. There is inequality in irrigation dam utilization.
- Our problem is the shortage of food almost every year, floods, the lack of techniques in cropping, lack of water resource and low prices of crops. After poor harvests, farmers have to migrate to city to get cash
- Ministries concerned should make programs to train farmer on technique, and to provide irrigation system and to find markets for products.

Farmers from Boribau district, Kampong Chnang Province.

- The farmers in Boribeau district make the floating rice and dry season rice.
- Our problem are shortages of rice seed, no irrigation system, lack of fertilizers and low prices of products
- The government and any others organization concerned should provide some

advise on how to became successful in agriculture, and should build or rehabilitate the irrigation system.

H.E Sok Siphanna, Secretary of State, Ministry of Commerce

- MOC in cooperation with MAFF will lead campaigns to find markets for the farmers. MOC sat up a rice mill association to export high quality rice to Asia and EU, and established a palm oil association. MOC will organize farms into one association for each produce such as cashew nuts, peanuts, corn, and sesame. Products export should be done through the associations. MOC will request ADB to provide fund to import high quality seeds. We got orders for beans from foreign countries like India and EU, but in vein. Because, Cambodia itself is unable to export to these countries due to a lack to standardization of agriculture products. Hybrids seed of rice to increase yields should be encouraged. I will negotiate with neighboring countries to use nearest port for export (like Battambang province and Pailin)

H.E Sam Sun Doeun, Member of the national assembly from Kandal province

- Deforestation causes floods. In the last fours years we faced with floods.
- Chopping down the trees makes Tonle Sap Lake shallow.
- We need to build more ponds and to stop deforestation
- We need to rehabilitate the irrigation system by the food for work program.
- We need to establish associations with the support from the government.
- We need to stop exporting foreign-aided good quality fertilizers to Vietnam and to import the low quality fertilizers to Cambodia in order to stop the soil becoming poor.

President of the palm vinegar enterprise:

- The domestic market is uncontrollable due to smuggling. What is the Ministry of Commerce going to do to regulate the smuggling? If the government doesn't care of the smuggling across border, the government itself is going to the big problem in the future. The government should stop importing products that are available in Cambodia in order to promote the local products.

H.E Nancy, Member of the Parliament from Kampong Chnang:

- MOC is promoting rice export, but, there are many farmers who don't have enough rice to eat.
- MOC should find markets of cash crops for farmers because farmers are so poor to find markets themselves. Even farmers find markets, they can't market their produce because the same product is imported at cheap prices.
- The government should declare what we got after jointing ASEAN.
- We have to settle people's problems. The government itself should know that

today every thing become more expensive like gasoline, water, electricity etc, but the people decreases in income so the people are continue to become poorer and poorest.

- MAFF and other concerned ministries should solve the problems by rehabilitating irrigation system and providing seeds with technical to the farmers.
- The government should set force to stop smuggling by military groups. Income taxes around 100 million US$/year are lost because of smuggling.

H. E Sok Siphanna answer the questions

- The smuggling is caused by the low salaries.
- We should focus on improving quality of products for export. We have to fill international standards. We have to arrange free trade markets for the farmers.
- The government will solve the problem step by step.

Farmers representative from Treng Trayeung Commune, Kampong Spueu:

- Treng trayeung commune is in upland area and the farmers need to clear the forests for planting crops.
- The people lack in agricultural land because the high-ranking officials and military force occupy farmer's land and force the people to move. We have surplus in agriculture products but no markets, no technology. They don't know how to apply pesticide.
- The government, NGOs and investors should assist to establish family groups for the development. Concerned ministries should provide seeds, techniques and markets to groups.

President of the palm vinegar company "Khmer natural"

- I established my company from a group of students in ITC (Institute of Technology of Cambodia)
- We didn't search for the international support. We tried ourselves.
- Palm juice is processed into palm vinegar without use of firewood and we get more benefit.
- We have advantage of cheap local products and good quality for poor people. We are preparing to export vinegar to Japan.

EQIP representative:

- EQIP created a company producing rice seed for the farmers. There are three kinds of seed: early variety rice seed, medium variety rice seed and late variety rice seed. We have specialized in agriculture and have targeted to help farmers by providing technology in producing seed.

Farmers from Kampong Spueu province:

- Farmers grow rice, corn, cassava, cashew nut, taro, sugar cane, mango, pineapple, jack fruits. Some varieties are imported from Thailand.
- We have over production in mango due to insufficient market outlets.

Ministry of Agriculture Fishery and Forestry should make programs to train farmers on how to use fertilizer, how to use seeds, how to use insecticides. The government should provide techniques, funds and credit loan to the farmers.

The representative from Ministry of Water Resource and Metrology:

- Now the Ministry has 40 projects but have to depend on international assistant from WB, ADB etc. to restore irrigation system and to study on Tonle Sap lake

Director of Agronomy Department, MAFF:

- The MAFF has a research institute call CARDI (Cambodia Agriculture Research Development Institute). There are 30 varieties for experiments.
- We provide good seed with an 80% of germination rate.
- There are many kinds of pesticides and the farmers need to be trained by the technicians of MAFF.
- Most of chemical fertilizers are imported with labels written in foreign language. So the farmers need a Khmer version to get instructions how to apply fertilizers.
- All problem of the farmers lie in
  - Inappropriate use of seed.
  - Using expired insecticides and wrong use of it.
- Wrong use of imported fertilizers, of which labels are written in foreign languages.

Appendix B
Secondary Industry

THE STUDY ON REGIONAL DEVELOPMENT OF THE PHNOM PENH-SIHANOUKVILLE GROWTH CORRIDOR IN THE KINGDOM OF CAMBODIA

Appendix B Secondary Industry

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APPENDIX B SECONDARY INDUSTRY

B.1 SCOPE OF APPENDIX B

In this appendix, the issues related to the industrial development for the Study Area, i.e., Growth Corridor, will be explained and recommendations will be made for the effective development thereof, focusing on the manufacturing industry sector. Besides those for Growth Corridor, current conditions and industrial policies with regard to the country as a whole will also be referred to, considering the important role of the Growth Corridor to be assumed for the national industrial and economic development.

It is noted that the coverage of industrial development is very wide and several appendices besides Appendix B include the relevant issues and recommendations.

B.2 CURRENT CONDITIONS AND CHARACTERISTICS OF THE SECONDARY INDUSTRY

B.2.1 Current Conditions and Characteristics of the Secondary Industry in Cambodia

(1) Production and Employment of Manufacturing Industry

Gross output value of the manufacturing industry of Cambodia is shown by category of industry by enterprise size in **Table B-1** for 2000 and 2001. As shown in the table, gross output value reached US$1,533 million in 2001. Category-wise, textile and wearing apparel was dominating, accounted for 82.1 % of the total manufacturing output value in 2001. Food and beverage category followed with 14.8 % share. They together accounted for the large majority of the output with the share of 96.9 %. From the viewpoint of the scale of the enterprises, medium and large scale enterprises which employ more than 50 and 200 employees, respectively accounted for the greater part of the total output, accounting for 86.1 %.

Table B-1 Gross Output Value of Manufacturing Industry in Cambodia by Category of Industry by Enterprise Size, 2000-2001

Unit: US$ 1 thousand

ISIC Code	Category of Industry	2000			2001			Growth Rate		
		S & H	M & L	Total	S & H	M & L	Total	S & H	M & L	Total
31	Manufacture of food, beverages and tobacco	98,615	53,206	151,821	171,871	55,146	227,017	74.3%	3.6%	49.5%
32	Textile and wearing apparel	1,791	1,092,000	1,093,791	951	1,256,852	1,257,803	-46.9%	15.1%	15.0%
33	Wood and wood products	4,253	5,353	9,606	9,847	0	9,847	131.5%	0.0%	2.5%
34	Paper and paper products	117	114	231	402	17	419	243.6%	-85.1%	81.4%
35	Chemicals, rubber and plastic products	1,453	3,211	4,664	1,503	2,340	3,843	3.4%	-27.1%	-17.6%
36	Non-metallic mineral products	3,259	0	3,259	4,457	0	4,457	36.8%	0.0%	36.8%
37	Manufacture of basic metals	0	0	0	0	0	0	0.0%	0.0%	0.0%
38	Fabricated metal products	8,926	6,705	15,631	10,660	5,647	16,307	19.4%	-15.8%	4.3%
39	Other manufacturing industries	5,911	0	5,911	12,871	0	12,871	117.7%	0.0%	117.7%
Total		**124,325**	**1,160,589**	**1,284,914**	**212,562**	**1,320,002**	**1,532,564**	**71.0%**	**13.7%**	**19.3%**

Note: S & H stands for Small and Handicraft (Micro) enterprises and M & L for Medium and Large enterprises.

As shown in **Table B-2**, total output has been sharply increasing these years, recording 38.4 % annual increase on the average during 1997-2001 period. Market-wise, clear difference is observed. Namely, export recorded a sharp increase with 64,3 % annual growth whereas domestic market recorded big fluctuation and recorded only slow annual growth of 2.5 %. Practically all the export was made by medium and large scale enterprises. They recorded 42.0 % annual growth while the small and micro recorded 22.6 % growth.

As shown in **Table B-3**, share of manufacturing industry in the employment remain low with 7.0 % of the total, partly because of higher labor productivity with primary sector being dominating in terms of employment.

Table B-2 Growth Trend of Gross Output Value of Manufacturing Industry in Cambodia by Market by Enterprise Size, 1997-2001

Unit: US$ 1 thousand
( ) : Annual Growth Rate

Kind of Market		1997	1998	1999	2000	2001	1997-2001 Average
I	**Domestic**	244,981	174,812	171,623	192,914	270,852	
			(-28.6%)	(-1.8%)	(12.4%)	(40.4%)	(2.5%)
	M & L	153,077	85,259	67,868	68,588	63,150	
			(-44.3%)	(-20.4%)	(1.1%)	(-7.9%)	(-19.9%)
	S & H	91,904	89,553	103,755	124,326	207,702	
			(-2.6%)	(15.9%)	(19.8%)	(67.1%)	(22.6%)
II	**Export**	173,051	456,554	724,013	1,092,000	1,261,712	
			(163.8%)	(58.6%)	(50.8%)	(15.5%)	(64.3%)
	Total	**418,032**	**631,366**	**895,636**	**1,284,914**	**1,532,564**	
			(51.0%)	**(41.9%)**	**(43.5%)**	**(19.3%)**	**(38.4%)**

Note: S & H stands for Small and Handicraft (Micro) enterprises and M & L for Medium and Large enterprises.

Table B-3 Employment of Manufacturing Industry of Cambodia, 2000

Industrial Category	Cambodia		Employment	
	Employment (Thousand)	Share in National Total	Urban	Rural
Food, Beverage & Tobacco	85.7	1.6%	10.6	75.1
Textile, Wearing Apparel & Footwear	232.4	4.4%	28.5	203.9
Wood & Paper Products, Publishing	7.0	0.1%	3.3	3.6
Rubber Products	3.0	0.1%	2.3	0.7
Non-Metallic Mineral	5.2	0.1%	2.1	3.1
Basic Metal, Fabricated Metal & Machinery	13.7	0.3%	3.8	9.9
Other Manufacturing	23.3	0.4%	7.1	16.2
Total	**370.3**	**7.0%**	**57.7**	**312.5**

Source: MOP LFS2000 Data.
Note : In the definition of MOP, sizable part of the Phnom Penh municipality is defined as rural.

(2) Trading of Manufactured Goods

Exports and imports of industrial commodities of Cambodia are shown in **Table B-4** and illustrated in **Figure B-1**. As shown in the table and figure, total imports

amounted to US$1,418 million while exports amounted to US$1,369 million in 2000. Accordingly, US$49 million of deficit was recorded.

Table B-4 Import/Export Flow of Industrial Commodities by Major Trade Partner, 2000

	Total		Imports		Exports		Balance
	US$ million	%	US$ million	%	US$ million	%	:E-I
Country/ASEAN							
Brunei	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
Indonesia	70.1	2.5%	68.4	4.8%	1.7	0.1%	-66.7
Laos	3.1	0.1%	0.0	0.0%	3.1	0.2%	3.1
Malaysia	74.0	2.7%	64.2	4.5%	9.8	0.7%	-54.4
Myanmar	0.1	0.0%	0.1	0.0%	0.0	0.0%	-0.1
Philipines	3.5	0.1%	2.3	0.2%	1.2	0.1%	-1.1
Singapore	124.0	4.5%	106.0	7.5%	18.0	1.3%	-88.0
Thailand	244.7	8.8%	221.8	15.6%	22.9	1.7%	-198.9
Vietnam	110.9	4.0%	91.5	6.5%	19.4	1.4%	-72.1
ASEAN Total	**630.4**	**22.6%**	**554.3**	**39.1%**	**76.1**	**5.6%**	**-478.2**
EU Total	**324.8**	**11.7%**	**93.7**	**6.6%**	**231.1**	**16.9%**	**137.4**
Other Countries							
China	136.7	4.9%	112.9	8.0%	23.8	1.7%	-89.1
Hong Kong	516.5	18.5%	254.3	17.9%	262.2	19.2%	7.9
Japan	69.1	2.5%	58.4	4.1%	10.7	0.8%	-47.7
South Korea	77.6	2.8%	76.8	5.4%	0.8	0.1%	-76.0
Taiwan	184.6	6.6%	174.8	12.3%	9.8	0.7%	-165.0
U.S.A	772.5	27.7%	32.8	2.3%	739.7	54.0%	706.9
Subtotal	**1,757.0**	**63.1%**	**710.0**	**50.1%**	**1,047.0**	**76.5%**	**337.0**
Other total (exception major ones)	**74.1**	**2.7%**	**59.6**	**4.2%**	**14.5**	**1.1%**	**-45.1**
Others Total	**1,831.1**	**65.7%**	**769.6**	**54.3%**	**1,061.5**	**77.6%**	**291.9**
Grand Total	**2,786.3**	**100%**	**1,417.6**	**100%**	**1,368.7**	**100%**	**-48.9**

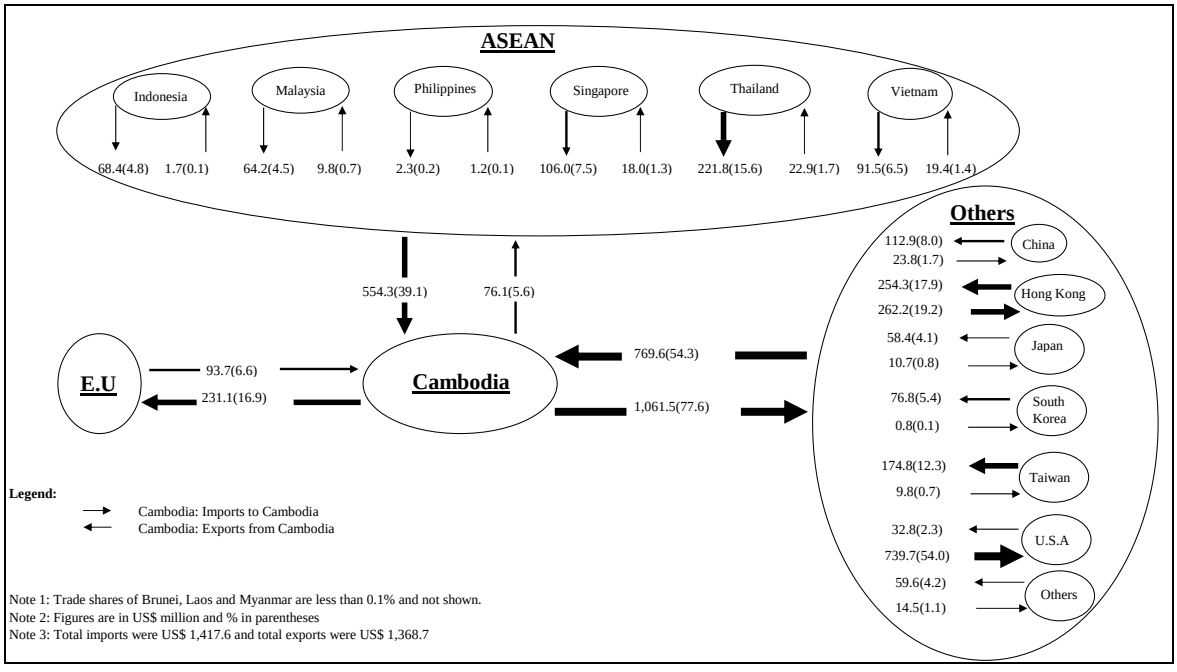


Figure B-1 Import/Export Flow for Industrial Commodities by Major Trade Partner, 2000

As shown in **Table B-4**, share of ASEAN in the total imports in 2000 was the biggest with 39.1 %. Among ASEAN, Thailand is the biggest share of 15.6 % of the total industrial imports or 39.9 % of ASEAN total.

Of the total imports in 2000, manufactured goods amounted to US$1,060.6 million, accounting for three fourths (74.8 %) of the total imports. By type of imported manufactured goods, raw and intermediate goods for garment had the biggest share of 33.3 % of the total imported goods as shown in **Table B-5**.

Of the imported industrial commodities, raw and intermediate goods for apparel industry accounts for the biggest share and basic metal, fabricated metal and machinery group follow. As shown in **Table B-6**, processed agricultural and mineral resource (sugar and salt) and transport machinery were the major imported ones from Thailand while raw and intermediate goods for garment was imported from Malaysia. From Singapore, industrial machinery was imported. Pharmaceutical products and electrical machinery were the major imported commodities from EU.

Among export commodities, share of the non-manufactured commodities including fish and cereals is minimal with less than 1 % share in the total exports in 2000. As shown in **Table B-7**, apparel (garment) products are by far the biggest with US$948.4 million, accounting for 69.3 % of the total. As shown in **Table B-8**, USA was by far the biggest, accounting for 54.0 % of the total exports followed by Hong Kong / China with 20.9 % share.

Table B-5 Major Imports of Industrial Commodities by Type, 2000

HS	Item	Value (US$ mil)	Share	Raw materials/ Intermediate	Agro based	Mineral R-based	Others
00	Personal Effect	1.2	0.1%				○
11	Products of the milling industry	2.9	0.2%		○		
13	Lac; gums, resins and other vegetable saps and extracts	0.1	0.0%		○		
15	Animal or vegetable fats and oils	6.7	0.5%		○		
16	Preparation of meat, of fish or of crustaceans, mullucs	2.7	0.2%		○		
17	***Sugars and sugar confectionery***	***12.3***	***0.9%***		***O***		
19	Preparations of cereals, flour, starch or milk; pastry cooks' products	9.3	0.7%		○		
20	Preparation of vegetables, fruit, nuts or other parts of plants	1.0	0.1%		○		
21	***Miscellaneous edible preparations***	***1.8***	***0.1%***		***O***		
22	***Beverages, spirits and vinegar***	***6.3***	***0.4%***		***O***		
25	***Salt; sulphur; earths and stone***	***30.8***	***2.2%***			***O***	
28	Inorganic chemicals	1.9	0.1%				○
29	Organic chemicals	24.5	1.7%				○
30	***Pharmaceutical products***	***40.1***	***2.8%***				***O***
31	Fertilizers	3.0	0.2%			○	
32	Tanning or dyeing extracts	1.9	0.1%				○
33	Essential oils and resinoids; perfumery cosmetic or toilet preparations	2.2	0.2%				○
34	Soap, organic surface-active agents	5.9	0.4%				○
37	Photographic or cinematographic goods	1.1	0.1%				○
38	Miscellaneous chemical products	3.4	0.2%				○
39	Plastics and articles thereof	25.1	1.8%				○
42	Articles of leather	1.1	0.1%				○
44	Wood and articles of wood	0.4	0.0%		○		
45	Cork and articles of cork	0.0	0.0%				○
46	Manufactures of straw	0.1	0.0%		○		
48	***Paper and paperboard***	***36.3***	***2.6%***				***O***
49	***Printed books, newpapers, pictures and other products of the printing industry***	***11.8***	***0.8%***				***O***
54	***Man-made filaments***	***16.9***	***1.2%***	***O***			
55	***Man-made staple fibres***	***225.1***	***15.9%***	***O***			
56	***Wadding, felt and non-wovens***	***13.2***	***0.9%***	***O***			
57	Carpets and other textile floor-covering	0.3	0.0%				○
58	***Special woven fabrics***	***18.8***	***1.3%***	***O***			
59	Impregnated, coated, covered or laminated textile fabrics	1.0	0.1%				○
60	***Knitted or crocheted fabrics***	***129.5***	***9.1%***	***O***			
61	Articles of apparel and clothing accessories, knitted or crocheted	0.9	0.1%				○
62	***Articles of apparel and clothing accessories, not knitted or crocheted***	***21.5***	***1.5%***	***O***			
63	***Other made up textile articles***	***47.0***	***3.3%***	***O***			
64	***Footwear, gaiters and the like***	***8.8***	***0.6%***				○
65	Headgear and parts thereof	0.4	0.0%				○
66	Umbrellas and parts thereof	0.1	0.0%				○
67	Prepared feathers and down	0.0	0.0%				○
68	Articles of stone, plaster, cement	2.9	0.2%			○	
69	***Ceramic products***	***10.6***	***0.7%***			***O***	
70	Glass and glassware	3.4	0.2%			○	
72	***Iron and steel***	***24.1***	***1.7%***				***O***
73	***Articles of iron or steel***	***13.6***	***1.0%***				***O***
74	Copper and articles thereof	0.2	0.0%			○	
75	Nickel and articles thereof	0.0	0.0%			○	
76	Aluminum and articles thereof	11.2	0.8%			○	
78	Lead and articles thereof	0.0	0.0%			○	
79	Zinc and articles thereof	1.2	0.1%			○	
80	Tin and articles thereof	0.0	0.0%			○	
82	Tools implements; cutlery, spoons, forks of base metals	1.4	0.1%				○
83	Miscellaneous articles of base metal	3.4	0.2%				○
84	***Nuclear reactors, boilers, machinery and mechanical appliances***	***102.9***	***7.3%***				***O***
85	***Electrical machinery and equipment***	***51.5***	***3.6%***				***O***
86	Railway or tramway locomotives, rolling-stock and parts thereof	0.0	0.0%				○
87	***Vehicles and parts***	***72.7***	***5.1%***				***O***
88	Aircraft, spaecraft, and parts thereof	0.4	0.0%				○
89	Ships, boats and floating structures	1.3	0.1%				○
90	***Optical, photographic instruments,ect.***	***11.6***	***0.8%***				***O***
91	Clocks and watches and parts thereof	0.2	0.0%				○
92	Musical instruments	0.0	0.0%				○
93	Arms and ammunition	0.0	0.0%				○
94	Furniture; bedding and the like	5.4	0.4%				○
95	Toys, games and sports requisites	1.2	0.1%				○
96	***Miscellaneous manufactured articles***	***24.0***	***1.7%***				***O***
Total of Manufactured (Processed) Goods		**1060.6**	**74.6%**	**33.2%**	**3.1%**	**4.4%**	**33.9%**
Total		**1,417.8**	**100.0%**				

Table B-6 Major Imports of Industrial Commodities by Trade Partner, 2000 (1/3)

More than US$ 1 million
Manufactured good items/HS

(1) ASEAN

Unit: US$ million

HS	Item (Chapter)	Indo-nesia	Malay-sia	Philip-pines	Singa-pore	Thai-land	Viet-nam	Total
00	Personal Effect							0.0
11	Products of the milling industry							0.0
13	Lac; gums, resins and other vegetable saps and extracts							0.0
15	Animal or vegetable fats and oils		4.0		1.9			5.9
16	Preparation of meat, of fish or of crustaceans, mullucs							0.0
17	Sugars and sugar confectionery					10.3		10.3
19	Preparations of cereals, flour, starch or milk; pastry cooks' products		1.9			3.7		5.6
20	Preparation of vegetables, fruit, nuts or other parts of plants							0.0
21	Miscellaneous edible preparations							0.0
22	Beverages, spirits and vinegar				1.6			1.6
25	Salt; sulphur; earths and stone	2.0				27.5		29.5
28	Inorganic chemicals							0.0
29	Organic chemicals	10.6				1.3		11.9
30	Pharmaceutical products					5.9		5.9
31	Fertilizers					2.7		2.7
32	Tanning or dyeing extracts							0.0
33	Essential oils and resinoids; perfumery cosmetic or toilet preparations					1.3		1.3
34	Soap, organic surface-active agents					1.3	1.5	2.8
37	Photographic or cinematographic goods							0.0
38	Miscellaneous chemical products					1.2		1.2
39	Plastics and articles thereof		2.5		1.6	8.0		12.1
42	Articles of leather							0.0
44	Wood and articles of wood							0.0
45	Cork and articles of cork							0.0
46	Manufactures of straw							0.0
48	Paper and paperboard	4.9	2.4		4.1	6.2		17.6
49	Printed books, newpapers, pictures and other products of the printing industry							0.0
54	Man-made filaments							0.0
55	Man-made staple fibres	7.6	12.4		4.1	1.9		26.0
56	Wadding, felt and non-wovens							0.0
57	Carpets and other textile floor-covering							0.0
58	Special woven fabrics		1.2					1.2
59	Impregnated, coated, covered or laminated textile fabrics							0.0
60	Knitted or crocheted fabrics		14.4		8.1			22.5
61	Articles of apparel and clothing accessories, knitted or crocheted							0.0
62	Articles of apparel and clothing accessories, not knitted or crocheted							0.0
63	Other made up textile articles							0.0
64	Footwear, gaiters and the like					1.4		1.4
65	Headgear and parts thereof							0.0
66	Umbrellas and parts thereof							0.0
67	Prepared feathers and down							0.0
68	Articles of stone, plaster, cement					2.4		2.4
69	Ceramic products	1.2				4.9		6.1
70	Glass and glassware					1.2		1.2
72	Iron and steel					4.9	1.5	6.4
73	Articles of iron or steel					3.3		3.3
74	Copper and articles thereof							0.0
75	Nickel and articles thereof							0.0
76	Aluminum and articles thereof		3.4		4.6			8.0
78	Lead and articles thereof							0.0
79	Zinc and articles thereof							0.0
80	Tin and articles thereof							0.0
82	Tools implements; cutlery, spoons, forks of base metals							0.0
83	Miscellaneous articles of base metal							0.0
84	Nuclear reactors, boilers, machinery and mechanical appliances		6.3		19.2			25.5
85	Electrical machinery and equipment		4.8		7.4	4.0		16.2
86	Railway or tramway locomotives, rolling-stock and parts thereof							0.0
87	Vehicles and parts		1.5			14.6		16.1
88	Aircraft, spaecraft, and parts thereof							0.0
89	Ships, boats and floating structures				1.0			1.0
90	Optical, photographic instruments,ect.					1.4		1.4
91	Clocks and watches and parts thereof							0.0
92	Musical instruments							0.0
93	Arms and ammunition							0.0
94	Furniture; bedding and the like					1.5		1.5
95	Toys, games and sports requisites							0.0
96	Miscellaneous manufactured articles		1.3					1.3

Note 1: Rounded to US$1 million (whole numbers)

Table B-6 Major Imports of Industrial Commodities by Trade Partner, 2000 (2/3)

(2) EU

Unit: US$ million

HS	Item (Chapter)	Aust-ria	Luxem-burg	Belgi-um	Den-mark	Fin-land	France	Germa-ny	Greece	Portu-gal	Ireland	Italy	Nether-lands	Spain	Swe-den	U.K	Total
00	Personal Effect																0.0
11	Products of the milling industry																0.0
13	Lac; gums, resins and other vegetable saps and extracts																0.0
15	Animal or vegetable fats and oils																0.0
16	Preparation of meat, of fish or of crustaceans, mullucs																0.0
17	Sugars and sugar confectionery																0.0
19	Preparations of cereals, flour, starch or milk; pastry cooks' products						1.2										1.2
20	Preparation of vegetables, fruit, nuts or other parts of plants																0.0
21	Miscellaneous edible preparations																0.0
22	Beverages, spirits and vinegar						1.3										1.3
25	Salt; sulphur; earths and stone																0.0
28	Inorganic chemicals																0.0
29	Organic chemicals																0.0
30	Pharmaceutical products						14.8	1.6									16.4
31	Fertilizers																0.0
32	Tanning or dyeing extracts																0.0
33	Essential oils and resinoids; perfumery cosmetic or toilet preparations																0.0
34	Soap, organic surface-active agents																0.0
37	Photographic or cinematographic goods																0.0
38	Miscellaneous chemical products																0.0
39	Plastics and articles thereof																0.0
42	Articles of leather																0.0
44	Wood and articles of wood																0.0
45	Cork and articles of cork																0.0
46	Manufactures of straw																0.0
48	Paper and paperboard										2.1						2.1
49	Printed books, newpapers, pictures and other products of the printing industry																0.0
54	Man-made filaments																0.0
55	Man-made staple fibres											1.4					1.4
56	Wadding, felt and non-wovens																0.0
57	Carpets and other textile floor-covering																0.0
58	Special woven fabrics																0.0
59	Impregnated, coated, covered or laminated textile fabrics																0.0
60	Knitted or crocheted fabrics																0.0
61	Articles of apparel and clothing accessories, knitted or crocheted																0.0
62	Articles of apparel and clothing accessories, not knitted or crocheted																0.0
63	Other made up textile articles																0.0
64	Footwear, gaiters and the like																0.0
65	Headgear and parts thereof																0.0
66	Umbrellas and parts thereof																0.0
67	Prepared feathers and down																0.0
68	Articles of stone, plaster, cement																0.0
69	Ceramic products																0.0
70	Glass and glassware																0.0
72	Iron and steel																0.0
73	Articles of iron or steel																0.0
74	Copper and articles thereof																0.0
75	Nickel and articles thereof																0.0
76	Aluminum and articles thereof																0.0
78	Lead and articles thereof																0.0
79	Zinc and articles thereof																0.0
80	Tin and articles thereof																0.0
82	Tools implements; cutlery, spoons, forks of base metals																0.0
83	Miscellaneous articles of base metal																0.0
84	Nuclear reactors, boilers, machinery and mechanical appliances							1.3			3.9	5.3					10.5
85	Electrical machinery and equipment						8.6	1.5		4.6							14.7
86	Railway or tramway locomotives, rolling-stock and parts thereof																0.0
87	Vehicles and parts						1.7										1.7
88	Aircraft, spaecraft, and parts thereof																0.0
89	Ships, boats and floating structures																0.0
90	Optical, photographic instruments,ect.						1.8										1.8
91	Clocks and watches and parts thereof																0.0
92	Musical instruments																0.0
93	Arms and ammunition																0.0
94	Furniture; bedding and the like																0.0
95	Toys, games and sports requisites																0.0
96	Miscellaneous manufactured articles																0.0

Note: Rounded to US$ 1 million (whole numbers)

Table B-6 Major Imports of Industrial Commodities by Trade Partner, 2000 (3/3)

(3) Others

Unit: US$ million

HS	Item (Chapter)	China	Hong Kong	Japan	South Korea	Taiwan	USA	Others	Total
00	Personal Effect								0.0
11	Products of the milling industry								0.0
13	Lac; gums, resins and other vegetable saps and extracts								0.0
15	Animal or vegetable fats and oils								0.0
16	Preparation of meat, of fish or of crustaceans, mullucs							1.1	1.1
17	Sugars and sugar confectionery								0.0
19	Preparations of cereals, flour, starch or milk; pastry cooks' products								0.0
20	Preparation of vegetables, fruit, nuts or other parts of plants								0.0
21	Miscellaneous edible preparations								0.0
22	Beverages, spirits and vinegar								0.0
25	Salt; sulphur; earths and stone								0.0
28	Inorganic chemicals								0.0
29	Organic chemicals	1.9				8.4			10.3
30	Pharmaceutical products				2.2			6.6	8.8
31	Fertilizers								0.0
32	Tanning or dyeing extracts								0.0
33	Essential oils and resinoids; perfumery cosmetic or toilet preparations								0.0
34	Soap, organic surface-active agents					1.4			1.4
37	Photographic or cinematographic goods								0.0
38	Miscellaneous chemical products								0.0
39	Plastics and articles thereof	1.1	6.9		1.6	4.5			14.1
42	Articles of leather								0.0
44	Wood and articles of wood								0.0
45	Cork and articles of cork								0.0
46	Manufactures of straw								0.0
48	Paper and paperboard	1.8	7.0			4.4			13.2
49	Printed books, newpapers, pictures and other products of the printing industry						10.1		10.1
54	Man-made filaments		4.5		4.6	5.5			14.6
55	Man-made staple fibres	29.2	112.1		11.9	37.1		1.1	191.4
56	Wadding, felt and non-wovens		10.1			5.0			15.1
57	Carpets and other textile floor-covering								0.0
58	Special woven fabrics		7.8			7.3			15.1
59	Impregnated, coated, covered or laminated textile fabrics								0.0
60	Knitted or crocheted fabrics	13.6	38.6		3.0	49.9			105.1
61	Articles of apparel and clothing accessories, knitted or crocheted								0.0
62	Articles of apparel and clothing accessories, not knitted or crocheted	5.3	13.6						18.9
63	Other made up textile articles		2.4	2.2	30.0	3.8	5.6	1.2	45.2
64	Footwear, gaiters and the like	2.6	1.9			2.1			6.6
65	Headgear and parts thereof								0.0
66	Umbrellas and parts thereof								0.0
67	Prepared feathers and down								0.0
68	Articles of stone, plaster, cement								0.0
69	Ceramic products	2.5							2.5
70	Glass and glassware								0.0
72	Iron and steel	10.7	2.0	1.7		1.8			16.2
73	Articles of iron or steel	4.5		2.1					6.6
74	Copper and articles thereof								0.0
75	Nickel and articles thereof								0.0
76	Aluminum and articles thereof								0.0
78	Lead and articles thereof								0.0
79	Zinc and articles thereof								0.0
80	Tin and articles thereof								0.0
82	Tools implements; cutlery, spoons, forks of base metals								0.0
83	Miscellaneous articles of base metal					1.3			1.3
84	Nuclear reactors, boilers, machinery and mechanical appliances	12.3	11.3	11.1	1.9	14.9		1.2	52.7
85	Electrical machinery and equipment	4.0	1.9	5.5		1.8		5.2	18.4
86	Railway or tramway locomotives, rolling-stock and parts thereof								0.0
87	Vehicles and parts	2.8		26.9	13.7	1.8	4.7		49.9
88	Aircraft, spaecraft, and parts thereof								0.0
89	Ships, boats and floating structures								0.0
90	Optical, photographic instruments,ect.			1.6					1.6
91	Clocks and watches and parts thereof								0.0
92	Musical instruments								0.0
93	Arms and ammunition								0.0
94	Furniture; bedding and the like								0.0
95	Toys, games and sports requisites								0.0
96	Miscellaneous manufactured articles	2.1	10.5			6.0			18.6

Note: Rounded to US$ 1 million (whole numbers)

Table B-7 Major Exports of Industrial Commodities, 2000

HS	Chapter (Item)	Value (US$ mil)	%
	Total of exports	**1,368.7**	**100.0%**
40	Rubber & Rubber articles	32.0	2.3%
44	Wood & Wood articles	34.1	2.5%
49	Printed books, products of printing industry	268.2	19.6%
61	Apparel articles, clothing accessories, knitted or crocheted goods	828.4	60.5%
62	Apparel articles, clothing accessories, not knitted or crocheted goods	120.0	8.8%
	Sub-Total of 61, 62	**948.4**	**69.3%**
64	Footwear	24.3	1.8%
	Sub-Total of 61, 62, 64	**972.7**	**71.1%**
	Sub-Total of the Major	**1,307.0**	**95.5%**

Note: More than US$ 10 million (Corresponding to about 0.73% of the total export).

Table B-8 Major Exports of Industrial Commodities by Trade Partner, 2000

More than US$ 1 million
Manufactured good items/HS

HS	Item (Chapter)	Thail-and	Viet-nam	ASEAN Sub-total	EU	Others								Total
						China	Hong Kong	Japan	South Korea	Taiwan	USA	Others	Sub-total	
42	Articles of leather			**0.0**	**0.0**						2.1		**2.1**	**2.1**
44	Wood and articles of wood		4.0	**4.0**	**0.0**	21.4	1.1			5.6			**28.1**	**32.1**
49	Printed books, newpapers, pictures and other products of the printing industry	13.3		**13.3**	**0.0**		254.9						**254.9**	**268.2**
55	Man-made staple fibres			**0.0**	**0.0**		1.3						**1.3**	**1.3**
60	Knitted or crocheted fabrics			**0.0**	**0.0**					1.3			**1.3**	**1.3**
61	Articles of apparel and clothing accessories, knitted or crocheted			**0.0**	**127.5**					1.3	618.1	7.6	**627.0**	**754.5**
62	Articles of apparel and clothing accessories, not knitted or crocheted			**0.0**	**77.2**						105.6		**105.6**	**182.8**
63	Other made up textile articles			**0.0**	**0.0**						3.9		**3.9**	**3.9**
64	Footwear, gaiters and the like			**0.0**	**17.1**			7.2					**7.2**	**24.3**
65	Headgear and parts thereof			**0.0**	**0.0**						7.3		**7.3**	**7.3**
73	Articles of iron or steel	1.5		**1.5**	**0.0**								**0.0**	**1.5**
84	Nuclear reactors, boilers, machinery and mechanical appliances			**0.0**	**1.7**								**0.0**	**1.7**
87	Vehicles and parts	2.5		**2.5**	**0.0**								**0.0**	**2.5**
Total for Major Exports		**17.3**	**4.0**	**21.3**	**223.5**	**21.4**	**257.3**	**7.2**	**0.0**	**8.2**	**737.0**	**7.6**	**1,038.7**	**1,283.5**
Total for All Exports		**22.9**	**19.4**	**76.2**	**231.0**	**23.8**	**262.2**	**10.7**	**0.8**	**9.8**	**739.7**	**14.5**	**1,061.5**	**1,368.7**

Note 1: Rounded to US$ 1 million (whole numbers)
Note 2: HS should include whichever is included for either one of the countries

(3) Major Investing Countries

Foreign direct investment (FDI) has been the key driving force for the industrial development in Cambodia as well as for exports. As shown in **Table B-9**, US$2,922 million was invested to Cambodia during 1994-2001. Leading ASEAN countries of Singapore, Malaysia and Thailand, UK and east Asian countries were the major investors, accounting for 91.3 % of the total FDI.

In terms of investment capital for manufacturing industry, FDI is the main stay whose investment has been made for large scale enterprises. Medium and large scale enterprises play the leading part in manufacturing production, accounting for the greater part of the production and almost all the exports. According to the

interview survey, Japanese investors located in ASEAN are planning the shift of procurement to make the best use of AFTA of which Cambodia is a member.

Table B-9 Major Investing Countries to Cambodia, 1994-2001

Unit: US$ 1 million

Major Investing Countries	1994-2001
Thailand	131
Singapore	156
Malaysia	1,530
UK	121
Taiwan	345
China	179
Hong Kong	113
Korea	92
Total	**2,667**
FDI Total	**2,922**

Remarks: Countries that invested US$ 1 million or more during 1994-2001 and the country whose investment during 2000 and 2001 is ranked among top five, are listed as Major Investing Countries.

B.2.2 Current Conditions of the Secondary Industry in Growth Corridor

(1) Past and Current Performance of Manufacturing Industry in Growth Corridor

1) Production and Employment of Manufacturing Industry

Gross output values of the manufacturing industry of the Growth Corridor are shown in **Tables B-10** to **B-12** by category of industry by enterprise size for 2001. These data have been newly prepared in this Growth Corridor Study by the joint efforts of the Study Team and the counterparts of the Government of Cambodia by analyzing and compiling the industrial reports submitted to the Government by the enterprises. As shown in the **Table B-12**, gross output value of Growth Corridor reached US$1,401 million in 2001, accounting for 91.4 % of the national total. Category-wise, textile and wearing apparel was dominating, accounted for 88.0 % of the total of Growth Corridor, being followed by food and beverage with the share of 7.3 % and fabricated metal with 3.8 %. These 3 categories accounts for eventually all the manufacturing activities in Growth Corridor. Market-wise, exports were dominating, accounting for 87.9 % and only 12.1 % for domestic market. From the viewpoint of the scale of the enterprises, medium and large scale enterprises were dominating, generating almost all the manufacturing output value, accounting for 96.3 % of the total for Growth Corridor. Micro and small enterprises generated only US$52million.

Area-wise, Greater Capital Area comprising Phnom Penh and Kandal province was dominating, 95.5 % of the total gross output value for Growth Corridor while that of Sihanoukville was 1.4 % and that of Intermediate Area comprising the 4 provinces of Takeo, Kampot, Koh Kong and Kampong Speu was only 3.1 %.

As shown in **Table B-13**, 253 thousand employments were generated by manufacturing industry in total in Growth Corridor in 2000,of which the greater part or 174 thousand or 68.9 % was employed by garment category.

2) Endowment of Local Resources

As shown in **Table B-14**, Growth Corridor is basically agriculture dominating area except Phnom Penh municipality,, producing rice, vegetables, fruits, sugar cane and other cash crops and cereals. Animal husbandry is actively being carried out in the provinces of Kandal, Takeo and Kampot while inland fishing is active in Phnom Penh and Kandal and marine fishing in the coastal area provinces and municipality of Kampot, Koh Kong and Sihanoukville. Except for rice milling and limited amount of fish processing, most of these products were marketed without processing.

To date, only a few mineral survey were carried out by private sector and no detailed information is available for the endowment of mineral resources. According to these information and current mining activities, various kind of mineral resources are presumed to be existing in Growth Corridor as shown in **Table B-15** and **Figure B-2**.

If properly utilized and exploited, these locally available resources might be utilized as raw materials for processing and manufacturing industry in Growth Corridor.

(2) Regional Characteristics

From industrial development viewpoint, Growth Corridor can be classified into 3 areas with distinctive features as follows.

a) Capital Area (Greater Capital)

b) Medium Area

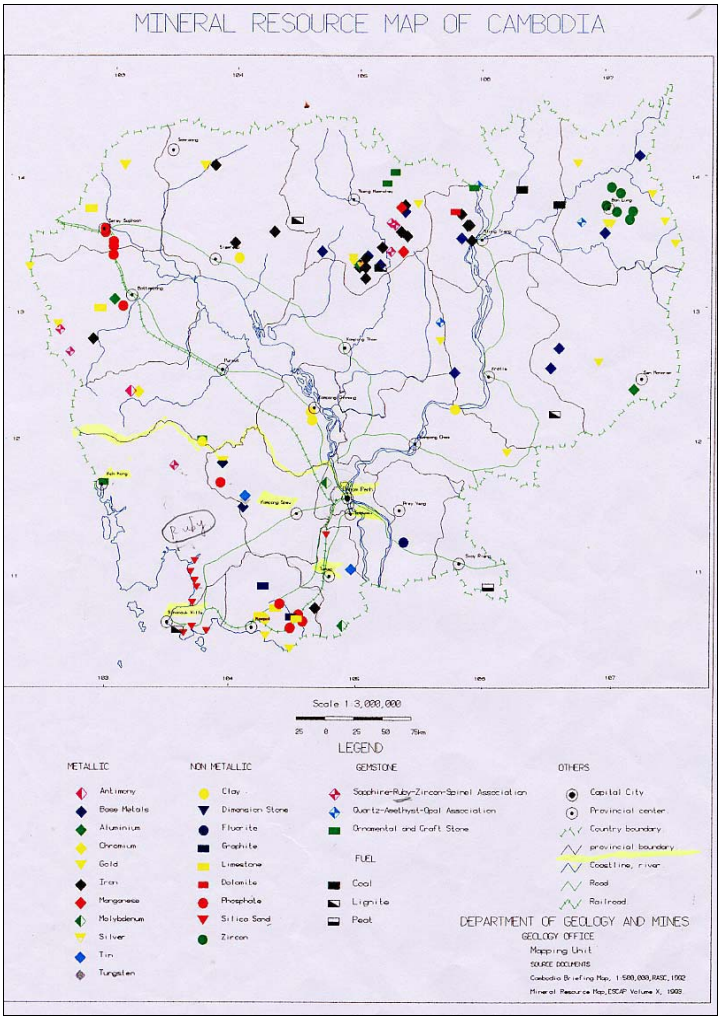
c) Sihanoukville

Capital Area has the biggest industrial accumulation and relatively well developed industrial infrastructures in the country. National Highways, No.2, No.3 and No.4 are connecting Phnom Penh with the other parts of the country. It is also at the middle point of the east-west international corridor between Bangkok, Thailand and Ho Chi Minh City in Vietnam. International airport is also located in the capital city. Capital Area is the biggest single domestic market in the country with 2 million population, density of which is relatively high.

Medium Area is characterized by agriculture. Industrial activities as well as the industrial infrastructure development to date are minimal. Though National Highways, No.3 and No.4 are passing this area, feeder road system is yet to be developed. Population is sparsely distributed and local market for industrial products is very small. Besides agricultural and livestock production, mineral resources are presumed to be available in this area.

Sihanoukville is the area which is characterized by rapid industrial development in recent years, centering on garment with some other industries including fabric and beverage. This area is equipped with the only international trading port in the

country. Besides bigger scale port is under construction which is scheduled to be completed in 2004. Marine fishing is active with the biggest fish catch in the country. Besides marine transport access, Sihanoukville may be the key location on the southern east-west land corridor connecting Bangkok, Koh Kong and Ho Chi Minh City.



Source : Department of Geology and Mines

Figure B-2 Mineral Resource Map of Cambodia

Table B-10 Profile of Medium and Large Scale Manufacturing Enterprises in Growth Corridor, 2001 (1/2)

(Growth Corridor Total)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)			REMARKS # of reported factories
					Domestic	Export	Total	
31	Manufacture of food, beverages and tobacco	27	112,559,570	4,017	65,733,753	36,750.0	**65,770,503**	8
32	Textile and wearing apparel	240	678,877,617	201,339	0	1,231,481,256	**1,231,481,256**	238
33	Wood and wood products	11	216,109,518	4,338	N.A	N.A	N.A	0
34	Paper and paper products	3	1,545,550	178	34,000	0	**34,000**	1
35	Chemicals, rubber and plastic products	12	10,115,000	1,876	7,020,000	0	**7,020,000**	3
36	Non-metallic mineral products	7	7,579,000	568	N.A	N.A	N.A	0
37	Manufacture basic metals	0	0	0	0	0	**0**	0
38	Fabricated metal products	12	19,204,298	1,524	44,482,247	0	**44,482,247**	5
39	Other manufacturing industries	1	2,381,690	225	N.A	N.A	N.A	0
Total		**313**	**1,048,372,243**	**214,065**	**117,270,000**	**1,231,518,006**	**1,348,788,006**	**255**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Phnom Penh)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)			REMARKS # of reported factories
					Domestic	Export	Total	
31	Manufacture of food, beverages and tobacco	21	16,359,570	2,250	39,626,553	36,750	39,663,303	7
32	Textile and wearing apparel	198	610,830,112	164,815	0	1,007,544,744	1,007,544,744	198
33	Wood and wood products	4	0	135	N.A	N.A	N.A	0
34	Paper and paper products	2	1,045,550	112	34,000	0	34,000	1
35	Chemicals, rubber and plastic products	9	5,300,000	1,284	7,020,000	0	7,020,000	3
36	Non-metallic mineral products	4	579,000	284	N.A	N.A	N.A	0
37	Manufacture basic metals	0	0	0	0	0	0	0
38	Fabricated metal products	9	8,322,298	1,159	43,775,561	0	43,775,561	4
39	Other manufacturing industries	0	0	0	0	0	0	0
Total		**247**	**642,436,530**	**170,039**	**90,456,114**	**1,007,581,494**	**1,098,037,608**	**213**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Kandal)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)			REMARKS # of reported factories
					Domestic	Export	Total	
31	Manufacture of food, beverages and tobacco	5	96,000,000	1,637	26,107,200	0	26,107,200	1
32	Textile and wearing apparel	29	31,737,030	29,581	0	192,456,803	192,456,803	29
33	Wood and wood products	3	197,553,518	1,778	N.A	N.A	N.A	0
34	Paper and paper products	1	500,000	66	N.A	N.A	N.A	0
35	Chemicals, rubber and plastic products	3	4,815,000	592	N.A	N.A	N.A	0
36	Non-metallic mineral products	3	7,000,000	284	N.A	N.A	N.A	0
37	Manufacture basic metals	0	0	0	0	0	0	0
38	Fabricated metal products	3	10,882,000	365	706,686	0	706,686	1
39	Other manufacturing industries	1	2,381,690	225	N.A	N.A	N.A	0
Total		**48**	**350,869,238**	**34,528**	**26,813,886**	**192,456,803**	**219,270,689**	**31**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Capital Area)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)			REMARKS # of reported factories
					Domestic	Export	Total	
31	Manufacture of food, beverages and tobacco	26	112,359,570	3,887	65,733,753	36,750	65,770,503	8
32	Textile and wearing apparel	227	642,567,142	194,396	0	1,200,001,547	1,200,001,547	227
33	Wood and wood products	7	197,553,518	1,913	N.A	N.A	N.A	0
34	Paper and paper products	3	1,545,550	178	34,000	0	34,000	1
35	Chemicals, rubber and plastic products	12	10,115,000	1,876	7,020,000	0	7,020,000	3
36	Non-metallic mineral products	7	7,579,000	568	N.A	N.A	N.A	0
37	Manufacture basic metals	0	0	0	0	0	0	0
38	Fabricated metal products	12	19,204,298	1,524	44,482,247	0	44,482,247	5
39	Other manufacturing industries	1	2,381,690	225	N.A	N.A	N.A	0
Total		**295**	**993,305,768**	**204,567**	**117,270,000**	**1,200,038,297**	**1,317,308,297**	**244**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

Table B-10 Profile of Medium and Large Scale Manufacturing Enterprises in Growth Corridor, 2001 (2/2)

(Sihanouk Ville)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)			REMARKS # of reported factories
					Domestic	Export	Total	
31	Manufacture of food, beverages and tobacco	0	0	0	0	0	0	0
32	Textile and wearing apparel	10	33,585,475	5,577	0	19,216,251	19,216,251	8
33	Wood and wood products	3	15,556,000	1,898	N.A	N.A	N.A	0
34	Paper and paper products	0	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0	0
36	Non-metallic mineral products	0	0	0	0	0	0	0
37	Manufacture basic metals	0	0	0	0	0	0	0
38	Fabricated metal products	0	0	0	0	0	0	0
39	Other manufacturing industries	0	0	0	0	0	0	0
Total		**13**	**49,141,475**	**7,475**	**0**	**19,216,251**	**19,216,251**	**8**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Kampong Speu)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)			REMARKS # of reported factories
					Domestic	Export	Total	
31	Manufacture of food, beverages and tobacco	0	0	0	0	0	0	0
32	Textile and wearing apparel	2	1,525,000	899	0	10,377,792	10,377,792	2
33	Wood and wood products	1	3,000,000	527	N.A	N.A	N.A	0
34	Paper and paper products	0	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0	0
36	Non-metallic mineral products	0	0	0	0	0	0	0
37	Manufacture basic metals	0	0	0	0	0	0	0
38	Fabricated metal products	0	0	0	0	0	0	0
39	Other manufacturing industries	0	0	0	0	0	0	0
Total		**3**	**4,525,000**	**1,426**	0	**10,377,792**	**10,377,792**	**2**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Takeo)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)			REMARKS # of reported factories
					Domestic	Export	Total	
31	Manufacture of food, beverages and tobacco	1	200,000	130	N.A	N.A	N.A	0
32	Textile and wearing apparel	1	1,200,000	467	0	1,885,666	1,885,666	1
33	Wood and wood products	0	0	0	0	0	0	0
34	Paper and paper products	0	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0	0
36	Non-metallic mineral products	0	0	0	0	0	0	0
37	Manufacture basic metals	0	0	0	0	0	0	0
38	Fabricated metal products	0	0	0	0	0	0	0
39	Other manufacturing industries	0	0	0	0	0	0	0
Total		**2**	**1,400,000**	**597**	**0**	**1,885,666**	**1,885,666**	**1**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Intermediate Area)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)			REMARKS # of reported factories
					Domestic	Export	Total	
31	Manufacture of food, beverages and tobacco	1	200,000	130	0	0	0	0
32	Textile and wearing apparel	3	2,725,000	1,366	0	12,263,458	12,263,458	3
33	Wood and wood products	1	3,000,000	527	N.A	N.A	N.A	0
34	Paper and paper products	0	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0	0
36	Non-metallic mineral products	0	0	0	0	0	0	0
37	Manufacture basic metals	0	0	0	0	0	0	0
38	Fabricated metal products	0	0	0	0	0	0	0
39	Other manufacturing industries	0	0	0	0	0	0	0
Total		**5**	**5,925,000**	**2,023**	0	**12,263,458**	**12,263,458**	**3**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

Table B-11 Profile of Micro and Small Scale Manufacturing Enterprises in Growth Corridor, 2001 (1/3)

(Growth Corridor Total)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	7,630	24,749,685	15,329	35,838,267	0	35,838,267
32	Textile and wearing apparel	230	3,316,650	4,138	950,475	0	950,475
33	Wood and wood products	1	1,025	4	1,026	0	1,026
34	Paper and paper products	23	990,353	234	401,779	0	401,779
35	Chemicals, rubber and plastic products	95	3,783,753	755	1,226,993	0	1,226,993
36	Non-metallic mineral products	389	6,703,357	3,212	2,629,928	0	2,629,928
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	638	6,928,893	2,280	8,347,743	0	8,347,743
39	Other manufacturing industries	690	6,740,640	2,495	2,763,479	0	2,763,479
Total		**9,696**	**53,214,356**	**28,447**	**52,159,690**	**0**	**52,159,690**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.
Note 2: Revision 2 of ISIC code is used.

(Phnom Penh)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	435	10,273,641	2,132	3,688,314	0	3,688,314
32	Textile and wearing apparel	153	3,277,369	2,192	738,432	0	738,432
33	Wood and wood products	0	0	0	0	0	0
34	Paper and paper products	22	969,840	225	381,267	0	381,267
35	Chemicals, rubber and plastic products	82	3,581,053	671	649,196	0	649,196
36	Non-metallic mineral products	196	5,759,128	1,846	1,447,891	0	1,447,891
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	293	6,368,802	1,564	2,164,016	0	2,164,016
39	Other manufacturing industries	454	6,601,715	1,925	2,605,024	0	2,605,024
Total		**1,635**	**36,831,548**	**10,555**	**11,674,139**	**0**	**11,674,139**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.
Note 2: Revision 2 of ISIC code is used.

(Kandal)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	1,986	3,748,362	4,186	7,164,842	0	7,164,842
32	Textile and wearing apparel	31	10,000	25	25,640	0	25,640
33	Wood and wood products	0	0	0	0	0	0
34	Paper and paper products	1	20,513	9	20,512	0	20,512
35	Chemicals, rubber and plastic products	13	202,700	84	577,797	0	577,797
36	Non-metallic mineral products	112	683,236	1,031	775,538	0	775,538
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	6	19,890	25	11,333	0	11,333
39	Other manufacturing industries	65	105,285	216	119,995	0	119,995
Total		**2,214**	**4,789,986**	**5,576**	**8,695,657**	**0**	**8,695,657**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

(Capital Area)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	2,421	14,022,003	6,318	10,853,156	0	10,853,156
32	Textile and wearing apparel	184	3,287,369	2,217	764,072	0	764,072
33	Wood and wood products	0	0	0	0	0	0
34	Paper and paper products	23	990,353	234	401,779	0	401,779
35	Chemicals, rubber and plastic products	95	3,783,753	755	1,226,993	0	1,226,993
36	Non-metallic mineral products	308	6,442,364	2,877	2,223,429	0	2,223,429
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	299	6,388,692	1,589	2,175,349	0	2,175,349
39	Other manufacturing industries	519	6,707,000	2,141	2,725,019	0	2,725,019
Total		**3,849**	**41,621,534**	**16,131**	**20,369,797**	**0**	**20,369,797**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.
Note 2: Revision 2 of ISIC code is used.

Table B-11 Profile of Micro and Small Scale Manufacturing Enterprises in Growth Corridor, 2001 (2/3)

(Sihanouk Ville)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	31	610,357	236	697,559	0	697,559
32	Textile and wearing apparel	0	0	0	0	0	0
33	Wood and wood products	0	0	0	0	0	0
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	11	84,036	70	89,371	0	89,371
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	35	133,100	131	56,844	0	56,844
39	Other manufacturing industries	0	0	0	0	0	0
Total		**77**	**827,493**	**437**	**843,773**	**0**	**843,773**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.
Note 2: Revision 2 of ISIC code is used.

(Kampot)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	1,331	841,748	4,067	1,601,218	0	1,601,218
32	Textile and wearing apparel	35	1,974	1,200	3,590	0	3,590
33	Wood and wood products	0	0	0	0	0	0
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	27	53,741	127	64,613	0	64,613
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	144	65,029	354	5,761,052	0	5,761,052
39	Other manufacturing industries	152	25,897	314	24,614	0	24,614
Total		**1,689**	**988,389**	**6,062**	**7,455,086**	**0**	**7,455,086**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.
Note 2: Revision 2 of ISIC code is used.

(Kampong Speu)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	2,323	7,949,236	3,487	15,126,574	0	15,126,574
32	Textile and wearing apparel	1	20,000	695	166,916	0	166,916
33	Wood and wood products	0	0	0	0	0	0
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	20	29,500	95	163,840	0	163,840
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	6	4,500	25	126,918	0	126,918
39	Other manufacturing industries	0	0	0	0	0	0
Total		**2,350**	**8,003,236**	**4,302**	**15,584,248**	**0**	**15,584,248**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.
Note 2: Revision 2 of ISIC code is used.

(Takeo)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	1,510	1,199,752	1,150	7,253,106	0	7,253,106
32	Textile and wearing apparel	0	0	0	0	0	0
33	Wood and wood products	0	0	0	0	0	0
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	22	83,224	15	75,600	0	75,600
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	108	304,239	66	176,044	0	176,044
39	Other manufacturing industries	0	0	0	0	0	0
Total		**1,640**	**1,587,215**	**1,231**	**7,504,750**	**0**	**7,504,750**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.
Note 2: Revision 2 of ISIC code is used.

Table B-11 Profile of Micro and Small Scale Manufacturing Enterprises in Growth Corridor, 2001 (3/3)

(Koh Kong)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	14	126,589	71	306,654	0	306,654
32	Textile and wearing apparel	10	7,307	26	15,897	0	15,897
33	Wood and wood products	1	1,025	4	1,026	0	1,026
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	1	10,492	28	13,076	0	13,076
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	46	33,333	115	51,536	0	51,536
39	Other manufacturing industries	19	7,743	40	13,846	0	13,846
Total		**91**	**186,489**	**284**	**402,035**	**0**	**402,035**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Intermediate Area)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	5,178	10,117,325	8,775	24,287,553	0	24,287,553
32	Textile and wearing apparel	46	29,281	1,921	186,403	0	186,403
33	Wood and wood products	1	1,025	4	1,026	0	1,026
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	70	176,957	265	317,128	0	317,128
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	304	407,101	560	6,115,550	0	6,115,550
39	Other manufacturing industries	171	33,640	354	38,460	0	38,460
Total		**5,770**	**10,765,329**	**11,879**	**30,946,120**	**0**	**30,946,120**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Table B-12 Profile of All the Manufacturing Enterprises

in Growth Corridor, 2001 (1/3)

(Growth Corridor Total)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	7,657	137,309,255	19,346	101,572,020	36,750	101,608,770
32	Textile and wearing apparel	470	682,194,267	205,477	950,475	1,231,481,256	1,232,431,731
33	Wood and wood products	12	216,110,543	4,342	1,026	0	1,026
34	Paper and paper products	26	2,535,903	412	435,779	0	435,779
35	Chemicals, rubber and plastic products	107	13,898,753	2,631	8,246,993	0	8,246,993
36	Non-metallic mineral products	396	14,282,357	3,780	2,629,928	0	2,629,928
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	650	26,133,191	3,804	52,829,990	0	52,829,990
39	Other manufacturing industries	691	9,122,330	2,720	2,763,479	0	2,763,479
Total		**10,009**	**1,101,586,599**	**242,512**	**169,429,690**	**1,231,518,006**	**1,400,947,696**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Phnom Penh)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	456	26,633,211	4,382	43,314,867	36,750	43,351,617
32	Textile and wearing apparel	351	614,107,481	167,007	738,432	1,007,544,744	1,008,283,176
33	Wood and wood products	4	0	135	0	0	0
34	Paper and paper products	24	2,015,390	337	415,267	0	415,267
35	Chemicals, rubber and plastic products	91	8,881,053	1,955	7,669,196	0	7,669,196
36	Non-metallic mineral products	200	6,338,128	2,130	1,447,891	0	1,447,891
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	302	14,691,100	2,723	45,939,577	0	45,939,577
39	Other manufacturing industries	454	6,601,715	1,925	2,605,024	0	2,605,024
Total		**1,882**	**679,268,078**	**180,594**	**102,130,253**	**1,007,581,494**	**1,109,711,747**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Kandal)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	1,991	99,748,362	5,823	33,272,042	0	33,272,042
32	Textile and wearing apparel	60	31,747,030	29,606	25,640	192,456,803	192,482,443
33	Wood and wood products	3	197,553,518	1,778	0	0	0
34	Paper and paper products	2	520,513	75	20,512	0	20,512
35	Chemicals, rubber and plastic products	16	5,017,700	676	577,797	0	577,797
36	Non-metallic mineral products	115	7,683,236	1,315	775,538	0	775,538
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	9	10,901,890	390	718,019	0	718,019
39	Other manufacturing industries	66	2,486,975	441	119,995	0	119,995
Total		**2,262**	**355,659,224**	**40,104**	**35,509,543**	**192,456,803**	**227,966,346**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Capital Area)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	2,447	126,381,573	10,205	76,586,909	36,750	76,623,659
32	Textile and wearing apparel	411	645,854,511	196,613	764,072	1,200,001,547	1,200,765,619
33	Wood and wood products	7	197,553,518	1,913	0	0	0
34	Paper and paper products	26	2,535,903	412	435,779	0	435,779
35	Chemicals, rubber and plastic products	107	13,898,753	2,631	8,246,993	0	8,246,993
36	Non-metallic mineral products	315	14,021,364	3,445	2,223,429	0	2,223,429
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	311	25,592,990	3,113	46,657,596	0	46,657,596
39	Other manufacturing industries	520	9,088,690	2,366	2,725,019	0	2,725,019
Total		**4,144**	**1,034,927,302**	**220,698**	**137,639,797**	**1,200,038,297**	**1,337,678,094**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

Table B-12 Profile of All the Manufacturing Enterprises

in Growth Corridor, 2001 (2/3)

(Sihanouk Ville)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	31	610,357	236	697,559	0	697,559
32	Textile and wearing apparel	10	33,585,475	5,577	0	19,216,251	19,216,251
33	Wood and wood products	3	15,556,000	1,898	0	0	0
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	11	84,036	70	89,371	0	89,371
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	35	133,100	131	56,844	0	56,844
39	Other manufacturing industries	0	0	0	0	0	0
Total		**90**	**49,968,968**	**7,912**	**843,773**	**19,216,251**	**20,060,024**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Kampot)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	1,331	841,748	4,067	1,601,218	0	1,601,218
32	Textile and wearing apparel	35	1,974	1,200	3,590	0	3,590
33	Wood and wood products	0	0	0	0	0	0
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	27	53,741	127	64,613	0	64,613
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	144	65,029	354	5,761,052	0	5,761,052
39	Other manufacturing industries	152	25,897	314	24,614	0	24,614
Total		**1,689**	**988,389**	**6,062**	**7,455,086**	**0**	**7,455,086**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Kampong Speu)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	2,323	7,949,236	3,487	15,126,574	0	15,126,574
32	Textile and wearing apparel	3	1,545,000	1594	166,916	10,377,792	10,544,708
33	Wood and wood products	1	3,000,000	527	0	0	0
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	20	29,500	95	163,840	0	163,840
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	6	4,500	25	126,918	0	126,918
39	Other manufacturing industries	0	0	0	0	0	0
Total		**2,353**	**12,528,236**	**5,728**	**15,584,248**	**10,377,792**	**25,962,040**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Takeo)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	1,511	1,399,752	1,280	7,253,106	0	7,253,106
32	Textile and wearing apparel	1	1,200,000	467	0	1,885,666	1,885,666
33	Wood and wood products	0	0	0	0	0	0
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	22	83,224	15	75,600	0	75,600
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	108	304,239	66	176,044	0	176,044
39	Other manufacturing industries	0	0	0	0	0	0
Total		**1,642**	**2,987,215**	**1,828**	**7,504,750**	**1,885,666**	**9,390,416**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

Table B-12 Profile of All the Manufacturing Enterprises

in Growth Corridor, 2001 (3/3)

(Koh Kong)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	14	126,589	71	306,654	0	306,654
32	Textile and wearing apparel	10	7,307	26	15,897	0	15,897
33	Wood and wood products	1	1,025	4	1,026	0	1,026
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	1	10,492	28	13,076	0	13,076
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	46	33,333	115	51,536	0	51,536
39	Other manufacturing industries	19	7,743	40	13,846	0	13,846
Total		**91**	**186,489**	**284**	**402,035**	**0**	**402,035**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

(Intermediate Area)

ISIC Code	Category of Industry	No.	Capital (US$)	Employment	Gross Output Value (US$)		
					Domestic	Export	Total
31	Manufacture of food, beverages and tobacco	5,179	10,317,325	8,905	24,287,553	0	24,287,553
32	Textile and wearing apparel	49	2,754,281	3,287	186,403	12,263,458	12,449,861
33	Wood and wood products	2	3,001,025	531	1,026	0	1,026
34	Paper and paper products	0	0	0	0	0	0
35	Chemicals, rubber and plastic products	0	0	0	0	0	0
36	Non-metallic mineral products	70	176,957	265	317,128	0	317,128
37	Manufacture basic metals	0	0	0	0	0	0
38	Fabricated metal products	304	407,101	560	6,115,550	0	6,115,550
39	Other manufacturing industries	171	33,640	354	38,460	0	38,460
Total		**5,775**	**16,690,329**	**13,902**	**30,946,120**	**12,263,458**	**43,209,578**

Note 1: Data are based on the factory report submitted to MIME with certain adjustment. Except for Textile and Wearing Apparel factories, 100% of which submitted the report, sizable number of factories under other categories did not submit the report. For these categories, adjustment was made by multiplying the total figures of the reported factories by the ratio of total number of factories to the total of reported factories.

Note 2: Revision 2 of ISIC code is used.

Table B-13 Employment of Manufacturing Industry of Growth Corridor, 2000

Industrial Category	Growth Corridor		Greater Capital		Phnom Penh	Kandal	Intermediate Area		Takeo	Kampong Speu	Koh Kong	Kampot	Sihanouk Ville	
	Employ-ment (x 1,000)	Share in total of Cambodia	Employ-ment (x 1,000)	Share in total of Growth Corridor			Employme nt (x 1,000)	Share in total of Growth Corridor					Employ-ment (x 1,000)	Share in total of Growth Corridor
Food, Beverage & Tobacco	45.4	53.0%	23.9	52.6%	11.1	12.8	19.2	42.3%	2.4	12.5	0.0	4.3	2.2	4.8%
Textile, Wearing Apparel & Footwear	174.0	74.9%	151.8	87.2%	133.4	18.4	16.3	9.4%	9.6	3.6	0.2	2.9	6.0	3.4%
Wood & Paper Products, Publishing	5.3	75.7%	3.4	64.2%	1.7	1.7	1.6	30.2%	1.0	0.4	0.2	0.0	0.2	3.8%
Rubber Products	3.0	100.0%	2.6	86.7%	2.3	0.3	0	0.0%	0.0	0.0	0.0	0.0	0.3	10.0%
Non-Metallic Mineral	4.5	86.5%	2.6	57.8%	1.2	1.4	1.9	42.2%	0.0	0.1	0.0	1.8	0.1	2.2%
Basic Metal, Fabricated Metal & Machinery	7.4	54.0%	4.9	66.2%	4.0	0.9	1.8	24.3%	0.5	0.9	0.2	0.2	0.6	8.1%
Other Manufacturing	12.9	55.4%	8.3	64.3%	3.4	4.9	4.3	33.3%	1.2	0.5	1.7	0.9	0.3	2.3%
Total	**252.5**	**68.2%**	**197.5**	**78.2%**	**157.1**	**40.4**	**45.1**	**17.9%**	**14.7**	**18.0**	**2.3**	**10.1**	**9.7**	**3.8%**

Source: MOP LFS2000 Data.
Note : In the definition of MOP, sizable part of the Phnom Penh municipality is defined as rural.

Table B-14 List of Agricultural Products in the Growth Corridor by Province/Municipality, 2000-2001

1. Cereals

Unit: %

	Rice	Maize	Cassava	Sweet potato	Vegetable	Mung bean	Peanut	Soya bean	Sugar cane	Sesame	Jute	Castor oil
Phnom Penh	0.3%	0.3%	0.0%	0.0%	2.8%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Kandal	***6.0%***	***8.2%***	1.3%	4.0%	***13.6%***	***7.1%***	***11.5%***	0.0%	***23.1%***	3.1%	***13.9%***	***9.3%***
Takeo	***11.6%***	0.2%	4.2%	***5.1%***	***11.6%***	1.9%	1.3%	0.0%	3.3%	0.1%	0.0%	0.0%
Kampot	***7.1%***	1.6%	***6.3%***	***14.5%***	***9.2%***	1.5%	3.4%	0.0%	***18.1%***	0.1%	0.0%	0.0%
Sihanouk ville	0.4%	0.0%	1.2%	0.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Koh Kong	0.2%	0.2%	1.5%	1.0%	0.4%	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%
Kg. Speu	3.9%	0.4%	***5.5%***	0.6%	4.9%	2.2%	2.7%	0.0%	2.1%	0.0%	0.0%	0.0%
Total	29.6%	10.8%	20.0%	25.8%	**43.0%**	12.7%	19.1%	0.0%	**48.9%**	3.4%	13.9%	9.3%

2. Fruits & Permanent Crops

Unit: %

	Banana	Cashew	Coco-nut	Logan	Mango	Sapodilla	Durian	Jack fruit	Custard apple	Orange	Rambutan	Pine-apple	Black pepper
Phnom Penh	0.3%	0.0%	0.2%	0.0%	0.3%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Kandal	***43.8%***	0.1%	***63.8%***	***99.4%***	***62.5%***	***82.9%***	0.0%	***91.8%***	***84.0%***	0.0%	0.0%	0.0%	0.0%
Takeo	2.5%	1.3%	3.6%	0.0%	2.9%	0.0%	0.0%	0.9%	0.0%	1.6%	0.0%	0.0%	0.0%
Kampot	***5.2%***	2.0%	***9.6%***	0.0%	***5.4%***	0.2%	***58.8%***	0.2%	3.2%	1.6%	0.0%	1.9%	***25.0%***
Sihanouk ville	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Koh Kong	0.7%	***5.4%***	1.3%	0.0%	0.5%	0.0%	4.3%	1.8%	0.0%	1.6%	***12.2%***	0.0%	0.0%
Kg. Speu	0.1%	1.0%	0.1%	0.0%	0.5%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	***5.3%***	0.0%
Total	**52.6%**	9.9%	**78.6%**	**99.4%**	**72.2%**	**83.2%**	**63.2%**	**95.0%**	**87.3%**	5.1%	12.2%	7.2%	25.0%

3.Animal Husbandry & Fish

Unit: %

	Animal Husbandry			Inland Fish			Marine Fish			Aqua-culture
	Cow	Pig	Poultry	Caught	Processed		Caught	Processed		
					Processed	Sauce		Processed	Sauce	
Phnom Penh	0.7%	1.0%	2.3%	***8.1%***	***26.1%***	***8.7%***	0.0%	0.0%	0.0%	***17.2%***
Kandal	***6.1%***	***7.1%***	***8.0%***	***18.8%***	***14.7%***	***38.8%***	0.0%	0.0%	0.0%	***13.5%***
Takeo	***10.4%***	***10.7%***	***8.6%***	3.4%	0.2%	0.0%	0.0%	0.0%	0.0%	3.7%
Kampot	***12.3%***	***7.9%***	***7.8%***	0.0%	0.0%	0.0%	***18.6%***	***6.8%***	***24.0%***	0.1%
Sihanouk ville	0.2%	0.8%	2.1%	0.0%	0.0%	0.0%	***45.8%***	***81.9%***	***73.9%***	1.2%
Koh Kong	0.2%	0.6%	0.5%	0.0%	0.0%	0.0%	***34.3%***	***10.1%***	1.4%	2.7%
Kg. Speu	***10.6%***	4.6%	***7.3%***	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
Total	**40.4%**	32.6%	**36.5%**	30.3%	**41.0%**	**47.5%**	**98.7%**	**98.7%**	**99.3%**	**38.5%**

Table B-15 Presumed Endowment of Mineral Resources in the Growth Corridor by Province/Municipality

Resource	Phnom Penh	Kandal	Takeo	Kampot	Sihanouk-ville	Koh Kong	Kg. Speu
Metallic							
Antimony							
Base Metals							X
Aluminum							
Chromium							
Gold				X			X
Iron				X			
Manganese							
Molybdenum		X	X				
Silver							
Tin			X				X
Tungsten							X
Non Metallic							
Clay							
Dimension Stone							
Fluorite							
Graphite				X			
Limestone				X			
Dolomite							
Phosphate				X			X
Silica Sand			X		X	X	
Zircon							
Gem Stone							
Sapphire-Ruby-Zircon-Spinel						X	
Quartz-Amethyst-Opal							
Ornamental and Craft Stone						X	
Fuel							
Coal							
Lignite					X		
Peat							
Others							
Sand Mine						X	
Salt Pan						X	

Source; Mineral Resource Map of Cambodia

B.2.3 Prospects and Constraints of the Secondary Industry in the Country and in Growth Corridor

Cambodia's manufacturing industries were severely damaged during the civil war of the 1970s, and were later mismanaged under the Khmer Rouge regime. Manufacturing activity recovered slowly in the 1980s and up to mid-1990s. In 1995, industry accounted for only 13 percent of GDP.

In the mid-1990s, the sector showed a quick upturn. In 2000 industry, primarily manufacturing, contributed to 23 percent of Cambodia's GDP that was ten percentage points higher than in 1995. This increase in manufacturing sub-sector was due to the rapid expansion of garment and footwear industries. These are the export processing industries by FDIs that have come to Cambodia to make use of custom exemptions under Generalized System of Preferences (GSP) with EU and MFN status with US.

Cambodia's garment and footwear sector has virtually little linkages with other domestic sectors. A system of high import tariffs and deep exemptions, as in the case of present Cambodia's garment and footwear sector, tends to stimulate exports from assembly-type operations, rather than from sectors with strong forward and backward linkages to other domestic sectors.

In addition, these industries are highly concentrated in Phnom Penh and its peri-urban areas (including Kandal and Kampong Speu) and a few other urban centers such as Sihanoukville and Battambang.

Except for the above specific sub-sectors, manufacturing still remains as a relatively minor segment of the national economy. Manufactured products include bricks, tiles, cement, processed rubber and furniture.

Mining is not a major industry. Cambodia produces a limited quantity of zircons, sapphires, and rubies, and exploits commercial deposits of salt, manganese and phosphate. In the early 1990s Cambodia began exploring petroleum in the Gulf of Thailand, but Thailand and Vietnam contested the projects with a claim over the offshore areas of the gulf.

Growth Corridor has the strongest advantages for industrial development which are given to the country, i.e., the biggest production center as well as the biggest domestic market and the only international trading port of the country; Phnom Penh and Sihanoukville. In-between there lies wide area of rural area as is the case for the country as a whole. Growth Corridor, therefore, shares very much similar prospects and constraints with the country as a whole. Number of manufacturing enterprises by category of industry is given in **Table B-16**. Distribution of the secondary industry employment is shown in Figure B-3.

Table B-16 Number of Manufacturing Enterprises in Cambodia by Category of Industry

ISIC Category of Industry	Micro	Small	Medium	Large	Total
31 Manufacturing of Food, Beverage and Tobacco	2,123	19,748	5	26	21,902
32 Textile, Wearing Apparel and Leather	799	583	20	220	1,622
33 Wood and Wood Products	98	43	0	7	148
34 Paper and Paper Products, Printing	10	13	2	1	26
35 Chemical and Petroleum, Coal, Rubber Products	195	82	7	9	293
36 Non-metallic Mineral Products	347	374	3	8	732
37 Basic Metal Industries	0	0	0	0	0
38 Fabricated Metal Products and Machinery	1,401	53	8	3	1,465
39 Other Manufacturing Industries	1,284	2	1	0	1,287
Total	6,257	20,898	46	274	27,475

Source: MOIME
Note: Numbers of employees of micro, small, medium and large enterprises are less than 10, 10 to 50, 50 to 200 and more than 200.

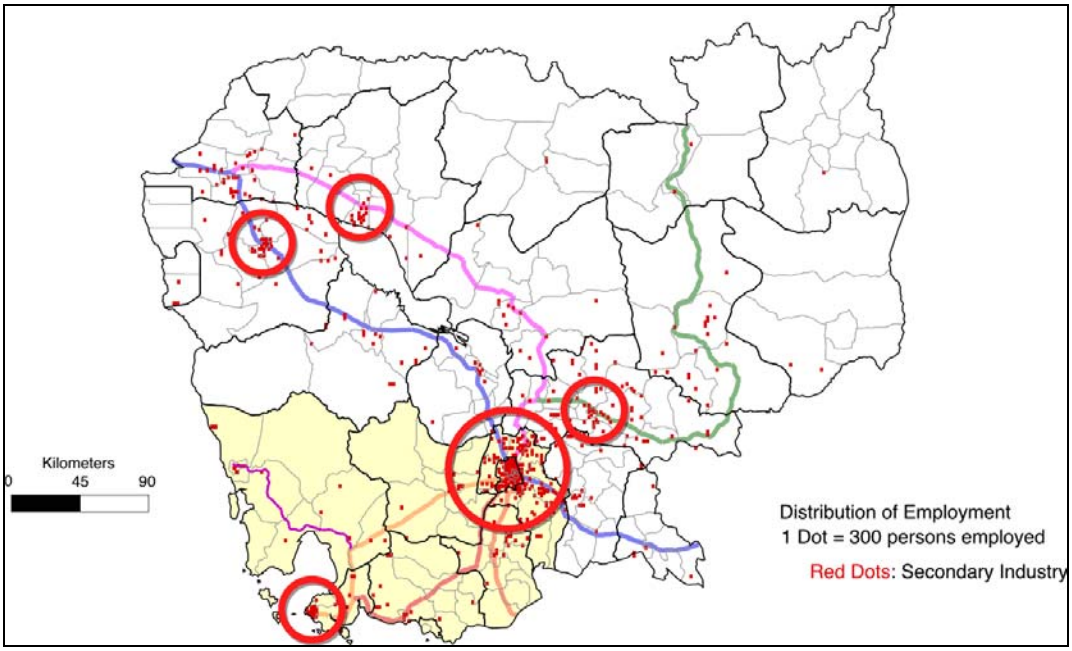


Figure B-3 Distribution of Secondary Industry Employment

B.3 REVIEW OF THE GOVERNMENT POLICY FOR INDUSTRIAL DEVELOPMENT FOR THE GROWTH CORRIDOR

(1) Policy Review

It is desirous that the industrial development strategies to be worked out for the Growth Corridor be in agreement with the Government policies for the national industrial development. The following industrial policies formulated by the Government were reviewed in this context.

- Promote labor-intensive industry

- Promote agribusiness
- Promote natural-resource-based industry
- Promote SMEs and micro enterprises
- Diversify export products
- Promote import substitution industry
- Establish industrial and export processing zones

1) Promote labor-intensive industry

With high unemployment rate and prevailing under-employment in the agriculture sector, employment generation is of vital importance for the economic development and social stability of the country. Promotion of the labor-intensive industry will contribute much to the meet this demand.

Cambodian labor is considered competitive with other countries with lower wage than that of the other ASEAN countries and therefore the products of the labor-intensive industry can be competitive in price.

"Promote labor-intensive industry" is, therefore considered as essential and implementable policy for the industrial development of the country.

2) Promote agribusiness

Cambodia needs food supply to support its 12 million population. At present, however, sizable amount of processed food is being imported, spending the precious hard currency. Cambodia is an agricultural country, producing cereals, fruits, vegetables and fishery products. If agro-processing industry and agribusiness can be developed, it will have advantages of being closely located to the raw materials as well as the market with lower transportation and storage costs. By substituting the imported processed food, agribusiness can contribute to the increase of foreign currency earnings. By transforming the agricultural products into preserved form of food, it can also contribute to solving the problem of seasonal fluctuation of food supply due to the lack of irrigation development.

"Promote agribusiness" is thus considered appropriate for the development of Cambodian industry.

3) Promote natural-resource-based industry

In order to develop the country's infrastructure and house building, construction materials and other mineral-resource-based products are needed. Currently, however, they are mostly imported including cement, tiles and metal products.

Though subject to verification by detailed mineral resource survey, Cambodia has the potential for certain mineral resources including lime stone, silica sand and gem stones.

If mineral-resource-based industry can be developed, it will enjoy the advantage of smaller transportation costs for the raw materials to the factories and products to the markets.

"Promote natural-resource-based industry" is, therefore considered as essential and implementable policy for the industrial development of the country.

4) Promote SMEs and micro enterprises

Though the scale of production of each SME and micro enterprise is quite limited, the number of the enterprises by far exceeds that of the large-scale enterprises. In terms of the production and employment, SMEs and micro enterprises claim certain share with about one seventh of the total production and about ?? in total employment. While the large enterprises are predominantly oriented to export market, SMEs and micro enterprises are providing their products to the domestic market with bigger share than that of the large enterprises. While the large enterprises are mostly foreign capital or its joint venture, SMEs and micro enterprises are domestic capital. There exists a gap between the wage level of the large and SMEs and micro enterprises which should be narrowed.

Promotion of SMEs and micro enterprises will bring about multiple benefits to the country including the production and employment generation, promotion of import substitution, bringing up the domestic capital and more equitable labor condition.

"Promote SMEs and micro enterprises" is, therefore considered as essential and implementable policy for the industrial development of the country.

5) Diversify export products

Considering the current trade balance and balance of payment, increasing the foreign exchange earnings is the prerequisite to the national economic development as is the case for the most of the developing countries, in particular non-oil/gas producing countries. At present, industrial sector is making the biggest contribution to the exports among all the sectors. Product-wise, garment is the giant, accounting for about 69% of the industrial commodity exports. Further, garment exports have very limited area and countries as its export markets, in particular USA. In short, strong dependency on a single product and limited number of markets makes the Cambodian exports vulnerable to the change of external environment and cast a gloom over the future exports of Cambodia.

Product-wise, Cambodia has the advantage of low level wage. Resource-wise, it has sizable agro-fishery products and there exists some potential to exploit mineral resource. Market-wise, Cambodia is a member of AFTA which offers the big market with 500 million population for the competitive products. Cambodia being a LDC, it is granted the special privilege of GSP and MFN/quota status by several countries/area.

"Diversify export products" is, therefore considered as essential and implementable policy for the industrial development of the country.

6) Promote import substitution industry

Cambodian import value was equivalent to 46.9 % of GDP whereas export value was 40.1 % of GDP, resulting in the large deficit in trade balance. Therefore import substitution is essential for the economic growth of the country as well as the export expansion.

Among these imported, some products fall under the labor-intensive type products. Some products are of low technology and low capital intensive and needed raw materials are available in the country, including processed food, some of mineral-resource-based products including ceramic tiles. With the efforts of the private sector as well as the Government sector, these imports seem to be able to be substituted by the domestically manufactured products.

"Promote import substitution industry" is, therefore considered as essential and implementable policy for the industrial development of the country.

7) Establish industrial and export processing zones

At present, neither the transport infrastructure nor industrial infrastructure including water, electricity and telecommunications are well developed. Institutional framework for providing quick, transparent and low cost procedures for getting permissions including those for imports and exports, is yet to be established. In order to develop the manufacturing industry and attract foreign investors, provision of the industrial zones well equipped with the infrastructures and quick and transparent services are essential.

Cambodia has promising sites for the industrial zone development. One is the Sihanoukville with an existing international port and new large port which is under construction. Another is the capital city of Phnom Penh with an international airport and with relatively well developed infrastructures. If these industrial zones are developed together with strong investment incentives, foreign investors will successfully be attracted.

"Establish industrial and export processing zones" is, therefore considered as essential and implementable policy for the industrial development of the country.

(2) Enhancement of Policy Framework

As reviewed above, the current Government policy framework is considered appropriate for the industrial development of the country in the coming years. However, some major issues are either lacking or not clearly stated. To further enhance the policy framework, it is advised that the followings points be taken into account.

i) Issue of smuggling and corruption should be clearly stated, which are the serious threats to the economic growth of the country.

ii) Phasing of policy implementation in time-frame and interrelationship/dependency among the policies should clearly be stated.

B.4 GOALS AND BASIC DEVELOPMENT STRATEGY FOR GROWTH CORRIDOR

B.4.1 Goals

Industrial development of Growth Corridor should assume the following two leading roles.

- Leading role in the overall development of Growth Corridor: Industrial development should be the major driving force for the regional development of the Growth Corridor.
- Leading role in the industrial development of Cambodia: Industrial development of Growth Corridor should lead the industrial development of the country as a whole. It should lead the national industrial development in terms of production value, employment generation, export, more advance technology, non-traditional and higher value-added products as well as upgraded institutional framework and well-facilitated industrial and free zones.

B.4.2 Sharing the Common Strategies for Cambodia

Industrial development of the Growth Corridor shares the common and similar strategies with that of the country as a whole due to the following reasons.

- Growth Corridor encompasses major production centers and key transport infrastructures as well as the typical rural area in Cambodia. Namely, Growth Corridor comprises the greater capital area consisting of the biggest production center of Phnom Penh with the international airport, rapidly growing Sihanoukville with the only country's international port, and the Intermediate area consisting of the typical agriculture-based provinces in the country.
- The presence of the Growth Corridor is dominating in the country with more than 90 % share of manufacturing production value in the national total while employment's share is about three fourths. Market is predominantly the export for the products of Growth Corridor and the country.
- Structures of the manufacturing sector of Growth Corridor and the country are also very similar. Namely garment is dominating for both with more than 80 % in terms of the gross output value. Small and micro enterprises by far outnumbers that of the large and medium but gross output value of the latter by far exceeds that of the former.

Under these conditions, industrial development strategies for Growth Corridor should be similar and applicable for the country.

B.4.3 Basic Development Strategy

At present, Growth Corridor as well as Cambodia as a whole is lacking most of the essential fundamentals for promoting industrial development by itself as follows.

- Domestic capital accumulation is very small and number of capable Cambodian entrepreneurs are also very limited. Namely, out of 10,009

enterprises which were in operation in Growth Corridor in 2001, 9,696 were small and micro enterprises that were mostly by domestic capital. However, their gross output value accounted for only 3.7 % of the total. Of 9,696, numbers of them are rice millers and in general the degree of manufacturing is of primary level. The remaining was by 313 enterprises of large to medium scale enterprises which were predominantly foreign or joint venture capital. Small and micro enterprises are completely oriented for the domestic market with 100 % sold in the country, having no export channel.

- Even in the case of joint ventures, the production is based on processing on commission and the required capital, market, specification and design of the product are brought by the foreign partners.
- Education and vocational facility are of low level. Quality of the Cambodian labor force is low with low education background and low level skills.
- Industrial infrastructure is not yet developed to meet the requirement of the investors, particularly the foreign.

Under the circumstances, the following basic strategy is recommended.

- Depends on the foreign direct investment. Upgrade the investment environment both in terms of infrastructure and legal and institutional framework.
- Make the best use of the advantages of the country and Growth Corridor, in particular cheap labor, domestic resources including agro-fishery products and mineral resource and the privilege given to Cambodia as a LDC, i.e., GSP, MFN/quota.
- Sustaining of the main stay industry of garment while diversifying the labor-intensive export products including footwear
- Utilize Cambodia's own domestic market by import substitution and strengthen the small and micro enterprises which are currently the major suppliers of the industrial products for the domestic market.
- Establish free zones, promotion zone and industrial zones which are equipped with upgraded infrastructure as well as one-stop service provision and stronger investment incentives. Non-traditional and higher value-added products should be produced mainly by the foreign investors to play role of the pioneer of the future advanced industrial perspective of the country and Growth Corridor.
- Make the utmost efforts for catching useful market information to find out nitch products. As an example, strong recycle demand of the advanced countries, particularly Japan, recycle industry should be promoted, making the best use of the international trading function of the Sihanoukville port.
- Toward the long-term development, accumulate know-how for production, quality control, management, marketing and others so that the Cambodian

entrepreneurs can run the business by their own capacity and accumulate domestic capital.

- Toward the long-term development, upgrade the fundamentals for industry, in particular rear the human resource and develop infrastructures.

(1) Sustaining of the Competitiveness of Apparel Industry

Apparel industry is the leading industry among the secondary industry in Cambodia, accounting for about 82% in the whole country both in term of the production and export values. The employment of the apparel industry numbers roughly at 232,000, accounting for 63% of the entire country. The industrial promotion measures in the country thus virtually equals to that of the apparel industry.

The export climate of the Cambodia's apparel industry is very difficult, as there are a number of strong competitors such as China, Bangladesh and India, which are competing for survival in the lower end of overseas market.

In Cambodia, the apparel industry was started by foreign investments from Hong Kong, Taiwan, Malaysia and others, following the Law of Investment enforced in 1994. All investors came to the country aiming at its competitive advantages including inexpensive labor, low land costs and the preferential conditions for export with a quota based on MFN status given by the United States and GSP by European Union and Japan. With GSP and quota application at the later stage as a turning point, the apparel export to the United States surged all at once. It became the engine for Cambodia's economy ever since.

One recent event that has significant effect on the business climate of the apparel industry is emergence of China with accession to WTO. Moreover, it is likely that the quota given by USA, which is the cutting edge for export to the United States, will be terminated around 2005. There is serious apprehension that this will weaken the Cambodia's apparel industry depriving competitive in the largest market and may threaten even its survival.

Although it is thus hard to draw an optimistic development strategy for the apparel, the following strategies consisting of three items are recommended for immediate consideration. The strategies aim at maintaining the current export level as much as possible in the short-term.

Maintenance of the Apparel Industry's Competitiveness

- To develop new markets and expand the existing markets other than USA.,
- To achieve technology improvement and thorough quality control, and
- To make the support system and foster human resources for achieving the above.

Roughly 80% of Cambodia's export is related to the quota and GSP, of which the apparel industry accounts for 95%, showing that the apparel export almost entirely relies on such preferential scheme. The short-term measure is "to develop GSP market in countries other than the United States to exploit a niche".

The primary trade partner of export based on preferential scheme is the United States, with an overwhelming share of 75%. This is more than five times of the total share of the European Union including the United Kingdom, Germany and France, ranked as the second to fourth. Should the export to US vanish due to dismantling of the quota, it would not be easy to compensate for the loss, although the implication is not clear. Considering the present Cambodia's ability, it would not practical to shift from the current lower end of the market to the higher one all at once. Active promotion is recommended for exporting to other regions.

Technology improvement and quality control are essential requirements for the survival and future shift to the value-added market. In the short-term, efforts should be made focusing on technological training for: to utilize in full new machines; and obtaining the knowledge and practical ability to shorten the lead-time of the new product manufacturing, rationalize manufacturing processes, and achieve quality control by grease stain, button holing, etc. Further, these activities should be continuously carried on.

"Local production of a part of the upstream material" is worth consideration since the country is importing a lot of upstream material for apparel production of the Medium However, the upstream industry is generally capital-intensive and governed by economy-of-scale. In addition, it includes some industries with a large environmental load. The upstream industry to be considered in the short-term should therefore be limited to the these which are not so much capital nor technology intensive and suitable for the small-scale production, such as the manufacture of liner.

(2) Diversification of Labor-Intensive Export Industry: Promotion of Footwear Industry

At present, apparel is dominating both in manufacturing production as well as in exports, not only among the industrial products but also among the all exports. Market-wise, apparel is largely depending on the quota given by USA which may end by the end of 2004. If apparel export decline sharply, it would have multiple adverse effects, in particular exports and employments. Diversification and promotion of export industry other than apparel is, therefore, urgent.

The shoemaking industry is considered to be prospective one, being very much labor-intensive and currently ranked next to the apparel, though its export value being only US$ 8 million, or one-fiftieth of the apparel's export value. Foreign investors enter into the Cambodia's shoemaking industry motivated by cheap labor costs and the quota under MFN to the bargain market in the European Union

Countries, similar to the case of the apparel industry. There are 15 shoemakers at the moment, mostly Taiwanese, Chinese of Taiwanese origin, and Malaysian.

In the short term, it should focus on improving technology and quality control ability to outgrow from the current low price level, typically a few dollars for a pair of shoes in the European and United States markets. Shoe sales largely depend on designing, which is a key element for higher value-added. Once the manufacturing technology reaches a certain level, the shoe design will make the key for sales promotion. Presently, as the Cambodian shoemakers still have ample room for technology improvement, so-called technical guidance inviting parent companies or outside experts mostly focus on quality control, but not on design.

Under such circumstances, it is recommended in the short term to upgrade technology for manufacturing as well as for quality control, and in the medium term to build up a designing capability. These measures indicate that human resources development is highly crucial in Cambodia.

It is generally said that the shoemaking industry circle is not very good at taking concerted actions even for only one issue like human resources development, due mainly to confidentiality related to designing and manufacturing. Nonetheless, it is recommended to cooperate between the government and private sector to implement consolidated training for the common issues such as basic technologies, quality control for middle-class employee, and safety management at the individual employee level.

In the long term, the shoemaking industry should change its GSP-driven structure in the same way as in the apparel industry.

Strategies for shoemaking industry promotion are summarized below.

Export Promotion of the Shoemaking Industry

- To improve manufacturing technology,
- To improve ability of production and quality control,
- To build up design ability,
- To develop market, and
- To foster human resources for achieving the above
- To collaborate among the shoemaking industrial circle and between the private and public sectors

(3) Promotion of Local-Resource-Based Industries: Agro-fishery Resource Based Industry

According to the import statistics for 2000, value of the imported agro-based commodities, mainly comprising processed food, accounted for about 4.2 % of the total import of the manufactured goods, while mineral products including ceramic

products and metal articles accounted for 5.9 % of the same. The largest market for the imported commodities were the capital area of Phnom Penh and Kandal province, population of which totaled about 2 million, or one sixth of the national total, with a relatively high per capita income.

The Intermediate is mainly based on agriculture, producing cereals, potatoes, beans, sugar cane and various kinds of fruits and vegetables. For certain products, the Growth Corridor Area accounts for a large share in the national total such as vegetables with 43.0 %, sugar cane with 48.9 % and banana with 52.6 %. Animal husbandry of cow, pig and poultry is another main stay of this area, catering to about one third meat of the demand of the country. Growth Corridor Area also produces fish meat of both inland and marine. Processed fish meat supply accounts for more than 40 % of the national demand while that of marine fish accounts almost all of the national demand.

Study Area has a sizable volume of agricultural production and proximity to the largest domestic market, and may thus become a supply center for the processed food of meat, fish, canned or dried fruits, vegetable oil and others, substituting or recapturing a part of the imported processed food.

Key components of the strategy should comprise:

Promotion of Local-Resource Based Industries for
Import Substitution and the Export Promotion

- To improve manufacturing technology,
- To improve ability of production and quality control,
- To build up design ability,
- To develop market, and
- To foster human resources for achieving the above
- To promote the industries exploiting the local resources, in particular agricultural products, which may be among the very limited number of the competitive factors besides labor.
- To substitute a part of the imported processed food to contribute to the improvement of trade imbalance of the country.

In the short-term, import substitution should be the main target while in the medium-to-long term, export should also be promoted.

(4) Promotion of Local-Resource-Based Industry: Mineral Resource Based Industry

Though no large-scale survey for mineral resource endowment has been carried out to date, small scale survey results as well as production records indicate that the

Study Area may be gifted with various kinds of mineral resources, including lime stone, phosphate, silica sand, gemstones , kaolin and building and construction materials and salt.

Depending on a full-scale mineral resource survey and assessment of international competitiveness in terms of quality and price, mineral-resource based industries may be developed for the production to substitute the imported products. Due to capital and technology intensive characteristics and world demand/supply situation, however, development of glass industry utilizing the silica sand resource and cement industry utilizing the lime stone resource are considered to be long-term perspective.

Key components of the strategy should comprise:

Promotion of Mineral - Resource Based Industry for Import Substitution

- To improve manufacturing technology,
- To improve ability of production and quality control,
- To build up design ability,
- To develop market, and
- To foster human resources for achieving the above

(5) Upgrading of Small and Micro Enterprises

Looking at the industrial structure of Cambodia, there exists the polarization of the enterprises. Namely, limited number of large and medium enterprises on one and numerous small and micro enterprises on the other hand. Most of the large enterprises are foreign capital, international joint ventures or state enterprises. Production facility as well as technology are relatively high. Overwhelming part of their production is apparel for export. Almost all of the requirements for industrial production are provided by the foreign capital as well as market channel.

Though small and micro enterprises are dominating in number, their contribution to the production is very limited, mainly engaged in food processing including rice milling based on traditional technology. Their market is predominantly the domestic except for wooden furniture. Almost all of these enterprises are owned by the domestic capital. They are seriously lacking most of the industrial requirements, in particular information, finance and capable human resources.

Fostering of SME is essential from the following viewpoints.

a) To help these small enterprises improve their productivity and competitiveness and raise the income level of the employees.

b) To rear the domestic capitals to contribute to the sustainable growth of industry.

Government support or guidance activities are considered to play an important role in the development process of SME. Policy should be directed to be supportive and not protective with minimum intervention, which is a preferred approach under the market mechanism in economic globalization.

As to the priority sector for SME, food and agro processing industry is considered to be suitable, which should be promoted for utilizing domestic products of agriculture and for substituting the imports. Specific strategies for the upgrading of small and micro enterprises are given hereunder.

- Promote further activation of the existing financial support facility including Mekong Project Development Facility.
- Provide the assistance to the application for loans.
- Introduce financial statement, accounting and book keeping standards for SME.
- Provide support to get access for needed information about technology and marketing.
- Assist the formation of business association/network in the industrial sub-sectors and circles as a vehicle for exchange of technology, information, procurement of inputs and marketing.
- Foster the nurturing of the managers and marketing experts.
- Promote the capacity building of middle class government officials concerned with SME upgrading in terms of technology, management and marketing.
- Promotion of the business seeds research and business incubation.
- In order to play the leading role in bringing the above strategies into actions, establish a body jointly formed by the government and the private sectors.

(6) Diversification of Export Industry and Promotion of High Value-Added Industry through Free Zone and Promotion Zone

While the neighboring countries including Thailand and Vietnam, have been actively developing the industrial estates mainly to provide attractive infrastructures and services to the foreign investors, very little has been done in Cambodia including Growth Corridor. Basic infrastructures including electricity, water supply and telecommunications are also inadequate and costly, electricity charge being about triple and telecommunication charge about one half of the competing neighboring countries.

To promote the foreign investment and upgrading the existing industries as well as exports, provision of well-facilitated industrial estates and free zones/promotion zones are indispensable. In Growth Corridor, Sihanoukville and Phnom Penh should be placed the first priority, considering the international trading port and international airport. In particular, free zone should be established providing good infrastructures and services as well as special investment incentives. FZ should,

making the full use of the foreign investors, spearhead the modernization and diversification of the industries to non-traditional type industries as well as raising the value-added of the products and strengthening the exports. Assembly and manufacturing of the parts of the machinery should be typical high-value added industry to be located. With strong import/export functions, recycle industry should also be promoted by importing the used and producing the reclaimed products.

Details of the investment environment to be provided through Sihanoukville FZ are given in Appendix E and F.

(7) Promotion of Recycling Industry

A large volume of used machinery, particularly automobiles, are disposed or discarded in the advanced countries, in particularly Japan. The volume of solid waste is increasing year by year while the capacity of disposal is limited, threatening the clean environment. The used machinery would have values if selection, tuning and extraction of usable parts could be carried out properly and effectively.

Cambodia, in particular Growth Corridor, can meet the demand by receiving the used machinery and automobiles by establishing the recycle industry. With the import and export functions with quick and transparent service for required procedures, the planned FZ to be constructed in Sihanoukville will provide the best place to establish this new industry. The recycle industry should include tuning and reassembling of machinery and displaying and sales of re-tuned machinery and selected usable parts.

Consideration needs to be made to adopt an environmentally safe and friendly method in dealing with the used machinery. Besides employment generation and foreign exchange earnings, this industry would bring about the following beneficial effects.

- Contribute to the mitigation of the global environmental problem
- Train the mechanics and technicians through tuning and reassembling of the used machinery.

If successfully managed with strenuous marketing efforts, Sihanoukville FZ could become the Indochina gateway of the tuning and recycling industry of the used machinery.

B.5 AREA SPECIFIC STRATEGIES FOR MANUFACTURING INDUSTRY FOR GROWTH CORRIDOR

(1) Development Image of Manufacturing Industry for Growth Corridor

The Growth Corridor Area is composed of three distinctive sub-areas, with different characteristics. Considering the characteristics of each sub-area as well as the future projects relevant to the industrial development in Growth Corridor including infrastructure projects and industrial and free zone projects, industrial development strategies were formulated for each sub-area with development phases as summarized in **Table B-17** below.

Table B-17 Area-Specific Strategies for Industrial Development for Growth Corridor

Sub-Area	Present (2002)	Short-term (Up to 2008)	Medium to Long Term (Up to 2015)
Greater Capital Area	• Apparel and footwear (labor intensive industries)	• Sustaining the apparel industry • Development of agro-fishery based processing industry • Development of urban type industry including printing • Airport based industry (high value added, labor intensive industry) • High value-added industry including electric appliance /transportation machinery assembly	• Upgrading and raising the value-added of the developed products • Development of IT industry • Strengthening of the airport based industry
Sihanouk-ville Area	• Apparel and footwear (labor intensive industries) • Beverage production • Marine products processing	• Development of agro- fishery based processing industry • Port based industry (Garment; used machinery reuse; light manufacturing) • Enlargement of beverage • Port-oriented industry (ship repair; boat building) • Non-traditional and high value-added industry including electric appliance /transportation machinery assembly	• Development of agro- fishery processing industry • Development of import substitution industries • Enlargement of used machinery reuse and recycling • Export of beverage products
Inter-mediate Area	• Cottage and handicraft industry	• Modernization of cottage industry • Agro-fishery processing	• Further improvement of agro-fishery processing for export

(2) Greater Capital Area

Greater Capital sub-area is characterized with two distinctive features: Biggest urban area/biggest domestic market and center for production and export facilitated with relatively well developed industrial infrastructure and industrial accumulation as well as transport infrastructure. Another characteristics of this area is the central location of East-West corridor (Bangkok - Phnom Penh – Ho Chi Minh).

The appropriate types of industries to be located in the Greater Capital sub-area comprises:

- Apparel industry which in the long-term should be upgraded to the higher value-added and medium-level-priced industry
- Daily consumer products and urban type industry including printing
- Agro-fishery processing for import substitution as well as for export
- Higher value-added categories including the assembly industry for electrical and transport machinery
- Airport based industry (high value-added, labor intensive)

- Information industry including software in the medium-to-long term

Apparel industry should continue to be located and upgraded in terms of quality and design as well as price competitiveness without privileges of GSP/MFN with higher value-added products. Import substitution type industries should be developed to meet the demand of the biggest domestic market of the Greater Capital sub-area. Urban type industry should be included among these. Agro-fishery based processing industry should be strengthened for import substitution as well as for export.

Having the universities and research institutes and relatively well-developed infrastructure and industrial accumulation as well as better human resource, high value-added industry of machinery assembly should be located which should start in the short-term and strengthened in the medium-to-long term. In the medium-to-long term, information industry including software can be developed and located in this sub-area.

Utilizing the international airport in Phnom Penh, airport-based industries for high value-added and labor intensive products should be started in the short-term and fully developed in the medium-to-long term. Industry for electronic device parts and high quality and order-made garment should among these. Aiming at rearing the airport-based industries, it is recommendable to establish an EPZ near the international airport.

(3) Intermediate Area

The Intermediate Area comprises the 4 provinces of Takeo, Kampot, Koh Kong and Kampong Speu. Industrial development strategy for this area is given hereunder by province.

1) Takeo Province

At present, there exists no manufacturing industry except for small-scale daily food processing industry to meet only the local demand. Since this area is richly cultivated producing agricultural products and breeding livestock, agro processing industry and animal feed production are recommendable.

In this area, silk used to be produced from rearing silkworms and reeling silk off cocoons up to weaving and is still being produced in the form of cottage industry, it is recommended to restore it. Prospective silk products include cloths including summer sweaters and hand-made silk products of Khmer tradition for foreign tourists.

Though silica sand is presumed to be endowed in the province, its utilization for glass industry is subject to further study considering its capital and technology intensive characteristics.

2) Kampot Province

Though not in big scale, the fishery processing industry is in operation and can be prospective for future expansion. Marine fishery is more varied in kinds of fish than inland water fishery and provide larger variety of processed products and frozen prepared foods.

Besides the fish processing industry, agro processing industry is also prospective for this province.

There exists lime stone resource in this province and some trials were made to produce cement, though not successful. Though not prospective in the short-term due to excess production capacity in the world, cement industry may worth consideration in the long-term perspective. Phosphate resource is presumed to be endowed in the province. However, its utilization for producing fertilizer is also subject to detailed study.

3) Kampong Speu Province

Being neighboring capital area, Kampong Speu Province has a suitable location for the food industry including agro processing products including meat preparation and fishery based products. If large-scale farming and livestock breeding are realized utilizing hilly terrain, this area has a possibility of locating the relatively large-scale food industry including dairy industry.

In addition to food, the area has a location potential for supplying building and construction material to the capital area. Currently, tapioca is grown with a plan for expansion, tapioca starch based industry such as glue production can be prospective. Though phosphate resource is presumed to be endowed in the province, its utilization for producing fertilizer is subject to detailed study.

4) Kaoh Kong Province

Large part of Kaoh Kong Province has a handicapped location far from the country's trunk road network due to geographical constrains. Being located in the mountain area, population of Kaoh Kong Province is small. Advantage is the close proximity to the neighboring Thailand.

Industrial location in this province should be considered based on local resource utilization and sharing the national boarder with Thailand. Available local resources are: fishery commodities, fruits, salt pan, clay, etc. If the existing fishing port should be improved, it is possible to develop fishery resource based industry.

Currently, a EPZ is planned to be established in the Kaoh Kong town. If this is materialized, labor intensive and export oriented industry will be developed together with fishery resource based industry.

Though silica sand is presumed to be endowed in the province, its utilization for glass industry is subject to further study considering its capital and technology intensive characteristics.

(4) Sihanoukville Area

Sihanoukville is the only international trade port in Cambodia, which is integrated into a container traffic network even though it is feeder container ship lane. Most of apparel that is the main export commodity is exported from this port to the United States and the European Union Countries via Singapore. In the same time, most of raw materials are imported from China, Taiwan, and other countries through this port, and delivered to apparel factories in Phnom Penh, Kandal, etc., as well as Sihanoukville.

The port of Sihanoukville has a fishing harbor that is the largest in the country in terms of gross receipt. Industries of processing marine fishery such as mackerel and surdine are located in the area. It is expected that the industrial potential be increased by improving fishery infrastructure including the fishing port, cold storage and distribution system. As a large-scale factory of beer and beverage is located in the area, the similar factories have a possibility of locating in this area subject to growth of the domestic market. In addition, the area has a possibility of locating the manufacture of tapioca as well as palm oil used for soap production. Though silica sand is presumed to be endowed in the province, its utilization for glass industry is subject to further study considering its capital and technology intensive characteristics.

Making the best use of its international trading port, it is recommended to establish a Free Zone and Promotion Zone with adequate infrastructure and one-stop service for various procedures as well as strong investment incentives. FZ should produce non-traditional and higher value-added export products while PZ should produce export and partially import substitution oriented products of tradition type. Details are given not in this appendix but Appendix I and others.

B.6 PROSPECTIVE CATEGORIES FOR THE MANUFACTURING INDUSTRY FOR GROWTH CORRIDOR

B.6.1 Selection Criteria for the Prospective Industrial Categories

(1) Prerequisites for Industrial Categories Selection

In order to formulate a criteria for industrial category selection, the considerations were given to the followings.

(a) To follow the industrial development strategies of this Study which have been worked out paying due attention to the Government policies for the industrial development for the country including the Growth Corridor Namely:

- Sustaining and Enhancing the Competitiveness of Garment Industry
- Diversification of Labor-intensive Export Industry: Promotion of Footwear Industry
- Promotion of the Local Resource Based Industry: Agro-fishery Resource Based Industry

- Promotion of the Local Resource Based Industry: Mineral Resource Based Industry
- Recapturing of Domestic Market and Upgrading of Small and Micro Enterprises
- Diversification of Export Industry and Promotion of Higher Value-Added Industry through Free Zone and Promotion Zone with Active Participation of FDI
- Promotion of Recycling Industry
- Upgrading of Marketing Capacity and Upgrading of Food Processing Industry

(b) To make the best use of the comparative advantages of Cambodia and Growth Corridor, including:

- Low wage level of the labor
- Local resource endowment of agricultural products, forestry products, fishery products and mineral resource.
- Special privileges of GSP and MFN status

(c) To minimize the disadvantages of Cambodia and Growth Corridor, including:

- Underdeveloped and high user charge infrastructures, in particular electricity and energy supply.
- Poor accumulation of domestic capital
- Industrial structure depending on the low technology and lack of qualified human resources in the industrial sector at all the levels including entrepreneurs, managers and labor.

(d) To minimize the adverse effect on the environment

(e) To pay attention to those factors which would affect the industrial development, either positively or adversely including:

- Information with regard to the demand and potential markets for the Cambodian products
- Existence of monopoly or oligopoly of particular products in the world which would hinder the market entrance of Cambodian products
- Current situation of demand-supply balance for particular products in the world

With regard to the offshore gas field development within Cambodian territory in the Gulf of Thailand, an appraisal exploration is expected to start from December 2002. It is reported that roughly two years would be taken for obtaining the appraisal results. As the gas field development has many unknown factors at this stage, it is excluded from the industrial category selection work. The procedure of industrial category selection is schematically shown on **Figure B-4**.

(2) Methodology for Industrial Category Selection

1) Selection Process

The selection process of the prospective industrial categories of the Industry for Growth Corridor comprises the following three steps.

(i) To determine the industrial classification

(ii) To determine the attributes, indices and criteria for primary selection

(iii) To determine the attributes, indices and criteria for secondary selection

The indices for primary selection are quantitative and primary selection was done quantitatively while the secondary selection was done in relatively qualitative manner.

The selection process is illustrated below. Though it is desirous that the intention of the potential investors to Cambodia, in particular Growth Corridor, be confirmed to raise the accuracy of category selection, no survey was carried out at this master plan stage.

1. "Determine attributes for the secondary selection: Addition and deletion"

Attibutes
Addition: Positive Attributes
• Local resources utilization including agro-forestry and fishery products and mineral resources • Possibility of import substitution • Special privileges including GSP and MFN statuses • Positive market information including the demand for recycle industry in the advanced countries, in particular Japan. • Categories to be located in Free Zone and Promotion Zone
Deletion: Negative Attributes
• Capital intensive • Technology intensive • Negative market information including the difficulty of market entrance due to monopoly/oligopoly and excess supply capacity in the world

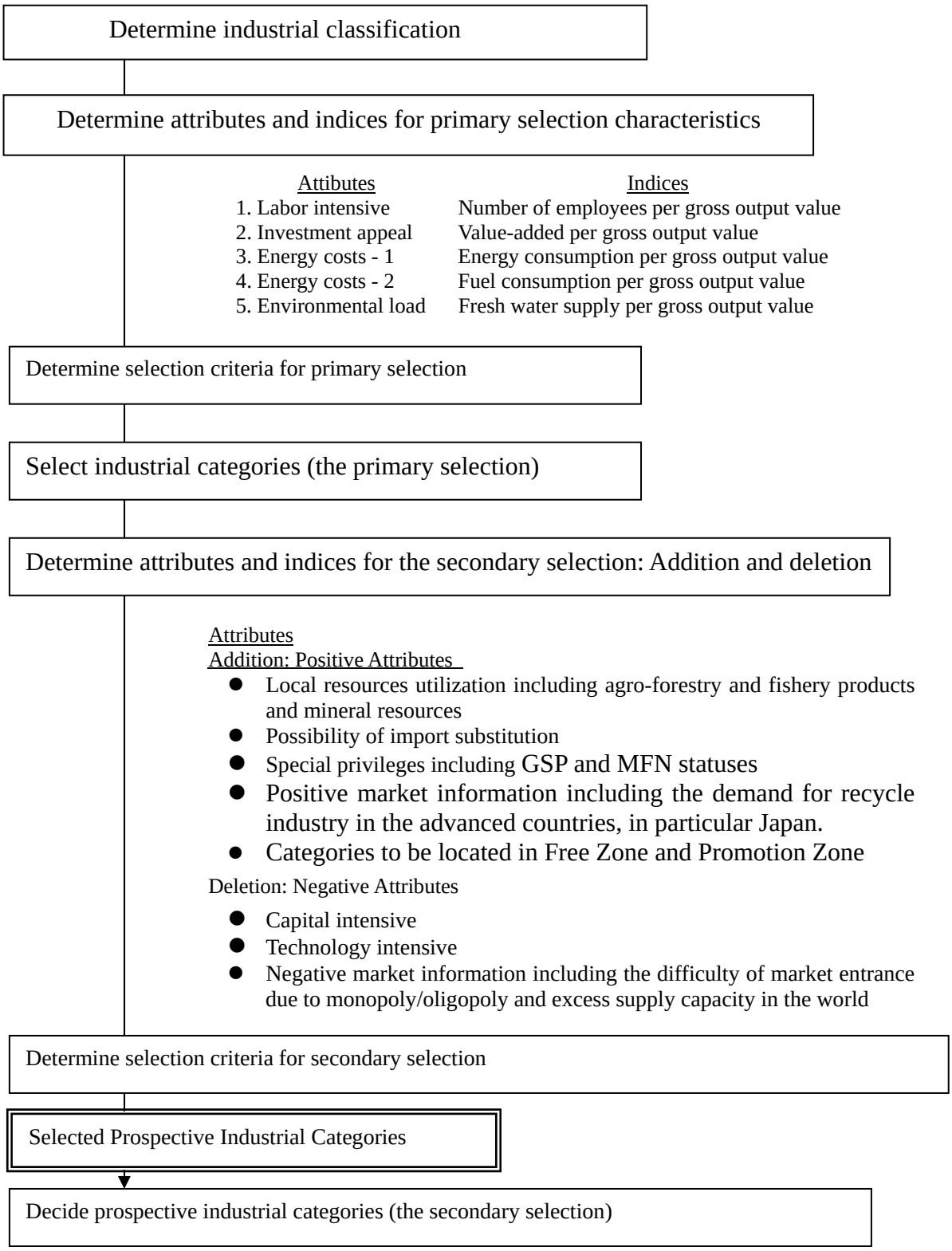


Figure B-4 Selection Process for Prospective Industrial Categories Selection Flow Diagram

2) Adopting Industrial Classification

It is necessary to determine how fine industrial classification should be for the selection of the prospective industrial categories. The industrial categories thus classified are assessed by comparing the basic units such as the number of employee, value-added, electric power consumption, water consumption per unit.

It is preferable that classification for the study be in accordance with the International Standard Industry Classification (ISIC). However, the basic unit data under this classification is available only for few countries and not for Cambodia. Though different from ISIC, i.e., Japanese Standard Industrial Classification, Japan has very detailed database for the basic unit data under fine classification. Fine classification under Japanese Standard Industrial Classification is consequently applied in this study by which industrial categories were selected. The fine classification is very much detailed, classifying the industry into 708 categories. Structure of the Japanese Standard Industrial Classification is to some extent different from ISIC but shares the similar structure and selected categories under fine classification can be referred to the categories under ISIC.

3) Criteria for the Primary Selection

Numerical indices were set for the 5 adopted attributes adopted for the primary selection based on the Japanese data under fine classification. As the index for the labor-intensive industry, the number of employees per gross output value is adopted. The value-added per gross output value is adopted as the index for the investment appeal of the category. The indices for low energy consumption are the electricity consumption cost and energy consumption cost per gross output value. Fresh water supply cost per gross output value, which is closely related to the waste water discharge volume and the treatment cost, was adopted as the index for measuring the environmental attribute of the category.

Based on these indices, attributes of the categories were assessed at 4 levels based on the average figures of Japanese enterprises by category. Namely, the most desirous level is given 4 points, second 3, third 2 and lowest 1 point. In the case of the positive attributes of “Labor intensive” and “Investment appeal”, assessment was made as follows.

- 4 points: More than 1.5 times of the Japanese average
- 3 points: 1 to 1.5 times of the Japanese average
- 2 points: 0.5 to 1 times of the Japanese average
- 1 point: Less than 0.5 times of the Japanese average

In the case of negative attributes of energy cost and environmental load, assessment was made as follows.

- 4 point: Less than 0.5 times of the Japanese average
- 3 points: 0.5 to 1 times of the Japanese average

- 2 points: 1 to 1.5 times of the Japanese average
- 1 point: More than 1.5 times of the Japanese average

4) Criteria for the Secondary Selection

In the secondary selection, categories were either added or deleted from the selected in the primary selection if they meet the following attributes.

Addition: Positive Attributes

- Local resources utilization including agro-forestry and fishery products and mineral resources
- Possibility of import substitution
- Special privileges including GSP and MFN statuses
- Positive market information including the demand for recycle industry in the advanced countries, in particular Japan.
- Categories to be located in Free Zone and Promotion Zone

Deletion: Negative Attributes

- Capital intensive
- Technology intensive
- Negative market information including the difficulty of market entrance due to monopoly/oligopoly and excess supply capacity in the world

As the indices for the secondary selection are not necessarily numerical, it is difficult to make uniform assessment as done in the primary selection. As for the agriculture and fishery resources utilization, the selection was made based on the area-wise statistical data on product items and production volume as well as the enterprise interview survey results. As for mineral resource utilization, the selection work was carried out using the map of deposits and current production data. Possibility of import substitution was assessed from the import statistics including the share and value of import items as well as the interviews to the related enterprises.

Utilization of the GSP status of Cambodia as LDC was one of the advantages of the country and added among the positive attributes. One effective approach for GSP utilization is to attract the foreign investors from the countries which have already graduated from GSP status for particular industrial categories/products, so called "GSP Graduation Items". Considering the trade and investment relationship with Cambodia, Thai investors are considered as the most appropriate ones to make investment in Cambodia for "GSP Graduation Items." The list of the Thai graduation items which are considered to be appropriate for Cambodia is given in **Table B-18**.

Special consideration was made for the categories to be located in the planned Free Zone and Promotion Zone, in particular Free Zone. The investment environment for the zone is very much different from the other area of Growth Corridor, being provided with well-developed infrastructures, one-stop service, strong investment incentives for FDI, etc. Therefore, categories under high value-added,

non-traditional and to some degree technology and capital intensive ones are included in the categories to be located. These are, therefore, added to the list of prospective categories on the condition that they should be located in the zone.

Table B-18 List of GSP Graduation Items of Thailand with Potential of Relocation to Cambodia

HTS Code /Description	Year of Revoke	Tariff: General / GSP・MFN rates	Relevant Cambodian Resource
4015.11.00 Surgical and Medical Rubber Gloves	1997	0.7% / 0%	Rubber
4016.99.30 Articles of Vulcanized Natural Rubber used for Vehicles	1991	0.8% / 0%	Rubber
6908.10.20 Glazed Ceramic Tiles	1989	16% / 13%	Silica
7113.11.50 Silver Jewelry over $18 per dozen pieces or parts	1997	5.3% / 5.0%	Craft-manship
7116.20.05 Jewelry of Precious/ Simi-Precious -Stones, over $40/pies	1988	3.9% / 3.3%	Gem- stone
7116.20.15 Jewelry of Precious/ Simi-Precious -Stones, over $40/pies	1988	6.5% / 6.5%	Gem- stone
8471.49.29 ADP Machine Displays, part of System, with CRTs over 30.50	1994	0.5% / 0%	Labor
8516.50.00 Microwave Ovens	1997	2.4% / 2.0%	Labor
8517.21.00 Facsimile Machines	1995	2.4% / 0%	Labor
8521.10.60 Video Cassette Recorders/ Players, Color w/o TV Tuner magnetic tape-type, other	1990	0.8% / 0%	Labor
8528.12.16 Non-high Definition Color Television not exceeding 33.02 cm VCRs, other	1998	3.9% / 3.9%	Labor
8534.00.00 Printed Circuits, without elements fitted thereon	1998	1.9% / 0%	Labor
8544.30.00 Ignition Wiring Sets for vehicles, Ships & Aircrafts	1994	5% / 5%	Labor
9009.12.00 Electric Photocopying Apparatus, with Indirect Process	1995	3.7% / 3.7%	Labor
9405.30.00 Lighting Sets for Christmas Trees	1990	8% / 8%	Labor

B.6.2 Selected Prospective Industrial Categories and Their Characteristics

Through the primary and secondary selection process, prospective industrial categories were selected for Growth Corridor except those to be located in FZ and PZ, as given in **Tables B-19**. In total, about 8 categories under fine classification were selected as prospective industrial categories. Selected categories for SPZ(FZ and PZ) are given in **Table B-20**.

Characteristics of selected categories and the status of industries are given hereunder.

(1) Food and Beverage

Prospective industrial categories in the food and beverage industry are: processed agricultural and fishery products; preserved food such as canned and bottled one; prepared frozen food; and livestock products such as ham, sausage and dairy products.

The food industry mostly locates where the raw material is available and is categorized as the local resource utilization type. However, a proximity to the market, or the market access, is considered as the important factor in many cases of prepared frozen food and junk food. Getting raw material is important factor for the food industry, and sometimes freezer and refrigerating facility are needed.

It should be noted that the dairy product industry is rather capital-intensive for maintaining quality, costs, market, etc., in addition to the needs for the stable supply and facilities for collecting raw materials. Therefore, in case of new business creation, it is necessary to aim at the development of time-conscious and functional products, for example, those appealing to the nature and safety.

Fish sauce is a typical processed fishery product in Cambodia. Fish sauce has been exported to Thailand with the volume of about 1,700 ton per year and got good reputation there. Therefore, Fish sauce is considered to have the development potential as a local industry.

(2) Animal Feed

It is getting increasingly important to supply feedstuff that warrants adequate quality and safety as the raw materials for meat and dairy production. In Japan, feedstuff is generally produced from the imported raw materials including corn, rye, bean cake, cornstarch, molasses, and many other materials in the large-scale facilities in the receiving area. It is difficult to introduce such feedstuff production into Cambodia right away, as there is not a large-scale cattle breezing there. However, if the country plans to develop livestock and dairy products as the future industry, it is recommended to start firstly developing the feedstuff industry.

Producers and consumers are getting more and more cautious to the use of animal-based feed due to the epidemic, in particular BSE (Bovine Spongiform Encephalopathy) or the mad cow disease. Considering this, it is worthy of consideration for introducing “Cambodian safe brand feedstuff” produced from locally available organic materials such as maize, molasses, rice bran, and cassava starch. For the time being, it should be armed with the experience from the small-scale practices, and develop local needs first.

(3) Textile and Apparel

Both the textile and apparel industries are labor-intensive. In addition, the textile industry typifies the capital-intensive and economy-of-scale oriented industry. It needs relatively large infrastructure of water supply, electric power supply, technology, etc.

For example, the daily fresh water supply to one spinning factory amounts to 2,333 ton, and to one dye-work amounts to 1,777 ton on the average in Japan. About same amount of wastewater as fresh water supply is disposed of from these factories. In particular, the dye-work generates wastewater from the manufacturing process where a large amount of chemicals are used, requiring adequate wastewater treatment

facilities. The dye industry would generate a high environment load if not properly managed.

It may be worth consideration to develop upstream industry of the main stay apparel industry as Cambodia is mostly relying on China for the raw material supply. However, it is necessary to select fields of the upstream industry prudently, even the upstream is wide because the upstream industry is more capital intensive and less labor intensive relative to the apparel.

It is often said that the apparel market will grow by up-market and multi-product marketing strategy. In the past, important location factors of the apparel industry were limited to labor force, transportation, and information but currently human resources with abilities of design and marketing additionally are added. The high-value-added apparel products are apt to come to the urban area at large. However, these changes of the apparel industry are mainly observed in advanced countries, where the industry has quite different location factor from those in China, Bangladesh, and Cambodia, even though only the labor force is considered.

The Cambodia's apparel industry will lose its advantage in the export market in the future if it continues to depend only on cheap labor and GSP and MFN benefits. For the up-keeping and development of the apparel industry for the future, it is essential to cultivate individual labor's ability; to upgrade the design and marketing capacity; and to improve information infrastructure and marketing capacity.

(4) Pulp and Paper

Although the category title is "Pulp and Paper", prospective products for Cambodia and Growth Corridor are not pulp and paper manufacturing but the converted paper and paper ware. In the category of converted paper, corrugated fiberboard has been selected as prospective industrial category; while in the category of paper ware, school and office paper ware as well as daily necessaries have been selected. In addition, there is a possibility of paper container as promising category.

These products are manufactured from raw material by processing and cutting, and have location factor of the market proximity. Sihanoukville and the Greater Capital area are expected to become significant markets for paper for packing and cushioning materials subject to the establishment of SPZ.

(5) Ceramic, Clay and Stone

This group includes building materials and electric machine's parts mainly for insulation and tiles for roofs and walls. In most cases, raw materials and products have relatively heavy weight and large volume. Therefore, industrial categories of the group have location factors of either raw-material-oriented or market-oriented of which raw-material-oriented is usually more prevailing. They sometimes locate in the area with a good access such as port districts.

The manufacture of concrete secondary products often locate in the outer city area slightly away from large cities, as they do not favor a long-distance transportation

and require a certain size of land. In the case of developing countries, micro-enterprises of brick and roof tile are often scattered in the rural area where they have market.

The manufacture of cement, which is characterized as raw-material-oriented industry, is often located in the rural area, as the raw materials exist in relatively many places. A large amount of fuel is needed for manufacturing cement. The number of cement factories utilizing industrial waste such as scrap tire for substitute fuel are increasing in Japan and other countries. Generally affected by economic climate, the cement industry always has an excess supply capacity over demand. It is considered difficult to develop the cement industry in the short-term in Cambodia, as Japanese and French enterprises are competing in making business groups with global linkage in East Asia.

The glass industry is completely capital-intensive and technology-intensive. Industrial and building glass is an oligopoly industry in the global market. However, in terms of glass for small container, tableware and craftwork, there are many examples of small-scale production. Silica sand, raw material of glass, exists in relatively many places in Growth Corridor. It is also possible to make glass from scrap-glass and scrap-bottles if sufficient production volume is secured. Though currently not existent in Cambodia, the glass industry can be a prospective industry if proper products are selected.

(6) Metal

Metal products have a huge variety of fields including those relevant to various machines, container manufacturing, construction materials, etc. This industrial category mostly locates in the place where a certain scale of industrial accumulation is formed.

High value of the location factor is attached to: proximity to the industrial accumulation and customers; traffic access to the industrial accumulation and customers; land acquisition; and labor acquisition. The possible industrial categories belonging to metal group are building materials and metal containers for fishery and agriculture processing. For the categories related to machines such as press and powder metallurgy, the early industrial location is difficult. However, some categories that require only low-grade technology have a possibility to locate, subject to industrial accumulation is formed as in Phnom Penh area and Sihanoukville SPZ.

(7) Machinery

The machinery industry includes general machine, electric machinery, transportation machinery and precise machinery, being called as the metal processing type industry. The principal location factors are generally: land, water supply, traffic access, labor force, and industrial accumulation. These location factors are nothing but those calling for the infrastructure preparation on the site. The labor force is not satisfied

with unskilled labor, as the machine industry often includes so-called the high technology industry. In addition, it has location factors such as university of science and technology, testing and research institute, technocrat, and skilled labor.

The machinery industry in general is deemed hard to locate in Cambodia in the short-term from the above-mentioned point of view, but some particular kinds of products may have possibility. For example, the future development of agriculture will increase the demand for small pumps, small electric-generators, and small engines. If it is not possible to manufacture the completed goods from the beginning, there is a way of beginning with knockdown or semi-knockdown, although this method sometimes requires extra costs for packaging parts for transportation.

For the group of electric machinery, the prospective categories are considered as follows: assembling wire harness for automobile, wiring accessories, switch, relay, connector, and printed circuits. The wiring harness is highly labor-intensive one. As Laem Chabang in Thailand is evolved as the automobile-manufacturing base, it is hoped that Cambodia takes propagation effect from there.

(8) Others

In addition to the major categories broadly viewed above, the prospective industrial categories may include: galvanized iron sheet that is one of the basic material, steel cutlery for SPZ construction, and repairing parts.

From viewpoints of local resource utilization, the possible categories are: the manufacture of gelatin, i.e. hide glue used for adhesive from crushed cattle bone; and the manufacture of sand paper by attaching abrasive. Taking no account of cost problems, the possible categories also include the manufacture of so-called eco-material from cassava starch for agricultural sheet, food preservation bag, garbage bag, dishware, packaging and cushioning materials, and seedling pot.

In terms of reuse that is noticeable in the recycle-oriented society, the prospective category is the manufacture of so-called retreated tire. It is produced from the second hand or used tire imported from the advanced countries such as Japan who have large stock, by replacing wheel track and reheating.

In addition, the following categories are deemed as prospective ones: button, ribbon and collar stay relevant to the apparel industry; wig, which is considerably labor-intensive but needs a certain level of technology, can be located in rural areas; sports goods including soccer ball which is being exported from Cambodia; and Hallel-food for Muslim in Malaysia and other countries.

Table B-19 Prospective Industrial Categories (1/2)

Medium Classification	Minor Classification	Fine Classification	
		(Target Year: 2008)	(Target Year: After 2008)
Food	Livestock products	Meet products (ham and sausage)	Dairy products
	Processed fishery products	Canned and bottled fishery products	
		Fish meat sausage	
	Preserved agricultural products	Canned and bottled agricultural products	Frozen agricultural products
	Bread and cake	Bread, cake, and biscuit	
	Others	Prepared food	Prepared frozen food
Beverage and feed	Carbonated drink	Carbonated drink	
	Alcoholic beverage		Fruits wine
	Feedstuff	Compound animal feed	Organic feed
Textile	Cloth		Cloth (liner, etc)
	Lace		Lace
	Embroidery		Embroidery, and fancy sewing
	Net making and net		Net making
Apparel	Woven garment	Men's wear, ladies' wear, and sports wear	
	Knitwear		Outer garment, shirt, infant's wear, and corrective orthosis
	Others	Clothing ornament, and swag, *necktie, handkerchief, gloves*	
Wooden products	*Plywood, architecture*	*Wooden container*	
Furniture	*Furniture*	*Wooden furniture*	
Pulp and paper	Converted paper		Corrugated fiberboard
	Paper ware	Paper daily necessaries, and school paper ware	
	Paper container		Brown wrapping paper, paper bag, and corrugated fiberboard container
Publication and printing	Printing	*Bookbinding, making-up*	Printing (Contracted work)
Chemical	Fat and fatty oil processing	Soap, *paint, ink*	
	Others	Pyrethrum coil and flypaper	Gelatin and adhesive
Plastics	*Plastic sheet*	*Plastic connector*	
	Reinforced plastics	*Reinforced plastic container*	
	Plastic formation material	*Reclamation plastic*	
	Others	Convenience goods and container	
Rubber	Footwear	Plastic and rubber footwear, *rubber hose*	
	Rubber hose	Rubber hose	
	Others		Rubber-coated cloth and retreated tire
Leather	Footwear	Footwear	
	Glove		
	Others		Bag and hand-bag

Table B-19 Prospective Industrial Categories (2/2)

Medium Classification	Minor Classification	Fine Classification	
		(Target Year: 2008)	(Target Year: After 2008)
Ceramic, clay and stone	Glass container		Scrap bottle and drink container
	Cement		Cement
	Concrete	Concrete secondary product	
	Building clay product	Brick	Fire brick and clay pipe
	Ceramic ware		Sanitary ceramic ware, electric ceramic ware, tile, table, and kitchen ceramic ware
	Grinding material	*Grindstone*	
	Aggregate	*Mason*	
Iron and steel	Surface treatment	Galvanized iron sheet	
	Others		Steel cutting and scrap iron processing
Metal	Tin can		Tin can
	Table ware / cutlery		Table ware / cutlery
	Plate working and sheet metal processing		Plate working and sheet metal processing
	Architecture metals	*Architecture and construction metals*	
	Metal press	*Metal press*	
	Nail	*Nail*	
	Bolt and nut	*Bolt and nut*	
General machine	Pump		Small pump (SNK)
	Electric generator		Small electric generator (SNK)
	Engine		Small engine (SNK)
	Agricultural machinery		*Agricultural machinery*
Electric machine	*Generator and* wiring accessories		*Small generator*, wiring accessories and their attachment
	Electrical components		Wire harness
	Electric bulb and lighting fixture		Electric bulb and lighting fixture
Electric machine	Electronic parts		Connector, switch, relay, and printed circuits
Transportation machinery	Automobile and its parts		Motor bike assembling and its parts fabrication
	Bicycle and its parts		Bicycle assembling and its parts fabrication
	Shipbuilding and repair		Repairing small ships
Others	Jewel processing		Jewel processing
	Sports goods	Sports goods	
	Toy		Toy
	Accessory and button		Accessory and button, wig

Remarks: * Eco-materials Development
Example: Utilizing cassava:
● Starch for forming and film, ● Bag and sheet, ● Dishware and seedling pot

Table B-20 Type of Industries/Services to be attracted to SPZ

Zone Division	Type of prospective industry	Categories of industry
Free Zone (FZ)	Non-traditional, export oriented and labor intensive industry	Garment/fabrics (High to medium notch), sportswear
		Wooden, stuffed and plastic toys
		Processed Fishery Products
		Electric Appliances/Components
		Machinery components
		Automobile parts and components such as Wire harness/accessories
		Ceramic products – ceramic tiles, roof tiles etc.
		Rubber products – surgical and medical rubber gloves, condoms
		Paper products – packing and cushioning materials, paper containers
		Others (jewelry, etc)
	High value-added, recycle oriented and labor intensive industry	Used car/motor cycles and used tire – for reassemble, retreat and recycle
	International Wholesaler	Temporal duty-free storage of goods for transshipment
Promotion Zone (PZ)	Export-oriented (traditional) and labor-intensive type	Garment – outerwear, shirts, pants, infant wear and uniforms
		Footwear – leather shoes and chemical shoes
	Export-oriented, partly import-substitute and domestic resource based industry	Process agricultural products – processed vegetables, fruits and nuts
	Export-oriented, partly import-substitute and labor intensive industry	Electric appliances assemble – washing machine, refrigerator, electric fan
		Machinery assemble – small pumps, generators and engines
		Metal processing – galvanized iron sheet, steel cutlery, building materials

B.7 REGIONAL DISTRIBUTION OF PROSPECTIVE INDUSTRIAL CATEGORIES

The locations of the prospective industrial categories in Growth Corridor are determined following the Area Specific Strategies for the manufacturing industry recommended in the Study, as described hereunder. It is noted that the prospective industrial categories for FZ and PZ are separately given in **Table B-20** and not given in this section.

B.7.1 Greater Capital Area

The appropriate industrial categories to be located in the Greater Capital area comprises:

- Apparel industry which in the long-term should be upgraded to the higher value-added and medium-level-priced industry
- Daily consumer products and urban type industry including printing

- Agro-fishery processing for import substitution as well as for export
- Higher value-added categories including the assembly industry for electrical and transport machinery
- Airport based industry (high value-added, labor intensive)
- Information industry including software in the medium-to-long term

Apparel should continue to be located accompanied with higher value-added products. The categories related to urban accumulation are: agro and fishery based processed food, beverage, daily consumer goods such as soap, printing, paper coating and cutting, paper container, jewel processing, etc.

High value-added industry of machinery assembly should be located as well as fabricated metal categories. Machinery assembly should include electric appliance and transportation machinery including motor-bikes and small boats as well as agricultural machinery and small pumps. In the medium-to-long term, information industry including software can be developed and located in this sub-area, though it is not included in the manufacturing industries according to the industrial classification.

Airport-based industrial categories for high value-added and labor intensive products should be among the categories to be located, including the electronic device parts including printed circuit board. The industrial locations of electronic devices and high quality apparel are expected near the international airport, in particular in EPZ if it is established with strong investment incentives.

In Kandal province, food processing industry including meat products, fishery processed products, canned and bottled fruits, beverage, vegetable oil, and animal fat will be located. Apparel and footwear will also be located in the province.

The other prospective group is the urban demand type categories including paper ware, furniture and woodwork, brick, roof tile, sanitary ceramic ware, concrete secondary product, gelatin, etc.

B.7.2 Intermediate Area

The Intermediate Area comprises the 4 provinces of Takeo, Kampot, Koh Kong and Kampong Speu. Industrial location in the Intermediate Area is described hereunder by province.

(1) Takeo Province

The prospective categories are meat products, agricultural processed product, animal feed, and apparel. Though to meet the small local demand mainly in the province, there is a possibility of other categories such as ceramic ware, brick and roof tile. Silk products including cloths and summer sweaters and hand-made silk products of Khmer tradition for foreign tourists are among the prospective categories.

(2) Kampot Province

Various fish processing categories including frozen shrimp are among the prospective ones. Others are meat products, canned and bottled vegetables and fruits, peanut oil, vegetable oil and animal fat.

(3) Kampong Speu Province

Prospective categories for Kampong Speu Province are processed food including daily processed food, meat products, agricultural processed products and fish processed products. Subject to the realization of a large-scale farming and livestock breeding utilizing hilly terrain, agricultural processed products, meat products, and dairy products are among the prospective ones.

Tapioca starch based products including glue are prospective as well as the building and construction categories of brick, roof tile and concrete secondary products are also among the prospective ones.

(4) Kaoh Kong Province

Prospective categories for Kaoh Kong Province are fish processing, fruit processing, salt pan, clay, etc. If EPZ is established in Kaoh Kong town, labor intensive export oriented categories will be located.

B.7.3 Sihanoukville Area

Apparel is a main industrial category in Sihanoukville Area. Weaving may possibly among the prospective ones depending on GSP status for it.

Fish processing category for mackerel and sardine is a prospective category. Beer and beverage categories are also prospective. Industrial category with tapioca as raw material and soap production using palm oil are also prospective.